WASTE MANAGEMENT
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February 12, 2016

Mr. David Denk
New York State Department of
Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2915

Re: Air State Facility Permit Modification Application – RMU-2
Response to December 1, 2015 NYSDEC Letter

Dear Mr. Denk:

On October 24, 2014, the New York State Department of Environmental Conservation (NYSDEC) issued an Air State Facility Permit (DEC ID 9-2934-00022/00233) for the CWM Chemical Services, LLC., Model City, New York Facility. Subsequently, an Air State Facility Permit Modification Application for the addition of Residuals Management Unit No. 2 (RMU-2), prepared by Conestoga-Rovers & Associates, Inc. (CRA, now known as GHD) was submitted to the NYSDEC on February 5, 2015.

By letter dated March 20, 2015, NYSDEC staff deemed the permit modification application complete and circulated, among other documents, a modified draft Air State Facility permit which incorporated conditions for the proposed RMU-2 landfill.

In a letter dated December 1, 2015 to Administrative Law Judge Honorable Daniel P. O'Connell, the NYSDEC indicated that based on the documents provided by petitioners in the RMU-2 proceedings following the issues conference, the NYSDEC reversed its decision on the completeness of CWM's permit modification application for the Air State Facility permit for RMU-2 proposal. The NYSDEC further indicated in the December 1, 2015 letter that a supplemental emissions inventory and clarification of certain calculations contained in the February 2015 permit modification application is required from CWM to render the modification application complete and for staff to determine if the draft Air State Facility permit for the proposed RMU-2 project needs to be modified.

This letter and attachments provide CWM's response to the December 1, 2015 NYSDEC letter. This letter and attachments contain revisions to the current emissions inventory for the facility and revisions to the emissions inventory for the addition of RMU-2. Additionally, proposed revisions to CWM's Fugitive Dust Control Plan and Air & Meteorological Monitoring Plan as requested by the December 1, 2015 letter.

As requested by the NYSDEC, the Current Operations Emissions Inventory has been revised. Revisions to the inventory include the following:

- Potential emissions from the fac ponds have been recalculated using half the detection limits of the analysis of samples collected from the ponds;
- Potential emissions from spills have been calculated and added to the emissions inventory;
- Potential emissions from leachate loading using a vacuum truck have been calculated and added to the emissions inventory;
- Potential emissions from equipment leaks have been added to the emissions inventory;
- Potential emissions of volatile organics from stabilization operations have been calculated and added to the emissions inventory;
- Potential emissions from closed landfills from diffusion through the respective caps and from barometric pumping have been calculated and added to the emissions inventory;
- Potential emissions from historical RMU-1 operations, partially closed RMU-1 (final cover) and RMU-1 Intermediate Cover area from diffusion through the respective caps and from barometric pumping have been calculated and added to the emissions inventory; and
- Recalculation of potential tank emissions was performed using the equations from AP-42 (Excel based) to verify the use of USEPA TANKS Modeling software.

In the December 1, 2015 letter, the NYSDEC requested that CWM clarify the accuracy of the NYSDEC's understanding that the activities at the PCB Warehouse are strictly limited to the storage of sealed drums. The NYSDEC's understanding is correct. The PCB Warehouse is strictly used for the storage of sealed drums and containers.

The update to the Emissions Inventory has been prepared by GHD and is attached to this letter as Enclosure No. 1.

It should be noted that there have been changes to the facility since the submittal of the initial emissions inventory in the Air State Facility Permit Application submitted in January 2014 and revision submitted March 2014. The changes include the closure of tank T-3001, the replacement of three fuel oil steam and hot water boilers with three propane fired steam and hot water boilers, the closure of fuel oil tank T-20, and the cessation of waste placement operations in RMU-1. These changes are reflected in this revised/updated Emissions Inventory.

Additionally, it should be noted that CWM/GHD utilized Agency issued air emission guidance documents and emission estimate models, including, but not limited to, the EPA's "Hazardous Treatment, Storage and Disposal Facilities (TSDF) -Air Emissions Models," dated December 1987, EPA's "Hazardous Waste TSDF- Background Information for Proposed RCRA Air Emission Standards," dated June 1991 , and EPA's "Air Emissions Models for Waste and Wastewater," dated November 1994 in developing the revised emissions inventory.

This revised and updated emissions inventory prepared by GHD for the existing operations confirms that the potential to emit VOCs and HAPs are well below the Title V thresholds and that that appropriate permitting shall be an Air State Facility Permit issued pursuant to Environmental Conservation Law (ECL) Article 19.

Based on the NYSDEC's December 1, 2015 letter, the Emissions Inventory for RMU-2 included in the February 2015 Air State Facility Permit Modification Request has been revised/updated. Revisions to the inventory include the following:

- Wind erosion emission calculations from soil stockpiles for RMU-2 have been revised and added to the emissions inventory;
- Proposed Fac Pond 5, which will replace Fac Pond 3, potential emissions were calculated and added to the emissions inventory;
- RMU-2 operations potential emissions were calculated and added to the emissions inventory; and
- RMU-2 partial closure potential emissions were calculated and added to the emissions inventory.

The revised/update to the Emissions Inventory for the addition of RMU-2 and related units has been prepared by GHD and is attached to this letter as Enclosure No. 2. The revised emissions inventory confirms that, with addition of RMU-2 and related units, the facility will still be well below the thresholds for Title V applicability. This is agreement with the NYSDEC statement in the December 1, 2015 letter to the ALJ that; "…….*Department staff deems it unlikely that the revised application will trigger Title V permit applicability*……"

The December 1, 2015 NYSDEC letter to the ALJ indicates that CWM should submit proposed revisions to the Fugitive Dust Control Plan and Air & Meteorological Plan to expand the dust management protocols and add an air monitoring program for PM-2.5, PCBs, metals, and VOCs during construction and operation of the landfill. Proposed revisions to Fugitive Dust Control Plan and Air & Meteorological Plan are attached to this letter in Enclosures No. 3 and 4, respectively. Additionally, a proposed Air Monitoring Program summary has been prepared for monitoring during construction and operation of RMU-2 and is provided in Enclosure No. 5.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

cc:

D. Stever	- NYSDEC/Region 9 (electronic copy)
M. Passuite	- NYSDEC/Region 9 (electronic copy)
P. Grasso	- NYSDEC/Region 9 (electronic copy)
B. Rostami	- NYSDEC/Region 9 (electronic copy)
A. Carlacci	- NYSDEC/Region 9 (electronic copy)
M. Cruden	- NYSDEC/Albany, NY (electronic copy)
M. Mortefolio	- NYSDEC/Albany, NY (electronic copy)
On-site Monitors	- NYSDEC/ Model City, NY (electronic copy)
A. Park	- USEPA/Region II (electronic copy)
N. Azzam	- USEPA/Region II (electronic copy)
P. Dicky	- NCHD/Lockport, NY (electronic copy)
M. Mahar	- CWM/Model City, NY (electronic copy)
J. Rizzo	- CWM/Model City, NY (electronic copy)
D. Darragh	- Cohen & Grigsby/Pittsburgh, PA (electronic copy)
EMD Subject File	
Q & A	

ENCLOSURE NO. 1
AIR STATE FACILITY PERMIT

Revised Emissions Inventory – Current Site Conditions

Emissions Inventory

CWM Chemical Services Model City Site
Model City, New York

CWM Chemical Services, LLC

1550 Balmer Road

Model City, NY 14107

2055 Niagara Falls Boulevard Niagara Falls New York 14304 USA

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Attachment 2 Calculation of Fugitive PM2.5 Emissions

Attachment 3 USEPA Paper *"Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions"*

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1. Introduction

GHD Services Inc. (GHD) has been retained by CWM Chemical Services, LLC (CWM) to update the emissions inventory of their existing Model City Facility (Facility or Site).

The CWM facility is an existing commercial hazardous waste treatment, storage, and disposal facility (TSDF) in Model City, Niagara County, New York. This TSDF began operation in 1972 as ChemTrol Pollution Services, Inc. Due to corporate acquisitions and name changes, CWM, a subsidiary of Waste Management, Inc., is the present owner and operator of the facility.

Based on the previous quantification of air emissions from the facility, in accordance with the guidance and regulations presented in 6 NYCRR Part 201, of the New York Code of Rules and Regulations (NYCRR), the facility had not historically qualified as a potential Title V or Air State Facility source. Therefore, prior to 2013, emissions from sources not identified as Exempt or Trivial under 6 NYCRR Part 201-3, had been previously permitted with the New York State Department of Environmental Conservation (NYSDEC) Division of Air Resources in accordance with 6 NYCRR Part 201-4 (Minor Facility Registrations).

The recent promulgation of 6 NYCRR Part 201-9 presented the new 'Significant Mass Emission Rates for Persistent, Bioaccumulative and Toxic Compounds' that took effect on February 22, 2013. Any facility that has total emissions greater than the thresholds listed in the table for any compound must apply for an Air State Facility Permit or a Title V Permit within six months of receipt of the department's determination to submit a complete permit application. As a result, GHD representatives conducted a thorough review of CWM facility operations and existing permit documentation in order to ascertain the level of air permitting required for the CWM Facility going forward. Based on this review, GHD determined that an Air State Facility Permit Application was required for the Facility. The Air State Facility Permit Application for the existing facility was submitted to NYSDEC in January 2014. The Air State Facility Permit for the facility was issued on October 24, 2014.

This emissions inventory update includes additional information requested in a December 1, 2015 letter from NYSDEC to the Honorable Daniel P. O'Connell regarding the proposed expansion at the CWM Facility.

2. Facility Description

The CWM Chemical Services, LLC (CWM), Model City Facility is located within the Erie-Niagara Region in the western section of New York State. The facility is situated on the boundary between the Towns of Lewiston and Porter in Niagara County. All hazardous waste management units are located within the Town of Porter. The facility's operations are authorized by a RCRA hazardous waste permit issued by NYSDEC and a TSCA (PCB) Approval issued by USEPA. The facility uses a number of processes for the proper storage, treatment and disposal of a variety of liquid and solid organic and inorganic hazardous waste and industrial non-hazardous waste. Storage, treatment and disposal capabilities include an aqueous waste treatment system, which includes phase separation, oxidation/reduction, neutralization, solids precipitation and filtration, biological treatment and carbon filtration. The treated effluent is stored in a facultative (fac) pond, qualified and discharged pursuant to the facility's State Pollutant Discharge Elimination System (SPDES) Permit.

Other operations include waste stabilization; secure landfilling of approved solid waste, including PCBs; solvent and fuel blending processes; RCRA and TSCA container storage and transfer; landfill leachate collection, storage and treatment. As a RCRA permitted TSDF, CWM is subject to the hazardous waste regulations in 6 NYCRR Parts 370-376. This includes several regulations focused on minimizing the release of hazardous waste contaminants to the air: 373-2.28, Air Emission Standards for Equipment Leaks, and 373-2.29, Air Emission Standards for Tanks, Containers and Surface Impoundments.

The Model City Facility began operations in 1971 as Chem-Trol Pollution Services, Inc. Activities included fuels blending of waste oils, distillation of spent solvents, aqueous waste treatment, and land disposal. In 1973, the stock of Chem-Trol was purchased by SCA Services, Inc. The Chem-Trol name was retained until late 1978 at which time the corporate name changed to SCA Chemical Waste Services, Inc., and in 1981, was renamed SCA Chemical Services, Inc.

In October 1984, WM Acquiring Corp., owned jointly by Waste Management, Inc. (WMI), and Genstar, Inc., acquired SCA Services, Inc., of which SCA Chemical Services, Inc. was a subsidiary. Through a corporate reorganization in October 1986, SCA Chemical Services, Inc. became a wholly owned subsidiary of Chemical Waste Management, Inc. (CWM), itself majority-owned by Waste Management, Inc. In July 1988, the corporate name SCA Chemical Services, Inc. was changed to CWM Chemical Services, Inc. CWM Chemical Services, Inc., became a limited liability company in January 1998 and became CWM Chemical Services, LLC. CWM Chemical Services, LLC, is the owner and operator of the Model City Facility.

The fuels blending tanks and solvent distillation operation were eliminated in the 1980s. The Aqueous Treatment facility continues to operate. The following summarizes the closed and active landfill units at the Facility:

Landfill Area	Status
SLF 1-6	Closed
SLF 7	Closed
SLF 10	Closed
SLF 11	Closed
SLF 12	Closed
RMU-1	Waste Receiving Completed (Nov. 2015)

It should be noted that the Facility's current active landfill (RMU-1) has essentially reached its capacity and received its final volume of hazardous wastes on November 12, 2015. From 1997 through 2013, final cover was constructed over the remaining waste area of RMU-1 (approximately 31.8 acres) in accordance with the Part 373 Permit. A minimum of 12-inches of intermediate soil cover has been installed over the remaining active area (approximately 7.7 acres). In accordance with the Part 373 Permit, RMU-1 must be completely closed by November 6, 2016 through the installation of final cover over the remaining 7.7 acres.

3. Facility Emission Unit Descriptions

The following sections present discussions of the emissions estimated for the sources identified at the Facility. Supporting calculations are provided as referenced.

3.1 Fugitive Dust Emissions

Off-road particulate matter (PM) emissions are primarily caused by the moving and handling of soil by heavy equipment such as loaders and bulldozers. The emissions were calculated based on the equipment and hours of operation for both operational and construction vehicles, and include such activities as soil handling and waste placement.

Operational vehicles and waste hauling vehicles also generate particulate emissions from traveling on both the paved and unpaved roads at the Facility. These emissions differ from those discussed above since they consider PM that is stirred up by vehicle tires on the road surface as opposed to the actual movement of soil. PM emissions to determine road dust were calculated based on information provided by the Facility, which include vehicle traffic, such as types of equipment and roads/paths traveled, as well as distances traveled and hours of operation. Figures 1 through 9 provide a description of the road segments and vehicle traffic routes for the different truck types that operate at the Facility.

GHD utilized a series of United States Environmental Protection Agency (USEPA) published emission factors and emission factor equations in the performance of this work. Emissions are based on routine operations for a typical year of landfill operation. Attachment 1 presents the calculation of fugitive PM-10 dust emissions for the Facility. Attachment 2 presents the calculation of fugitive PM-2.5 dust emissions for the Facility. As indicated in Section 2.0, current active landfill RMU-1 has essentially reached its capacity and received its final volume of hazardous wastes and will be closed in 2016. The PM-10 and PM-2.5 calculations provided in Attachments 1 and 2 were prepared based on the landfill actively receiving wastes. RMU-1 will no longer receive waste, hence the calculations are conservative.

3.2 Landfill Emissions

This Section provides a summary of emissions from each of the landfill units, in addition to the emissions from the standpipes presented in section 3.3.1.

3.2.1 Cover Diffusion

Emissions from diffusion of pollutants through the cover of each closed and partially closed landfill unit were calculated using the methodology presented in Chapter 8.2 (Closed Landfills) of the USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. Aqueous pollutant concentrations of the leachate for each landfill area are described in Section 3.3.1. Diffusion coefficients for the cover system were referenced from the paper *Transport of Volatile Organic Compounds Through PVC and LLDPE Geomembranes From Both Aqueous and Vapour Phases*, dated September 29, 2009. The table below summarizes the calculation methodology for landfill cover diffusion for each area:

Landfill	Synthetic Liner	Cover Description	See Table
SLF 1-6	20-mil PVC	3-ft of clay below liner & 2-ft of clay & 0.5-ft of topsoil above liner	21
SLF-7	20-mil PVC	3-ft of clay below liner & min. 1.5-ft of uncompacted clay & 0.5-ft of topsoil above liner	22
SLF-10	20-mil PVC	3-ft of clay below liner & min. 1.5-ft of uncompacted clay & 0.5-ft of topsoil above liner	23

Landfill	Synthetic Liner	Cover Description	See Table
SLF-11	40-mil HDPE	3-ft of clay below liner & min. 1.5-ft of general fill & 0.5-ft of topsoil above liner	24
SLF-12	40-mil HDPE	2-ft clay below liner & 2.5 ft general fill & 0.5 ft topsoil above liner	25
RMU-1	40-mil HDPE	17.8 Acres: 2-ft clay below liner & 2.5 ft general fill & 0.5 ft topsoil above liner	26A
RMU-1	40-mil HDPE	14.0 acres: 0.5 ft general fill below liner Geosynthetic Clay Liner (below liner) 1.5 ft general fill & 0.5 ft topsoil above liner	26A
RMU-1	None as of 2/2016	7.7 acres: minimum of 1-foot of general fill cover over waste	26B

Please note that diffusion coefficients were based on the geomembrane liner material only and did not take into account the clay cover or general fill soil cover above and below the liner material. Therefore, the effective diffusion coefficient is expected to be lower than what was presented in the calculations.

3.2.2 Barometric Pumping

According to RJ Pirkle, DE Wyatt, V Price, BB Looney (Barometric Pumping: The Connection Between the Vadose Zone and the Atmosphere, 1992) "the principal of barometric pumping is simple. During periods of falling barometric pressure, the pressure on the soil/atmosphere boundary is rapidly reduced. Soil gas from the sedimentary pore space flows vertically into the atmosphere in order to restore pressure equilibrium." This concept is well understood and documented in landfills with a vent system. This condition is common at municipal solid waste landfills (with gas collection or venting systems) and in some cases solid waste landfill personnel will increase the vacuum on a gas collection system during periods of a rapid barometric pressure loss.

One of the base assumptions in the EPA document entitled Air Emissions for Waste and Wastewater (EPA-453/R-94-080A, November 1994) is that "the landfill is assumed to be vented to the atmosphere. The volume of gas available for barometric pumping is assumed to consist of the total void volume of the waste bed." In a landfill with a vent system this makes complete sense. As barometric pressure drops, vapors would rise vertically through vents and/or a gas venting layer and be emitted. As pressure increases, the void spaces would be refilled with air from the atmosphere where it would mix with vapors from the waste – and then rise again to be vented when the barometric pressure drops (thus "barometric pumping").

However, the landfills at CWM have no venting system (refer to Attachment 16 for drawings). Therefore as barometric pressure drops, any vapors within the unsaturated zone of the landfill may rise, but they will be contained by the clay and synthetic cap (other than potentially by diffusion as described in Section 3.2.1). They will not be emitted through a venting system, since one does not exist. Further, since the vapors will not be emitted, they will not be replenished during a high pressure event and the “barometric pumping” effect will not occur as described in the referenced document.

The only possible pathway for vapors to be emitted to the atmosphere from barometric pumping is through the standpipes. However, this is an incomplete pathway for the following reasons:

1. As described above, a reduction in barometric pressure will cause gases to rise vertically in an attempt to reach pressure equilibrium. The stand pipe risers are only perforated at the very bottom in order to allow leachate to flow from the landfill and into the bottom of the standpipes where it is then pumped from the landfill. During a reduction in barometric pressure gasses would be moving away from these perforations as they rise vertically.
2. The material at the bottom of the landfills is saturated with leachate, meaning that there is near zero pore space for gases to migrate through in the event that a preferential pressure gradient did exist.
3. The standpipes are covered, inhibiting gases present inside them from escaping.

The emissions inventory currently includes emissions from the leachate within the standpipes. This analysis is entirely consistent with NYSDEC's September 12, 1990 letter to CWM allowing the removal/capping of gas vents from SLF-11. While we believe that the above information provides evidence that barometric pumping does not occur, or occurs only to a very limited extent. In an effort to be conservative, the many background documents that the above EPA study was based on relative to barometric pumping were reviewed. Again, all of these documents were associated with landfills with a vent system. No references to barometric pumping without a gas venting system were found. One reference (Evaluation and Selection of Models for Estimating Air Emissions from Hazardous Waste Treatment, Storage and Disposal Facilities, EPA-450/3-84-020, December 1984) states that "for a landfill handling strictly hazardous waste, with no expected internal gas generation…an increase of 10-15 percent to emission release could be expected." Therefore, in order to be conservative, 15 percent was added to the diffusion emission estimate to account for any limited effect barometric pumping may have.

3.2.3 Active Placement of Waste

Emissions from the open active region of waste were estimated using a model developed for a similar hazardous waste landfill located in Louisiana. The model was developed based on equations presented in USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. The profile of waste used for the model is based on historical receipts for RMU-1 using the maximum amount of each compound received in a year for the period of 2005 through 2014 and the maximum annual amount of waste received during the corresponding time period. The area of the active RMU-1 area was input into the model (7.7 acres) and the depth of waste in the active zone is assumed to be 6 feet (approximate depth of one "lift "of waste). The output of the model is presented as Attachment 17.

3.3 Leachate Collection, Transfer and Storage

This Section provides a summary of emissions from the collection, transfer and storage of leachate at the Facility.

3.3.1 Standpipes and Sideslope Risers

Emissions occur within the landfill standpipes and sideslope risers due to the evaporation of leachate to the atmosphere. The calculation methodology for leachate emissions from the landfill standpipes and sideslope risers was taken from the USEPA paper, "*Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions* (Guo, Z. and Roache, N.F., December 20, 2002)" [See Attachment 3 for paper]. The

exposed surface area for each landfill area was calculated by summing the individual standpipe areas using the diameters presented in Table 2.

Table 3 presents a summary of volatile organic compounds (VOCs) and hazardous air pollutant (HAPs) emissions from the SLF 1-6 standpipes. Individual VOC and HAP concentrations within the leachate are based on a sample taken from Tank 103 on March 21, 2013 (refer to Attachment 4 for laboratory analytical report). It should be noted that the emissions presented in Table 3 represent volatilization from the aqueous phase of leachate only.

The leachate collected from SLF 1-6 also contains non-aqueous phase liquids (NAPL). Attachment 5 presents a phase breakdown of leachate from SLF 1-6 based on a study conducted in 1994. This information was used to calculate emissions of light non-aqueous phase liquids (LNAPL) from SLF 1-6, presented in Table 4. Emissions were calculated based on the assumption that 2.5 percent of the total leachate collected from SLF 1-6 is LNAPL and approximately 1 percent of the LNAPL volatilizes from the leachate. The 1 percent volatilization rate was estimated based on site-specific testing that was conducted on the standpipes on August 23, 2013.

It is assumed that dense non-aqueous phase liquids (DNAPL) settle within the leachate and do not volatilize. DNAPL is ultimately removed from the standpipe and transferred to the oil/water separator (T-158) and sent off-site to a third party for incineration.

Table 5 presents a summary of VOC and HAP emissions from the SLF 7 standpipes. Individual VOC and HAP concentrations within the leachate in SLF 7 were based on the maximum detected value from historical sampling results for Tank T-107 (see Attachment 6).

Table 6 presents a summary of VOC and HAP emissions from the SLF 10 standpipes. Individual VOC and HAP concentrations within the leachate in SLF 10 were based on the maximum detected value from historical sampling results for Tank T-109 and Tank T-110 (see Attachment 6).

Table 7 presents a summary of VOC and HAP emissions from the SLF 11 standpipes. Individual VOC and HAP concentrations within the leachate in SLF 11 were based on the maximum detected value from historical sampling results for Tank T-108 (see Attachment 6).

Table 8 presents a summary of VOC and HAP emissions from the SLF 12 standpipes. Individual VOC and HAP concentrations within the leachate in SLF 12 were based on the maximum detected value from historical sampling results for Tank T-150 (see Attachment 6).

Table 9 presents a summary of VOC and HAP emissions from the RMU-1 standpipes. Individual VOC and HAP concentrations within the leachate in RMU-1 were based on the maximum detected value from the following historical sampling results (see Attachment 7):

- Periodic sampling results for individual standpipes between May 2006 and February 2013
- Periodic sampling results for Tank T-102 between April 2012 and April 2013
- Periodic sampling results for Tank T-160 (lift station for RMU-1 Landfill) between January 31, 2012 and February 15, 2012

3.3.2 Leachate Storage Tanks and Lift Stations

Emissions are generated from the volatilization of leachate and from the working and breathing losses from the filling and unloading of the lift stations and storage tanks at the Facility. Emissions

calculations for the storage tanks and lift stations that transfer and store leachate at the Facility were estimated utilizing TANKS 4.0.9d software (calculations have also been replicated by GHD in Microsoft Excel as requested by the NYSDEC using the methodology from AP-42, Section 7.1 (11/06), with the exception of meteorological data which was taken from the sources described in Section 6.2 of the *User's Guide to TANKS*, prepared by USEPA). Tank compositions were referenced based on periodic sampling results provided by CWM. Attachment 8 presents the TANKS model output for each of the following tanks:

Tank ID	Description	Composition
T-102[1]	SLF-12 and RMU-1 Leachate	Maximum Detected value in Attachment 7
T-103[1]	SLF 1-6 Leachate	Sample of T-103 (Attachment 4)
T-105	Lift Station for T-130	Overall Average in Table 20
T-107	SLF 7 Leachate	Maximum Detected value in Attachment 6
T-108	SLF 11 Leachate	Maximum Detected value in Attachment 6
T-109	SLF 10 Leachate	Maximum Detected value in Attachment 6
T-110	SLF 10 Leachate	Maximum Detected value in Attachment 6
T-111	SLF 11 Leachate	Maximum Detected value in Attachment 6
T-130	SLF 1-6 Leachate	Overall Average in Table 20
T-150	SLF-12 Leachate	Maximum Detected value in Attachment 6
T-158	SLF 1-6 Leachate	Overall Average in Table 20
T-160	RMU-1 Lift Station	Maximum Detected value in Attachment 6

Dimensions, capacities and throughputs for all tanks at the Facility are presented in Table 10. A summary of emissions from each tank is presented in Table 11.

It should be noted that the leachate tanks are vented to carbon canisters. To be conservative, the maximum constituent concentrations were used and no reduction was applied for the air emissions control provided by the carbon canisters.

3.3.3 Leachate Transfer via Tanker Trucks

Emissions due to the transfer of leachate collected from each landfill area via tanker trucks were calculated using the methodology presented in Chapter 9.9 (Vacuum Truck Loading) of the USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. Emissions from truck loading are estimated by calculating an equilibrium concentration of organic vapors in the vacuum truck at its operating conditions and assuming that a total volume of gas equal to the vacuum truck volume is emitted to the atmosphere for each loading episode. It is assumed that the truck has a capacity of 5,500 gallons and an operating pressure of 303 mmHg. It is assumed that

[1] Three tanks in the Leachate Tank Farm (T-101, T-102, T-103); one is used for SLF 1-6 aqueous leachate, one is used for SLF 12 and RMU-1 leachate and one is generally on stand-by. [tank service is changed from time to time]

leachate is transferred from each landfill area once per week. Aqueous pollutant concentrations of the leachate for each landfill area are the same as previously described in Section 3.3.1. The table below summarizes the calculation methodology from leachate transfer operations via transfer trucks:

Landfill	Origin	Destination	See Table
SLF 1-6	T-130	T-158	21
SLF-7	T-107	T-1010 / T-1020	22
SLF-10	T-109/T-110	AWTF	23
SLF-11	T-108/T-111	AWTF	24
SLF-12	Standpipes	T-150	25
*** RMU-1 leachate is transferred by piping to the AWTF.			

3.4 Stormwater Event Tanks

One of the three tanks in the Leachate Tank Farm (e.g. T-101) is on stand-by.[2] The Facility is currently required to maintain Tank T-101 on a stand-by basis for major storm events. As a conservative measure, emissions are assumed to be equal to those of Tank T-102 (which currently stores collected leachate from SLF-12 and RMU-1).

Tank T-165 is used to store collected contact stormwater from collection/storage basins located in the active area of RMU-1 and allows for sufficient excess capacity to contain precipitation from a 25-year, 24-hour design storm event. Emissions were estimated based on sampling results for Tank T-160 (see last page of Attachment 7) and the methodology presented in the USEPA paper, "*Overall Mass Transfer Coefficient for Pollutant Emissions From Small Water Pools Under Simulated Indoor Environmental Conditions* (Guo, Z. and Roache, N.F., December 20, 2002)" [See Attachment 3 for paper]. A surface area of 357.7 square meters and a wind speed of 11.8 miles per hour were assumed in the calculations. Table 12 presents the estimated emissions from Tank T-165.

As the active area of RMU-1 has a minimum of 12-inches of clean soil/intermediate cover over it, contact storm water is no longer being generated or pumped to T-165. The emissions from this tank will be reduced as the residual contact water is removed and just precipitation is collected in this open top tank.

3.5 Groundwater Extraction System

3.5.1 Storage Tanks

The 8000 series of tanks at the Facility represent the groundwater extraction system. Emissions are generated from the volatilization of collected groundwater and from the working and breathing losses from the filling and unloading of the lift stations and storage tanks at the Facility. Emission

[2] Three tanks in the Leachate Tank Farm (T-101, T-102, T-103); one is used for SLF 1-6 aqueous leachate, one is used for SLF 12 and RMU-1 leachate and one is generally on stand-by. [tank service is changed from time to time]

calculations for the storage tanks and lift stations that transfer and store groundwater at the Facility were estimated utilizing TANKS 4.0.9d software (calculations have also been replicated by GHD in Microsoft Excel as requested by the NYSDEC using the methodology from AP-42, Section 7.1 (11/06), with the exception of meteorological data which was taken from the sources described in Section 6.2 of the *User's Guide to TANKS*, prepared by USEPA).Tank compositions were referenced based on periodic sampling results provided by CWM. Attachment 9 presents the TANKS model output for each of the following tanks:

Tank ID	Description	Composition
T-8001[a]	Collected Groundwater	Maximum Detected value in Attachment 6
T-8002[a]	Lift Station for T-8001	Same as Tank T-8001
T-8004[a]	Collected Groundwater	T-8004 samples (see Attachment 10)
T-8005	Collected Groundwater	T-8005 samples (see Attachment 10)
T-8006	Collected Groundwater	T-8006 samples (see Attachment 10)
T-8007	Collected Groundwater	T-8007 samples (see Attachment 10)
T-8008[a]	Collected Groundwater	Nearby Extraction Well (see Attachment 10)
T-8009[a]	Collected Groundwater	T-8009 samples (see Attachment 10)
T-8010	Collected Groundwater	T-8010 samples (see Attachment 10)

[a] Due to the level of VOCs in the groundwater stored in these tanks, they are vented to carbon canisters. Conservatively, no reduction by carbon was included in the calculations.

Dimensions, capacities and throughputs for all tanks at the Facility are presented in Table 10. A summary of emissions from each tank is presented in Table 13.

3.5.2 Groundwater Transfer Via Tanker Trucks

Emissions due to the transfer of groundwater collected from the groundwater extraction system via tanker trucks were calculated using the methodology presented in Chapter 9.9 (Vacuum Truck Loading) of the USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. Emissions from truck loading are estimated by calculating an equilibrium concentration of organic vapors in the vacuum truck at its operating conditions and assuming that a total volume of gas equal to the vacuum truck volume is emitted to the atmosphere for each loading episode. It is assumed that the truck has a capacity of 5,500 gallons and an operating pressure of 303 mmHg. It is assumed that leachate is transferred from each landfill area once per week. Aqueous pollutant concentrations of the extracted groundwater for each tank are the same as previously described in Section 3.5.1. The table below summarizes the calculation methodology from groundwater transfer operations via transfer trucks:

Origin	Destination	See Table
T-8004	T-200 series	27
T-8005	T-200 series	28
T-8006	T-200 series	29
T-8007	T-200 series	30

Origin	Destination	See Table
T-8008	T-200 series	31
T-8009	T-200 series	32
T-8010	T-200 series	33
*** T-8001/T-8002 – transferred to AWTS by piping		

3.6 Aqueous Water Treatment Facility

This section provides the estimated emissions from the Aqueous Water Treatment Facility. Emissions are generated from the volatilization of collected influent water and from the working and breathing losses from the filling and unloading of the storage tanks at the Facility. Emissions calculations for the storage tanks at the Aqueous Water Treatment Facility were estimated utilizing TANKS 4.0.9d software (calculations have also been replicated by GHD in Microsoft Excel as requested by the NYSDEC using the methodology from AP-42, Section 7.1 (11/06), with the exception of meteorological data which was taken from the sources described in Section 6.2 of the *User's Guide to TANKS*, prepared by USEPA). Tank compositions were referenced based on periodic sampling results provided by CWM. Attachment 11 presents the TANKS model output for each of the following tanks:

Tank ID	Description	Composition
T-100	Filtrate Tank	Maximum Detected value in Attachment 12
T-210	Processing of Tank T-103	Same as Tank T-103
T-220	Processing of Tank T-103	Same as Tank T-103
T-230	Processing of Tank T-103	Same as Tank T-103
T-710	Processing of Tank T-103	Same as Tank T-103
T-810	Processing of Tank T-103	Same as Tank T-103
T-820	Processing of Tank T-103	Same as Tank T-103
T-1010	Processing of Tank T-103	Same as Tank T-103
T-1020	Processing of Tank T-103	Same as Tank T-103
T-310	Biotowers	Maximum Detected value in Attachment 12
T-320	Biotowers	Maximum Detected value in Attachment 12
T-3002	Feed to Biotowers	Same as Tank T-100
T-3003	Feed to Carbon	Same as Tank T-100
T-3009	Carbon Backwash	Same as Tank T-100
T-3011	Effluent From Biotowers	Same as Tank T-310 / Tank T-320
T-3012	Lift Station Between Biotowers	Same as Tank T-310 / Tank T-320
Frac Tank #3	SLF-7 Leachate Processing	Same as Tank T-107

Dimensions, capacities and throughputs for all tanks at the Facility are presented in Table 10. A summary of emissions from each tank is presented in Table 14. Tanks are vented to carbon canisters. Conservatively, no reduction by carbon was included in the calculations.

Emissions from the exhaust of the biotowers were estimated using SUMMA canister results from March 16, 2013 (refer to Attachment 13 for analytical report). Table 15 presents a summary of emissions from the biotower exhaust.

Emissions from the filter press are presented in Table 16.

3.7 Stabilization Facility

Emissions from the stabilization facility were estimated based on information compiled for the Toxic Release Inventory (TRI) Report for the facility. The calendar years of 2008 and 2012 were selected since these 2 years represent worst-case emissions for the 5-year period of 2008 through 2012.

Emissions of PM and metals from entrainment within the stabilization facility are presented in Table 1. It should be noted that the stabilization facility exhausts to two baghouses with a capture efficiency of greater than 99.998 percent according to manufacturer specifications.

Emissions of VOCs from volatilization within the stabilization facility are presented in Table 34. The following calculations methodology was utilized in the analysis:

- Each of the VOC materials processed in the stabilization facility were classified as one of the following based on the boiling point for the respective pollutant (VVOC = very volatile compound; VOC = moderately volatile compound; SVOC = semi-volatile compound)
- VVOC are assumed to emit 50 percent of its total weight during the stabilization process
- VOC are assumed to emit 25 percent of its total weight during the stabilization process
- SVOC are assumed to emit 1 percent of its total weight during the stabilization process
- PCBs are estimated to emit 0.044 percent of its total weight during the stabilization process based on CWM's data

3.8 Fugitive Emissions From Pipe Valves/Connectors

Equipment leaks and testing are addressed under 6 NYCRR Part 373-2.28 (RCRA Subpart BB). CWM performs routine monitoring with a flame ionization detector (FID) for hazardous waste systems with >10 percent organics and performs daily visual inspections of all hazardous waste tanks and ancillary equipment. The BB valve leak threshold of 10,000 ppm is high and rarely if ever exceeded. The majority of the valve monitoring results are ND/<10 ppm. When a leak is identified by monitoring or observation, the equipment is repaired immediately. The potential for emissions from equipment leaks is much less than for other industries since the volatile fraction of the material being handled is typically less than 10 percent (except for oily organic phase leachate from SLF 1-6). Using emission factors from the USEPA's Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017), which is intended for the chemical and petroleum industries, and using the conservative values of 10 ppm emissions and 10 percent volatile compound concentration, the VOC emission rate is calculated at 26 pounds per year (see Table 35). Since monitoring records have documented that monitored actual concentrations are less than 10 ppm, the actual emissions would be significantly less than 26 pounds per year and are deminimis.

3.9 Facultative Ponds

Treated wastewater is stored in the batch qualification tanks (T-58 and T-125) prior to discharge to Facultative Pond 1 /2 and Facultative Pond 3. Samples are collected from the batch qualification tanks and analyzed for VOCs, metals. In addition, one batch per month is analyzed for PCBs, SVOCs, COD, pH, cyanide, and sulfide. Results of the analyses of the monthly batch qualification samples are submitted to the NYSDEC. The laboratory analytical results for the treated wastewater discharged to the facultative ponds shows non-detects (NDs) for all Volatile Organic Compounds (VOCs) with the exception of acetone (which is not considered a VOC according to 6 NYCRR 200.1(cg)). In order to obtain an estimate of emissions from the facultative ponds, one-half of the detection limit was assumed for each compound for a sample collected on December 2, 2015. Tables 36A and 36B present emissions from Facultative Ponds 1 & 2 and Facultative Pond 3, respectively.

3.10 Heating Equipment

Heating at the Facility is provided by the following boilers/heaters:

- Two (2) 1.633 MMBTU/hr Steam Boilers (Propane-fired, AWTF)
- One (1) 1.0 MMBTU/hr Hot Water Boiler (Propane-fired)
- A number of small propane heaters located throughout the facility (cumulative rating of 2.709 MMBTU/hr)
- Fulton Model 50063 (Propane-fired, Locker Room)
- Copper Hydronic Boiler (Propane-fired, Firewater Pump Bld.)
- Davo Hastings Heaters (Two (2) Propane-fired, Drum Bld. Roof)
- Stabilization Main Heaters (One (1) Propane-fired, Stab. Bld. Roof)
- Pug Mill Heaters (One (1) Propane-fired, Stab. Pug Mill Area)

Emission factors for the propane-fired boilers/heaters were referenced from USEPA AP-42, Section 1.5 (07/08). Table 17 presents the estimated emissions from the heating equipment at the Facility.

3.11 Diesel Generator

The Site operates a Cummins Diesel Fire-Water Pump rated at 187 horsepower for 1 day each month for a maximum of 2 hours per occurrence. Emission factors for the diesel generator were referenced from USEPA AP-42, Section 3.3 (10/96). Table 18 presents a summary of emissions for the diesel generator.

3.12 Laboratory Emissions

An estimate of emissions laboratory activities was compiled based on an analysis of 2012 purchase records. Table 19 presents a summary of emissions from the laboratory at the CWM Facility.

3.13 Storage of Petroleum Products

Unleaded gasoline, diesel fuel, engine oil and propane are stored in above-ground storage tanks at the facility. Emissions are generated from the volatilization of these liquids and from the working

and breathing losses from the filling and unloading of the tanks. Emissions calculations for the storage tanks at the Facility were estimated utilizing TANKS 4.0.9d software and estimated throughputs at the Facility. Attachment 14 contains the model output of the TANKS program for the storage of petroleum products for each tank.

3.14 Container Storage/Movement

Sampling and waste fuel transfer occurs at the Drum Warehouse building. Emissions from these activities are quantified in Attachment 15.

Emissions due to spills as a result of container storage were calculated based on the methodology presented in Chapter 9.7 (Spills) of the USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. Table 37 presents VOC and HAP emissions from spills due to container storage at the CWM facility. Emissions are based on a container inventory for the 2015 calendar year.

4. Emission Discussion

Table 1 presents a summary of total emissions for the CWM Facility. A summary of select compounds is presented below:

Emission Source	***Emissions (TPY)***							
	VOCs	***HAPs***	***NO_X***	***CO***	***SO_2***	***PM_{10}***	***$PM_{2.5}$***	***Total GHG***
Totals (TPY)	**3.09**	**1.07**	**2.64**	**4.62**	**0.01**	**7.44**	**5.66**	**4,376.86**
Title V Threshold (TPY)	**50**	**25**	**100**	**100**	**100**	**100**	**100**	**100,000**

Emissions have been prepared using site-specific test data, where available. VOC and metals emissions from stabilization have been based on 2008 data. 2008 data is conservative and considered to represent potential emissions based on a review of the past 5 years of data of which 2008 concentrations (and thus emissions) represent the highest values, and also when significantly more waste was managed at the site. This is further supported by recent revisions to 6 NYCRR Part 212 which lower thresholds for implementation of air controls (and thus lower emissions) than required in the past, even if waste acceptance rates were to return to historical levels.

As shown in the table above, the facility is well below the thresholds for Title V applicability. The CWM Facility has applied for and obtained an Air State Facility Permit as described under 6 NYCRR 201-4.1.

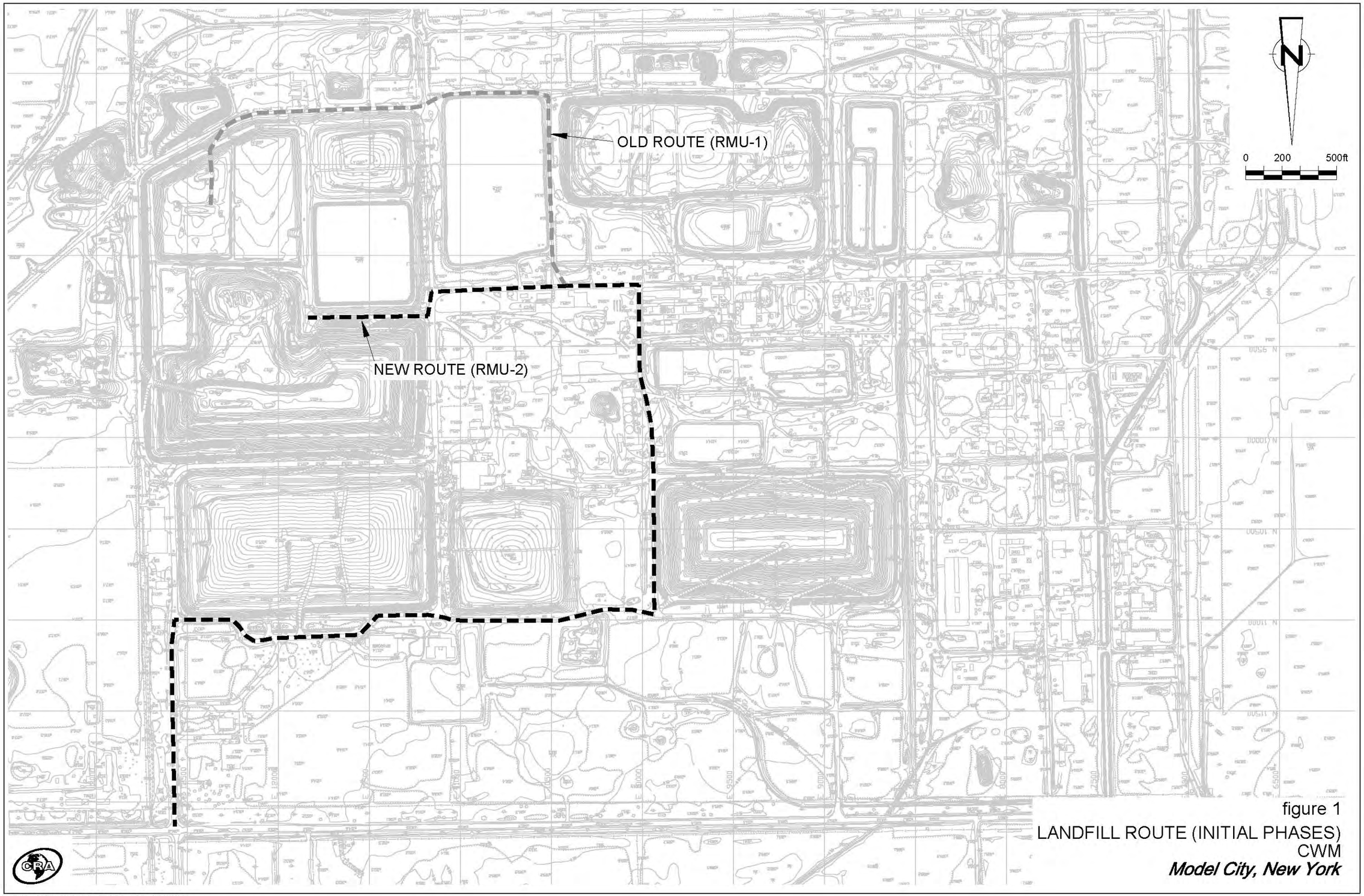


figure 1

LANDFILL ROUTE (INITIAL PHASES)
CWM
Model City, New York

80335-00(001)GN-NI001 JAN 12/2015

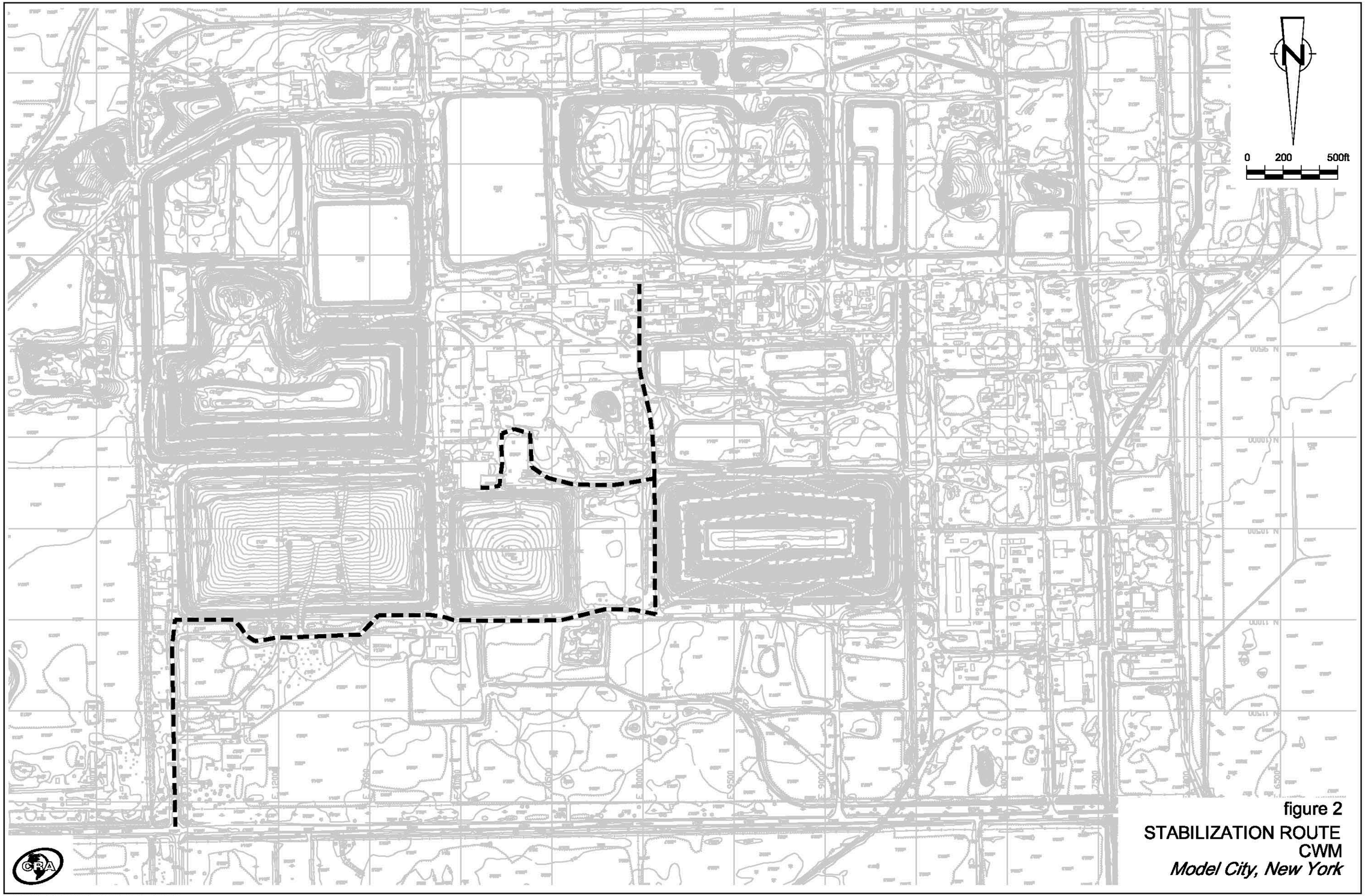


figure 2
STABILIZATION ROUTE
CWM
Model City, New York

48312-00(001)GN-NI002 OCT 29/2007

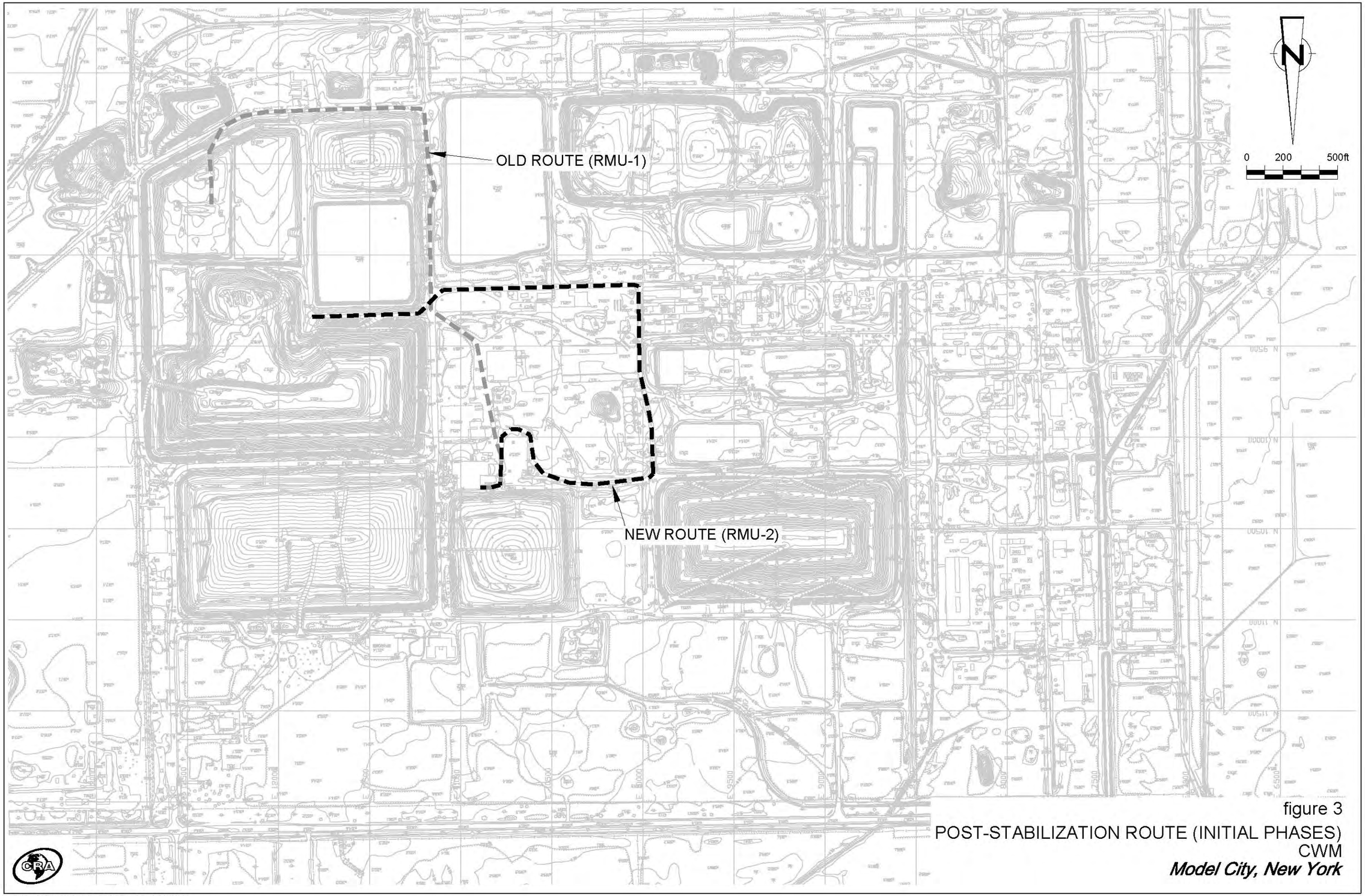


figure 3

POST-STABILIZATION ROUTE (INITIAL PHASES)
CWM
Model City, New York

80335-00(001)GN-NI003 JAN 12/2015

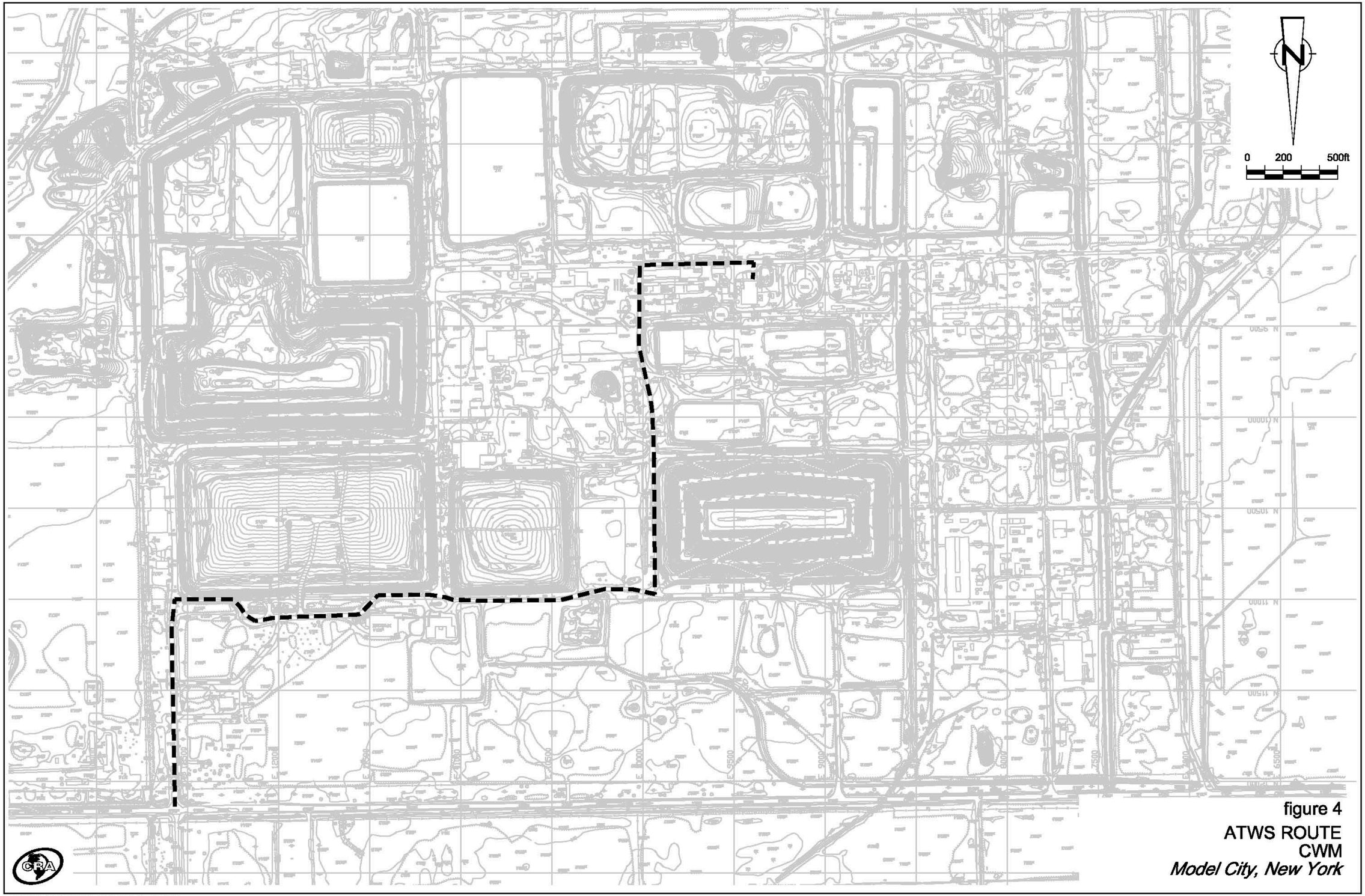


figure 4
ATWS ROUTE
CWM
Model City, New York

48312-00(001)GN-NI004 OCT 29/2007

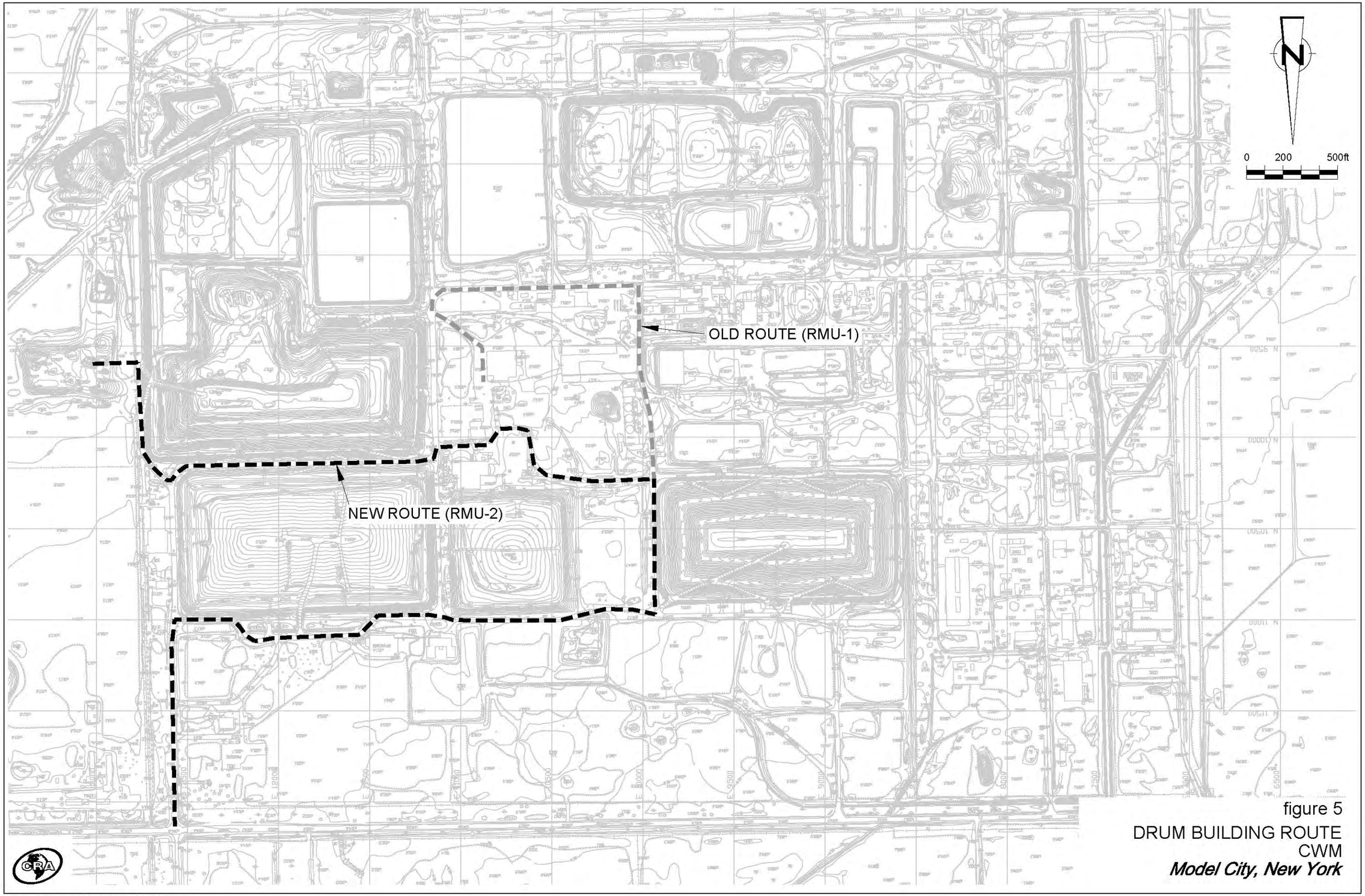


figure 5
DRUM BUILDING ROUTE
CWM
Model City, New York

80335-00(001)GN-NI005 JAN 19/2015

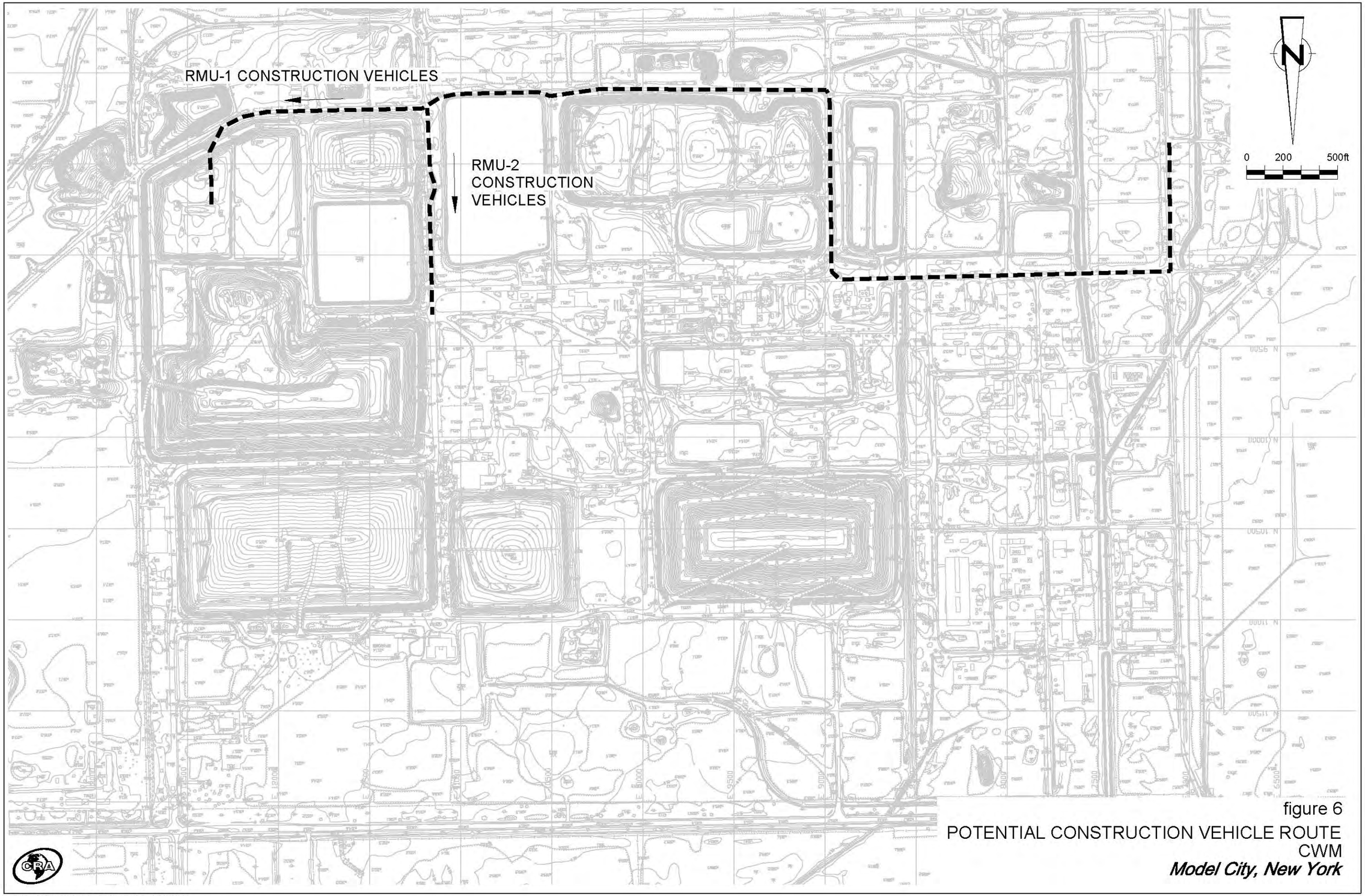


figure 6

POTENTIAL CONSTRUCTION VEHICLE ROUTE

CWM

Model City, New York

80335-00(001)GN-NI006 JAN 12/2015

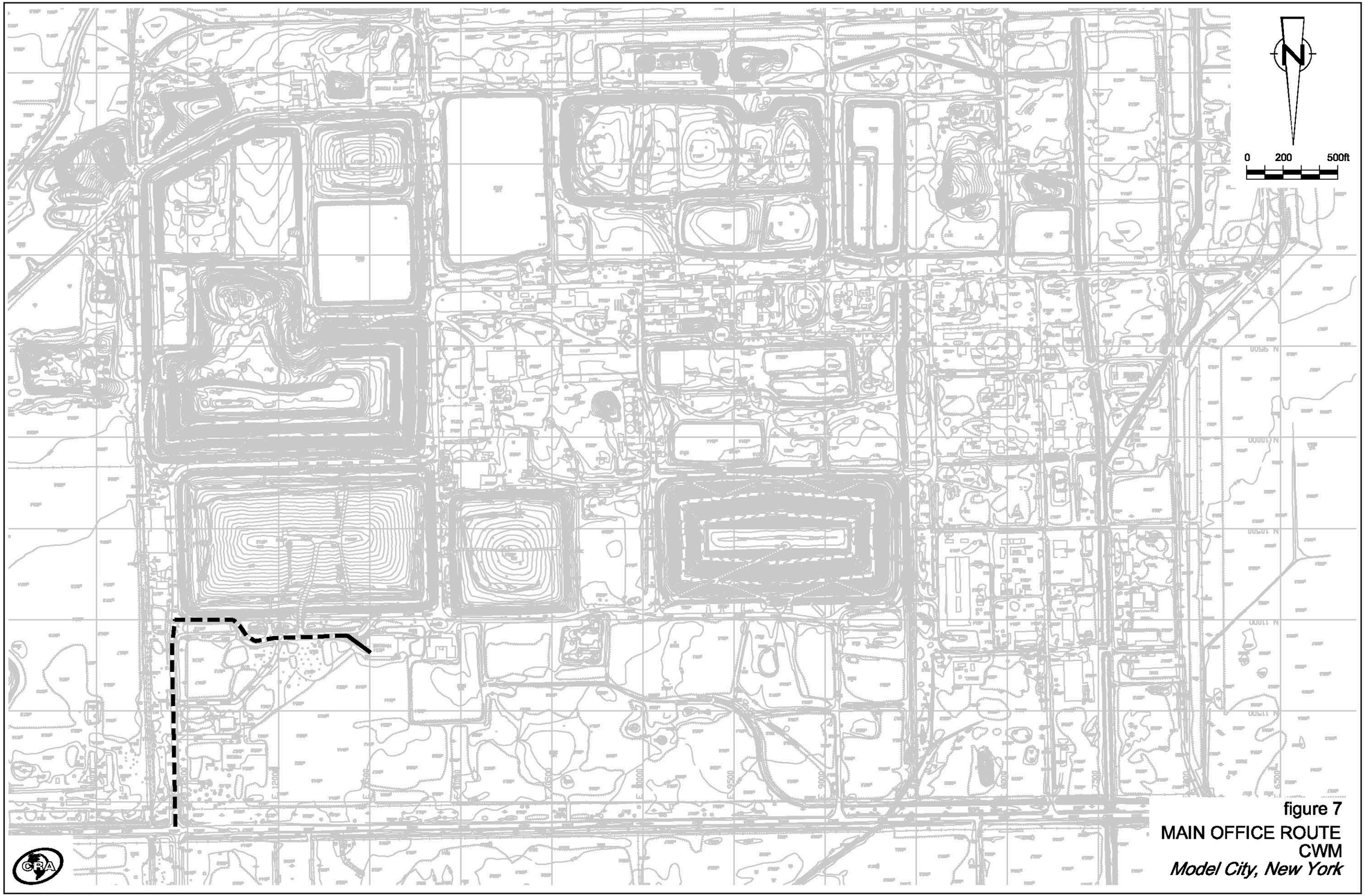


figure 7
MAIN OFFICE ROUTE
CWM
Model City, New York

48312-00(001)GN-NI007 OCT 29/2007

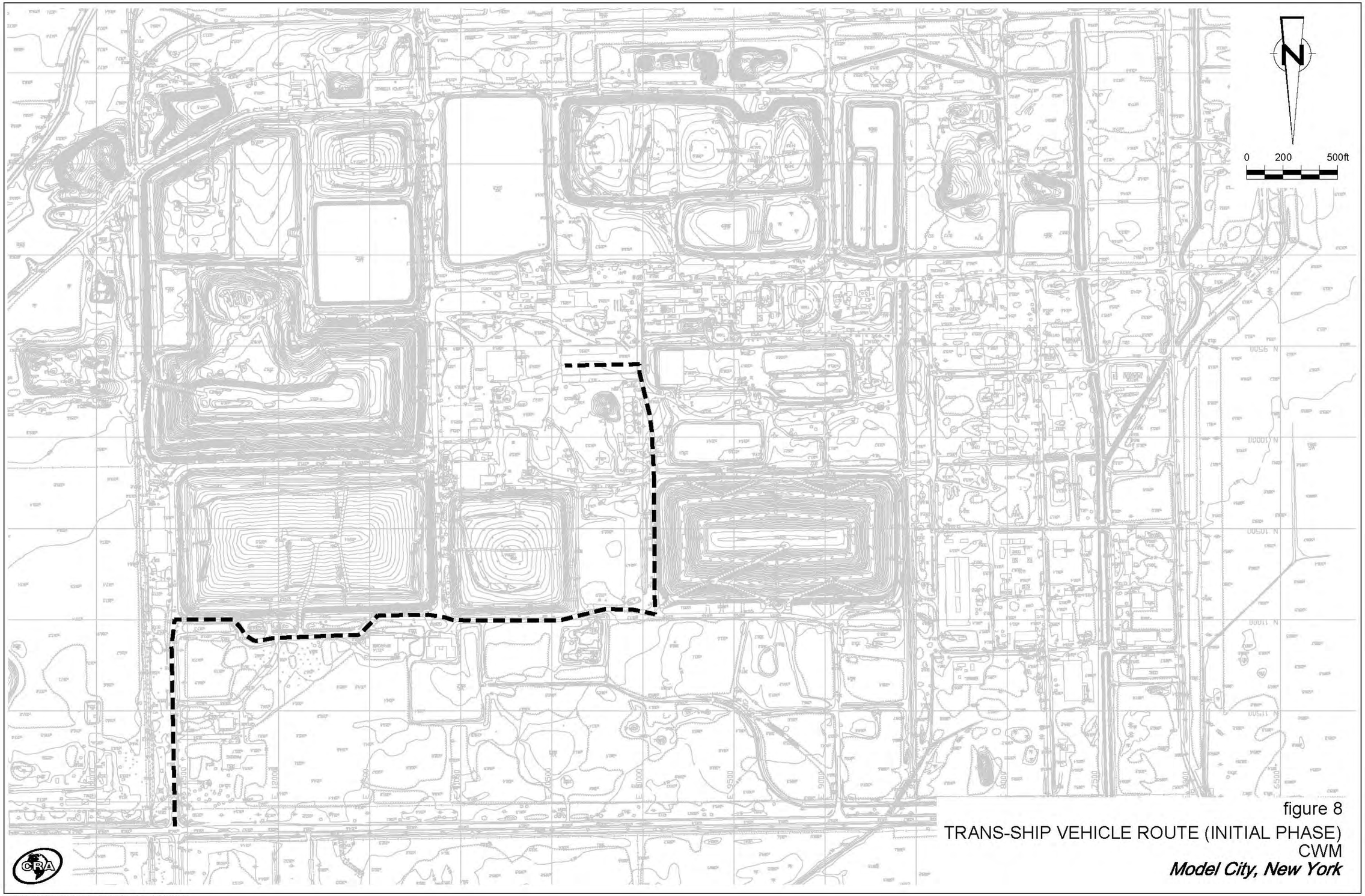


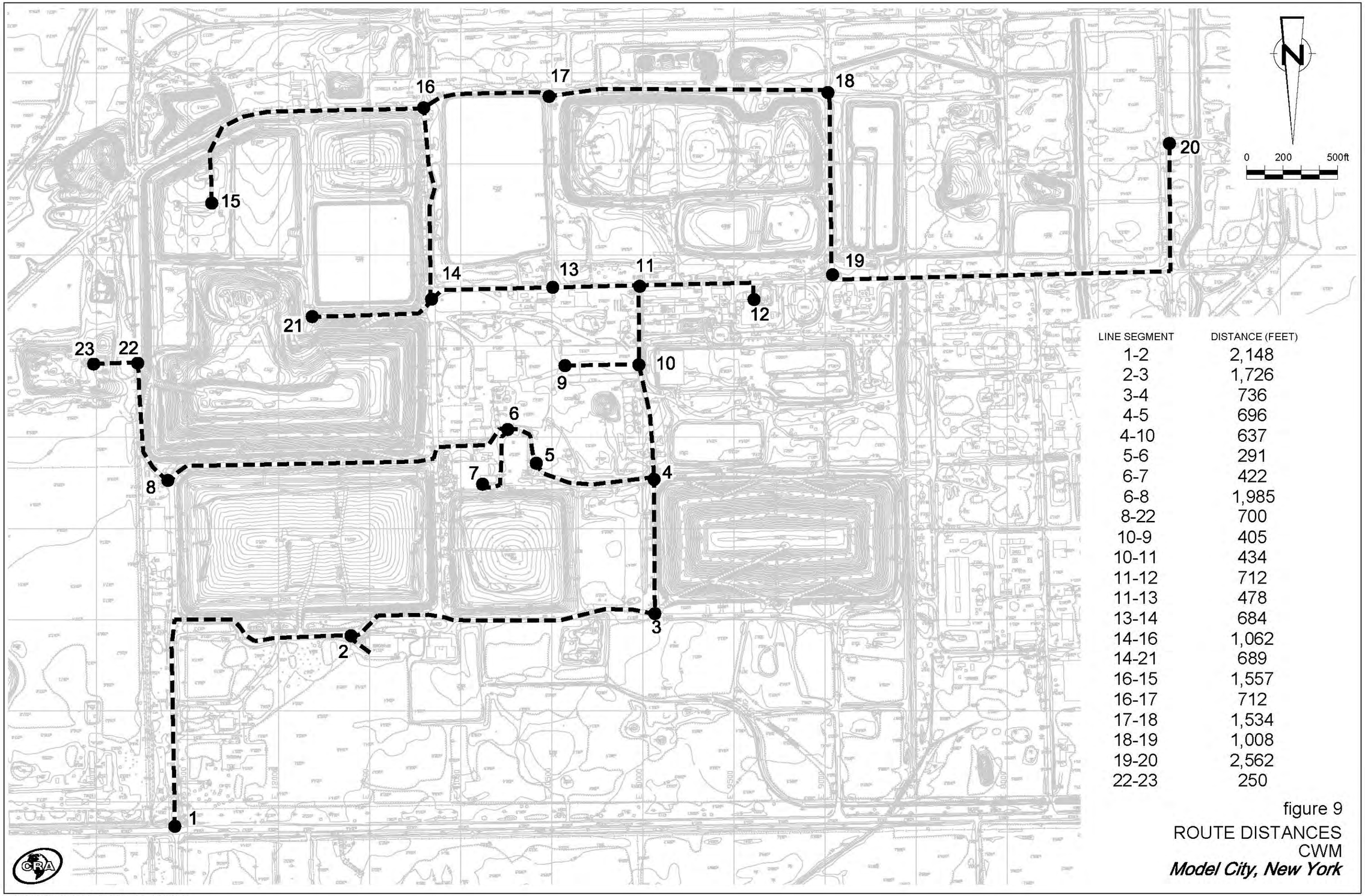
figure 8

TRANS-SHIP VEHICLE ROUTE (INITIAL PHASE)

CWM

Model City, New York

80335-00(001)GN-NI008 JAN 12/2015



LINE SEGMENT	DISTANCE (FEET)
1-2	2,148
2-3	1,726
3-4	736
4-5	696
4-10	637
5-6	291
6-7	422
6-8	1,985
8-22	700
10-9	405
10-11	434
11-12	712
11-13	478
13-14	684
14-16	1,062
14-21	689
16-15	1,557
16-17	712
17-18	1,534
18-19	1,008
19-20	2,562
22-23	250

figure 9
ROUTE DISTANCES
CWM
Model City, New York

80335-00(001)GN-NI009 JAN 12/2015

TABLE 1

FACILITY EMISSION SUMMARY
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

	Exempt/ Trivial	Exempt / Trivial Basis	VOC	HAP	CO	NOx	SO_2	PM-10	PM-2.5	Carbon Tetrachloride	Chloroform	Benzene	Methylene Chloride	TCE	Acrylonitrile	Pesticides, Herbicides, Insecticides	PCBs	POM	CO_2	CH_4	N_2O	Arsenic	Cadmium	Chromium	Manganese	Nickel	Lead
Emission Source			*Emissions (lb/year)*																								
SLF 1-6 Standpipes	N	---	382.63	383.42	-	-	-	-	-	0.26	6.56	0.77	183.41	22.15	0.07	0.16	7.81	2.05	-	-	-	-	-	-	-	-	-
SLF 1-6 Cover Diffusion	N	---	2.86	5.95	-	-	-	-	-	-	0.17	0.03	2.92	0.81	0.00	0.00	0.04	-	-	-	-	-	-	-	-	-	-
SLF 1-6 Barometric Pumping	N	---	0.43	0.89	-	-	-	-	-	-	0.03	0.00	0.44	0.12	0.00	0.00	0.01	-	-	-	-	-	-	-	-	-	-
SLF 7 Standpipes	N	---	20.75	39.94	-	-	-	-	-	-	-	-	35.38	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-
SLF 7 Cover Diffusion	N	---	0.81	2.57	-	-	-	-	-	-	-	-	1.77	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
SLF 7 Barometric Pumping	N	---	0.12	0.38	-	-	-	-	-	-	-	-	0.27	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
SLF 10 Standpipes	N	---	36.21	23.17	-	-	-	-	-	-	-	-	17.41	-	-	-	1.49	-	-	-	-	-	-	-	-	-	-
SLF 10 Cover Diffusion	N	---	0.03	0.19	-	-	-	-	-	-	-	-	0.16	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
SLF 10 Barometric Pumping	N	---	0.00	0.03	-	-	-	-	-	-	-	-	0.02	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
SLF 11 Standpipes	N	---	11.30	5.27	-	-	-	-	-	-	-	-	0.74	-	-	-	2.73	-	-	-	-	-	-	-	-	-	-
SLF 11 Cover Diffusion	N	---	0.05	0.05	-	-	-	-	-	-	-	-	0.00	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-
SLF 11 Barometric Pumping	N	---	0.01	0.01	-	-	-	-	-	-	-	-	0.00	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
SLF 12 Standpipes	N	---	0.09	0.51	-	-	-	-	-	-	-	-	0.4	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-
SLF 12 Cover Diffusion	N	---	0.00	0.02	-	-	-	-	-	-	-	-	0.01	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
SLF 12 Barometric Pumping	N	---	0.00	0.00	-	-	-	-	-	-	-	-	0.00	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-
RMU-1 Standpipes	N	---	3.02	3.02	-	-	-	-	-	-	-	-	1.23	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-
RMU-1 Cover Diffusion [F]	N	---	1.39	1.76	-	-	-	-	-	0.00	0.01	0.05	0.45	0.07	0.00	-	0.01	-	-	-	-	-	-	-	-	-	-
RMU-1 Barometric Pumping	N	---	0.21	0.26	-	-	-	-	-	0.00	0.00	0.01	0.07	0.01	0.00	-	0.00	-	-	-	-	-	-	-	-	-	-
RMU-1 Capping	N	---	-	-	-	-	-	2,107.37	1,012.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RMU-1 Landfill Operations [G]	N	---	419.1	429.9	-	-	-	12,074.32	9,614.58	0.16	1.21	6.61	31.49	9.69	0.01	-	96.09	13.19	-	-	-	0.00	0.00	0.10	0.02	0.23	0.34
Vacuum Trucks (Leachate Transfer)	N	---	1.96	1.39	-	-	-	-	-	-	0.01	0.00	0.29	0.01	0.00	-	0.01	-	-	-	-	-	-	-	-	-	-
Vacuum Trucks (Groundwater Transfer)	N	---	0.23	0.27	-	-	-	-	-	0.09	0.01	0.00	0.04	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
Stabilization Baghouse #1	N	---	42.62	42.62	-	-	-	33.77	33.77	0.03	0.02	0.12	0.18	6.40	-	-	0.49	0.21	-	-	-	0.00	0.00	0.07	0.00	0.48	0.24
Stabilization Baghouse #2	N	---	42.62	42.62	-	-	-	18.76	18.76	0.03	0.02	0.12	0.18	6.40	-	-	0.49	0.21	-	-	-	0.00	0.00	0.07	0.00	0.48	0.24
Cement Kiln Silo	Y	6 NYCRR 201-3.2(c)(27)	-	-	-	-	-	3.78	3.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lime Silo	Y	6 NYCRR 201-3.2(c)(27)	-	-	-	-	-	67.10	67.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-101 [C]	N	---	0.05	0.08	-	-	-	-	-	-	-	-	0.05	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-102	N	---	0.05	0.08	-	-	-	-	-	-	-	-	0.05	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-103	N	---	1.47	1.91	-	-	-	-	-	-	0.01	0.00	0.90	0.01	0.00	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-105	Y	6 NYCRR 201-3.2(c)(25)	0.14	0.14	-	-	-	-	-	0.01	0.04	0.00	0.00	0.05	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-107	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.01	-	-	-	-	-	-	-	-	0.01	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-108	N	---	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-109	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.01	-	-	-	-	-	-	-	-	0.01	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-110	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	0.00	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-111	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-130	Y	6 NYCRR 201-3.2(c)(25)	0.45	1.42	-	-	-	-	-	0.01	0.04	0.00	0.75	0.23	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-150	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	0.00	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-158	N	---	1.28	4.02	-	-	-	-	-	0.02	0.10	0.01	2.12	0.66	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-160	Y	6 NYCRR 201-3.2(c)(25)	0.01	1.07	-	-	-	-	-	-	-	-	1.07	-	-	-	[E]	-	-	-	-	-	-	-	-	-	-
Tank T-165	N	---	7.75	4.37	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	-	-	-	-	-	-	-	-	-
Tank T-8001	Y	6 NYCRR 201-3.2(c)(25)	0.01	0.01	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8002	Y	6 NYCRR 201-3.3(c)(44)	0.01	0.01	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8004	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8005	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8006	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8007	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8008	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8009	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	0.00	0.00	-	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-8010	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	0.00	0.00	-	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-100	N	---	0.11	0.23	-	-	-	-	-	-	0.00	0.00	0.22	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-210	N	---	0.44	0.57	-	-	-	-	-	-	0.00	0.00	0.27	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-220	N	---	0.44	0.57	-	-	-	-	-	-	0.00	0.00	0.27	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-230	N	---	0.44	0.57	-	-	-	-	-	-	0.00	0.00	0.27	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-1010	N	---	0.31	0.40	-	-	-	-	-	-	0.00	0.00	0.19	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-1020	Y	6 NYCRR 201-3.2(c)(25)	0.26	0.34	-	-	-	-	-	-	0.00	0.00	0.16	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-310	N	---	0.02	0.01	-	-	-	-	-	-	0.00	0.00	0.01	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-320	N	---	0.02	0.01	-	-	-	-	-	-	0.00	0.00	0.01	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-3002	Y	6 NYCRR 201-3.2(c)(25)	0.02	0.03	-	-	-	-	-	-	0.00	0.00	0.03	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-3003	Y	6 NYCRR 201-3.2(c)(25)	0.02	0.03	-	-	-	-	-	-	0.00	0.00	0.03	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
T-3007/3008 Carbon Adsorbers [A]	Y	6 NYCRR 201-3.2(c)(22)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-3009	Y	6 NYCRR 201-3.2(c)(25)	0.01	0.02	-	-	-	-	-	-	0.00	0.00	0.02	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tanks T-3010 A/B/C/D [A]	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-3011	Y	6 NYCRR 201-3.3(c)(44)	0.01	0.00	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-3012	Y	6 NYCRR 201-3.3(c)(44)	0.01	0.03	-	-	-	-	-	-	0.00	0.00	0.03	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Frac Tank #3	N	---	0.01	0.05	-	-	-	-	-	-	0.00	0.00	0.05	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1

FACILITY EMISSION SUMMARY
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Emission Source	Exempt/ Trivial	Exempt / Trivial Basis	VOC	HAP	CO	NOx	SO_2	PM-10	PM-2.5	Carbon Tetrachloride	Chloroform	Benzene	Methylene Chloride	TCE	Acrylonitrile	Pesticides, Herbicides, Insecticides	PCBs	POM	CO_2	CH_4	N_2O	Arsenic	Cadmium	Chromium	Manganese	Nickel	Lead
			Emissions (lb/year)																								
Biotower Exhaust	N	---	0.00	0.01	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tanks T-1111 / T-1112 [B]	Y	6 NYCRR 201-3.3(c)(44)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filter Press	N	---	179.6	198.40	-	-	-	-	-	-	-	-	129.00	43.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-710	Y	6 NYCRR 201-3.2(c)(25)	0.07	0.09	-	-	-	-	-	-	0.00	0.00	0.04	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-810	Y	6 NYCRR 201-3.2(c)(25)	0.07	0.09	-	-	-	-	-	-	0.00	0.00	0.04	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-820	Y	6 NYCRR 201-3.2(c)(25)	0.07	0.09	-	-	-	-	-	-	0.00	0.00	0.04	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-
T-830/T-840 Ferrous Sulfate Tanks [B]	Y	6 NYCRR 201-3.2(c)(25)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-850 [D]	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	4.37	4.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-58	N	---	0.00	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-125	N	---	0.00	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-910 [B]	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-1310 [B]	Y	6 NYCRR 201-3.3(c)(44)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank T-1410 [B]	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drum Storage Building Ventilation [H]	Y	6 NYCRR 201-3.3(c)(5)(ii)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB Drum Building [H]	Y	6 NYCRR 201-3.3(c)(5)(ii)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Two Propane Steam Boilers	Y	6 NYCRR 201-3.2(c)(1)(i)	157.20	-	1,178.99	2,043.58	3.14	110.04	110.04	-	-	-	-	-	-	-	-	-	1,964,984	31.44	141.48	-	-	-	-	-	-
One Hot Water Propane Boiler	Y	5 NYCRR 201-3.2(c)(1)(i)	96.26	-	721.98	1,251.43	1.93	67.38	67.38	-	-	-	-	-	-	-	-	-	1,203,297	19.25	86.64	-	-	-	-	-	-
Propane Heaters	Y	6 NYCRR 201-3.2(c)(1)(i)	130.39	-	977.92	1,695.06	2.61	91.27	91.27	-	-	-	-	-	-	-	-	-	1,629,865	26.08	117.35	-	-	-	-	-	-
0.506 MMBtu/hr Propane Boiler	Y	6 NYCRR 201-3.2(c)(1)(i)	24.35	-	182.66	316.61	0.49	17.05	17.05	-	-	-	-	-	-	-	-	-	304,434	4.87	21.92	-	-	-	-	-	-
1.34 MMBtu/hr Propane Boiler	Y	6 NYCRR 201-3.2(c)(1)(i)	64.50	-	483.73	838.46	1.29	45.15	45.15	-	-	-	-	-	-	-	-	-	806,209	12.90	58.05	-	-	-	-	-	-
2 - 0.16 MMBtu/hr Propane Heaters	Y	6 NYCRR 201-3.2(c)(1)(i)	15.40	-	115.52	200.23	0.31	10.78	10.78	-	-	-	-	-	-	-	-	-	192,527	3.08	13.86	-	-	-	-	-	-
4 MMBtu/hr Propane Heater	Y	6 NYCRR 201-3.2(c)(1)(i)	192.53	-	1,443.96	2,502.86	3.85	134.77	134.77	-	-	-	-	-	-	-	-	-	2,406,593	38.51	173.27	-	-	-	-	-	-
2 - 0.4 MMBtu/hr Propane Heaters	Y	6 NYCRR 201-3.2(c)(1)(i)	19.25	-	144.40	250.29	0.39	13.48	13.48	-	-	-	-	-	-	-	-	-	240,659	3.85	17.33	-	-	-	-	-	-
Diesel Engine	Y	6 NYCRR 201-3.2(c)(3)(ii)	11.22	-	29.98	139.13	9.20	9.87	9.87	-	-	-	-	-	-	-	-	-	5,161.2	-	-	-	-	-	-	-	-
Laboratory Emissions	Y	6 NYCRR 201-3.2(c)(40)	325.42	590.80	-	-	-	67.07	67.07	-	-	-	128.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Safety Kleen Parts Washer [B]	Y	6 NYCRR 201-3.2(c)(39)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Septic Tanks [B]	Y	6 NYCRR 201-3.3(c)(39)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T-27 20,000 gal Fuel Oil Tank	Y	6 NYCRR 201-3.2(c)(21)	10.60	10.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propane Storage Tanks [A]	Y	6 NYCRR 201-3.3(c)(79)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
275-gal Kerosene Tank	Y	6 NYCRR 201-3.3(c)(44)	0.11	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Two 1,000-gal Gasoline Tanks	Y	6 NYCRR 201-3.2(c)(25)	313.68	313.68	-	-	-	-	-	-	-	15.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,000-gal Diesel Fuel Tank	Y	6 NYCRR 201-3.2(c)(25)	0.55	0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117-gal Diesel Fuel Tank	Y	6 NYCRR 201-3.2(c)(25)	0.09	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325-gal Engine Oil Tank	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325-gal Engine Oil Tank	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270-gal Engine Oil Tank	Y	6 NYCRR 201-3.2(c)(25)	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,500-gal Fuel Oil Tank	Y	6 NYCRR 201-3.2(c)(25)	0.69	0.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fuel Transfer Operation	Y	6 NYCRR 201-3.3(c)(67)	3200.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drum Sampling	Y	6 NYCRR 201-3.3(c)(5)(i)	420.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leaks / Spills from Drums	N	---	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leaks From Pipes/ valves/ flanges	N	---	26.40	26.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Facultative Pond 1/2	N	---	1.48	1.48	-	-	-	-	-	0.04	0.03	0.04	0.07	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
Facultative Pond 3	N	---	2.77	2.77	-	-	-	-	-	0.07	0.06	0.07	0.14	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-
EXISTING TOTALS (lb/year)			**6,172.48**	**2,146.13**	**5,279.12**	**9,237.64**	**23.20**	**14,876.32**	**11,321.67**	**0.72**	**8.35**	**23.51**	**541.14**	**90.47**	**0.08**	**0.16**	**113.35**	**15.66**	**8,753,729.88**	**139.98**	**629.90**	**0.00**	**0.00**	**0.24**	**0.03**	**1.19**	**0.83**
EXISTING TOTALS (TPY)			**3.09**	**1.07**	**2.64**	**4.62**	**0.01**	**7.44**	**5.66**	**0.00**	**0.00**	**0.01**	**0.27**	**0.05**	**0.00**	**0.00**	**0.06**	**0.01**	**4,376.86**	**0.07**	**0.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Title V Thresholds (TPY)			**50**	**25**	**100**	**100**	**100**	**100**	**100**	**10**	**10**	**10**	**10**	**10**	**10**	**-**	**-**	**-**	**100,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
% of Title V Threshold			**6.17%**	**4.29%**	**2.64%**	**4.62%**	**0.01%**	**7.44%**	**5.66%**	**0.00%**	**0.04%**	**0.12%**	**2.71%**	**0.45%**	**0.00%**				**4.38%**								

Notes:
A - There are no emissions from these tanks because they are sealed vessels with no vent to the atmosphere
B - These sources either do not have quantifiable emissions and/or do not emit regulated air pollutants
C - Tank T-101 is on standby for RMU-1 leachate; assume emissions are equal to Tank T-102
D - Referenced from April 2006 Emission Inventory
E - PCB compounds are not included in the USEPA Tanks 40.9d program and could not be modeled; it is assumed that PCB emissions from these storage tanks are negligible
F - RMU-1 Cover Diffusion as of February, 2016 includes 7.7 acres of interim capped area and 31.8 acres of final (HDPE) cap. Final cap (HDPE) will be installed on 7.7 acres in 2016; additional reduction in emissions.
G - RMU-1 Landfill Operations: historical emissions calculated for 7.7 acres open/operating area prior to installation of interim cap.
H - No emissions expected from storage of closed containers. Emissions from container sampling at Drum Warehouse listed separately. Emissions from container spills listed separately.

General Note: The numbers presented on this table have been rounded to 2 decimal places. Therefore, a value of '0.00' means less than 0.005 pounds per year, not necessarily that zero emissions are present. Emissions were reported to two significant digits past the decimal fro consistency, and since this level is orders of magnitude below applicable thresholds.

TABLE 2

LANDFILL STANDPIPE AND SIDESLOPE RISER DIAMETERS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Standpipe #	Internal Pipe Dimension (in.)	Internal Pipe Dimensions Sideslope Risers (in.)	Internal Pipe Dimensions Landfill Secondaries (in.)
SLF 1-6			
1	24	N/A	N/A
2	8	N/A	N/A
3	8	N/A	N/A
4	24	N/A	N/A
5	8	N/A	N/A
6	24	N/A	N/A
7	8	N/A	N/A
8	24	N/A	N/A
9	24	N/A	N/A
10	8	N/A	N/A
12	24	N/A	N/A
13	30	N/A	N/A
14	24	N/A	N/A
15	30	N/A	N/A
16	24	N/A	N/A
17	8	N/A	N/A
18	30	N/A	N/A
19	30	N/A	N/A
20	30	N/A	N/A
21	30	N/A	N/A
22	24	N/A	N/A
23	24	N/A	N/A
24	30	N/A	N/A
25	30	N/A	N/A
SLF 7			
26	24	N/A	N/A
27	24	N/A	N/A
28	24	N/A	N/A
29	24	N/A	N/A
30	24	N/A	N/A
31	24	N/A	N/A
SLF 10			
32	48	N/A	N/A
33	48	N/A	N/A
34	48	N/A	N/A
35	48	N/A	N/A
36	48	N/A	N/A

TABLE 2

LANDFILL STANDPIPE AND SIDESLOPE RISER DIAMETERS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Standpipe #	Internal Pipe Dimension (in.)	Internal Pipe Dimensions Sideslope Risers (in.)	Internal Pipe Dimensions Landfill Secondaries (in.)
SLF 11			
37	48	N/A	N/A
38	48	N/A	N/A
39	48	N/A	N/A
40	48	N/A	N/A
41	48	N/A	21
42	48	N/A	21
43	48	N/A	21
44	48	N/A	21
45	26	N/A	N/A
46	26	N/A	18
47	26	N/A	N/A
48	26	N/A	N/A
49	26	N/A	N/A
50	26	N/A	N/A
SLF 12			
51	19.5	19.5	N/A
52	19.5	19.5	N/A
53	19.5	19.5	N/A
54	19.5	19.5	N/A
RMU-1			
55	19.5	19.5	19.5
56	19.5	19.5	19.5
57	19.5	19.5	19.5
58	19.5	19.5	19.5
59	19.5	19.5	19.5
60	19.5	19.5	19.5
61	19.5	19.5	19.5
62	19.5	19.5	19.5
63	19.5	19.5	19.5
64	19.5	19.5	19.5

TABLE 3

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 1-6 STANDPIPES (FROM AQUEOUS PORTION ONLY)
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [4] (µg/L)	Leachate Concentration ($\mu g/m^3$)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [5]	Gas Diffusion Coefficient D_a [6] (m^2/h)	Atomic Volume for D_l Calculation [7] (cm^3/mol)	Liquid Diffusion Coefficient D_l [8] (m^2/h)	Schmidt Number S_c [9]	Reynolds Number R_e [9]	Sherwood Number S_h [9]	Total Surface Area [10] (m^2)	Char. Length [11] (m)	k_G [9] (m/h)	k_L [9] (m/h)	K_{OL} [9] (m/h)	Henry's Constant [12]	K_{OG} [9] (m/h)	Emissions [9] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Method 8260B VOCs																																	
1,1,1-Trichloroethane	71-55-6		X	133.4	3900	3,900,000	2	3	0	3	0	0	0	0	97.44	2.86E-02	105.50	3.51E-06	2.0	24,813.8	131.4	6.77	2.60	1.44	5.60E-03	5.57E-03	7.05E-01	7.90E-03	1.47E+05	3.24E-04	2.84		2.84
1,1,2-Trichloro-1,2,2-trichfluoroethane [1]	76-13-1	X		187.376	39	39,000	2	0	0	3	3	0	0	0	114.80	2.60E-02	120.50	3.24E-06	2.2	24,813.8	135.6	6.77	2.60	1.35	5.38E-03	5.38E-03	1.96E+01	2.75E-04	1.42E+03	3.13E-06	0.03	0.03	
1,1,2-Trichloroethane	79-00-5	X	X	133.4	4800	4,800,000	2	3	0	3	0	0	0	0	97.44	2.86E-02	105.50	3.51E-06	2.0	24,813.8	131.4	6.77	2.60	1.44	5.60E-03	5.07E-03	3.74E-02	1.36E-01	1.65E+05	3.63E-04	3.18	3.18	3.18
1,1-Dichloroethane	75-34-3	X	X	98.96	2700	2,700,000	2	4	0	2	0	0	0	0	79.92	3.20E-02	87.60	3.91E-06	1.8	24,813.8	126.5	6.77	2.60	1.56	5.91E-03	5.82E-03	2.30E-01	2.53E-02	1.06E+05	2.34E-04	2.05	2.05	2.05
1,1-Dichloroethene	75-35-4	X	X	96.94	410	410,000	2	2	0	2	0	0	0	0	75.96	3.27E-02	80.20	4.12E-06	1.7	24,813.8	125.6	6.77	2.60	1.58	6.07E-03	6.05E-03	1.06E+00	5.71E-03	1.68E+04	3.70E-05	0.32	0.32	0.32
1,2-Dibromoethane [2]	106-93-4	X	X	187.86	560	560,000	2	4	0	0	0	0	2	0	108.12	2.66E-02	98.40	3.65E-06	2.1	24,813.8	134.5	6.77	2.60	1.38	5.71E-03	5.03E-03	3.03E-02	1.66E-01	1.90E+04	4.20E-05	0.37	0.37	0.37
1,2-Dichloroethane	107-06-2	X	X	98.96	6900	6,900,000	2	4	0	2	0	0	0	0	79.92	3.20E-02	87.60	3.91E-06	1.8	24,813.8	126.5	6.77	2.60	1.56	5.91E-03	5.40E-03	4.01E-02	1.35E-01	2.52E+05	5.56E-04	4.87	4.87	4.87
1,4-Dioxane [3]	123-91-1	X	X	88.11	95000	95,000,000	4	8	2	0	0	0	0	0	72.80	3.37E-02	88.60	3.89E-06	1.7	24,813.8	124.4	6.77	2.60	1.61	5.89E-03	3.34E-04	2.20E-04	1.52E+00	2.15E+05	4.74E-04	4.15	4.15	4.15
Acetonitrile	75-05-8	X	X	41.05	6400	6,400,000	2	3	0	0	0	0	0	1	44.63	4.62E-02	56.30	5.08E-06	1.2	24,813.8	111.9	6.77	2.60	1.99	6.74E-03	1.65E-03	1.10E-03	1.50E+00	7.15E+04	1.58E-04	1.38	1.38	1.38
Acrylonitrile	107-13-1	X	X	53.06	160	160,000	3	3	0	0	0	0	0	1	61.13	3.89E-02	71.10	4.42E-06	1.5	24,813.8	118.5	6.77	2.60	1.77	6.29E-03	3.37E-03	4.10E-03	8.23E-01	3.65E+03	8.05E-06	0.07	0.07	0.07
Benzene [3]	71-43-2	X	X	78.11	920	920,000	6	6	0	0	0	0	0	0	90.88	3.12E-02	96	3.71E-06	1.8	24,813.8	127.5	6.77	2.60	1.53	5.76E-03	5.66E-03	2.28E-01	2.48E-02	3.53E+04	7.77E-05	0.68	0.68	0.68
Carbon disulfide	75-15-0	X	X	76.14	27	27,000	1	0	0	0	0	2	0	0	50.5	3.96E-02	66.00	4.62E-06	1.4	24,813.8	117.8	6.77	2.60	1.79	6.43E-03	6.41E-03	1.24E+00	5.17E-03	1.17E+03	2.58E-06	0.02	0.02	0.02
Chlorobenzene [3]	108-90-7	X	X	112.56	1000	1,000,000	6	5	0	1	0	0	0	0	108.4	2.78E-02	113.90	3.35E-06	2.0	24,813.8	132.6	6.77	2.60	1.42	5.47E-03	5.34E-03	1.52E-01	3.51E-02	3.61E+04	7.96E-05	0.70	0.70	0.70
Chloroethane	75-00-3	X	X	64.51	110	110,000	2	5	0	1	0	0	0	0	62.4	3.74E-02	69.70	4.48E-06	1.5	24,813.8	120.1	6.77	2.60	1.73	6.33E-03	6.26E-03	3.60E-01	1.74E-02	4.66E+03	1.03E-05	0.09	0.09	0.09
Chloroform	67-66-3	X	X	119.38	7800	7,800,000	1	1	0	3	0	0	0	0	76.98	3.18E-02	83.30	4.03E-06	1.8	24,813.8	126.7	6.77	2.60	1.55	6.00E-03	5.85E-03	1.50E-01	3.90E-02	3.09E+05	6.81E-04	5.96	5.96	5.96
Chloromethane	74-87-3	X	X	50.49	84	84,000	1	3	0	1	0	0	0	0	41.94	4.54E-02	47.50	5.61E-06	1.2	24,813.8	112.6	6.77	2.60	1.97	7.08E-03	7.01E-03	3.60E-01	1.95E-02	3.99E+03	8.79E-06	0.08	0.08	0.08
Dibromomethane [2]	74-95-3	X		173.83	3500	3,500,000	1	2	0	0	0	0	2	0	87.66	2.92E-02	76.20	4.25E-06	1.9	24,813.8	130.4	6.77	2.60	1.47	6.16E-03	5.51E-03	3.53E-02	1.56E-01	1.30E+05	2.87E-04	2.52	2.52	
Ethyl ether	60-29-7	X		74.12	9400	9,400,000	4	10	1	0	0	0	0	0	91.28	3.14E-02	103.6	3.54E-06	1.8	24,813.8	127.3	6.77	2.60	1.54	5.63E-03	5.25E-03	5.04E-02	1.04E-01	3.34E+05	7.36E-04	6.45	6.45	
Ethylbenzene [3]	100-41-4	X	X	106.17	170	170,000	8	10	0	0	0	0	0	0	131.8	2.57E-02	140.4	2.96E-06	2.2	24,813.8	136.1	6.77	2.60	1.34	5.15E-03	5.09E-03	3.21E-01	1.58E-02	5.85E+03	1.29E-05	0.11	0.11	0.11
Isobutanol	78-83-1	X		74.12	37000	37,000,000	4	10	1	0	0	0	0	0	91.28	3.14E-02	103.6	3.54E-06	1.8	24,813.8	127.3	6.77	2.60	1.54	5.63E-03	6.57E-04	4.84E-04	1.36E+00	1.64E+05	3.62E-04	3.18	3.18	
Tetrachloroethene	127-18-4	X	X	165.83	500	500,000	2	0	0	4	0	0	0	0	111	2.66E-02	116	3.32E-06	2.1	24,813.8	134.6	6.77	2.60	1.37	5.44E-03	5.42E-03	7.50E-01	7.22E-03	1.83E+04	4.04E-05	0.35	0.35	0.35
Toluene [3]	108-88-3	X	X	92.14	4800	4,800,000	7	8	0	0	0	0	0	0	111.34	2.81E-02	118.2	3.28E-06	2.0	24,813.8	132.1	6.77	2.60	1.43	5.41E-03	5.34E-03	2.71E-01	1.97E-02	1.73E+05	3.82E-04	3.35	3.35	3.35
trans-1,2-Dichloroethene	156-60-5	X		96.94	300	300,000	2	2	0	2	0	0	0	0	75.96	3.27E-02	80.2	4.12E-06	1.7	24,813.8	125.6	6.77	2.60	1.58	6.07E-03	6.01E-03	3.85E-01	1.56E-02	1.22E+04	2.69E-05	0.24	0.24	
Xylenes [3]	1330-20-7	X	X	106.16	820	820,000	8	10	0	0	0	0	0	0	131.8	2.57E-02	140.4	2.96E-06	2.2	24,813.8	136.1	6.77	2.60	1.34	5.15E-03	5.07E-03	2.56E-01	1.98E-02	2.81E+04	6.20E-05	0.54	0.54	0.54
Cyclohexanone [3]	108-94-1	X		98.15	2100	2,100,000	6	10	1	0	0	0	0	0	104.28	2.87E-02	118.2	3.28E-06	2.0	24,813.8	131.2	6.77	2.60	1.45	5.41E-03	6.29E-04	4.92E-04	1.28E+00	8.93E+03	1.97E-05	0.17	0.17	
1,1,2,2-Tetrachloroethane	79-34-5	X	X	167.85	12000	12,000,000	2	2	0	4	0	0	0	0	114.96	2.62E-02	123.4	3.20E-06	2.2	24,813.8	135.3	6.77	2.60	1.36	5.35E-03	4.18E-03	1.41E-02	2.97E-01	3.40E+05	7.48E-04	6.56	6.56	6.56
2-Butanone	78-93-3	X		72.11	550000	550,000,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	24,813.8	126.4	6.77	2.60	1.56	5.75E-03	2.20E-03	2.28E-03	9.64E-01	8.18E+06	1.80E-02	157.96	157.96	
4-Methyl-2-pentanone	108-10-1	X	X	100.16	79000	79,000,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	24,813.8	135.3	6.77	2.60	1.36	5.14E-03	3.08E-03	5.63E-03	5.47E-01	1.65E+06	3.63E-03	31.78	31.78	31.78
Acetone	67-64-1			58.08	740000	740,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	24,813.8	120.5	6.77	2.60	1.71	6.22E-03	1.89E-03	1.59E-03	1.19E+00	9.49E+06	2.09E-02	183.25		
Methylene Chloride	75-09-2		X	84.93	220000	220,000,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	24,813.8	120.9	6.77	2.60	1.70	6.45E-03	6.18E-03	8.93E-02	6.92E-02	9.21E+06	2.03E-02	177.78		177.78
Trichloroethene	79-01-6	X	X	131.39	13000	13,000,000	2	1	0	3	0	0	0	0	93.48	2.91E-02	98.1	3.66E-06	1.9	24,813.8	130.5	6.77	2.60	1.46	5.72E-03	5.67E-03	4.21E-01	1.35E-02	4.99E+05	1.10E-03	9.63	9.63	9.63
Method 8270C SVOCs																																	
1,2,4,5-Tetrachlorobenzene [3]	95-94-3	X		215.89	210	210,000	6	2	0	4	0	0	0	0	160.96	2.22E-02	167.6	2.67E-06	2.5	24,813.8	142.9	6.77	2.60	1.22	4.89E-03	4.71E-03	1.06E-01	4.45E-02	6.69E+03	1.47E-05	0.13	0.13	
2,4-Dichlorophenol [3]	120-83-2	X		163	1300	1,300,000	6	4	1	2	0	0	0	0	131.4	2.47E-02	139.2	2.98E-06	2.3	24,813.8	137.8	6.77	2.60	1.31	5.16E-03	1.64E-04	1.30E-04	1.27E+00	1.45E+03	3.19E-06	0.03	0.03	
2,4-Dimethylphenol [3]	105-67-9	X		122.16	2600	2,600,000	8	10	1	0	0	0	0	0	137.28	2.49E-02	147.8	2.87E-06	2.3	24,813.8	137.6	6.77	2.60	1.32	5.07E-03	1.06E-04	8.20E-05	1.29E+00	1.86E+03	4.10E-06	0.04	0.04	
2-Chlorophenol [3]	95-57-8	X		128.56	230	230,000	6	5	1	1	0	0	0	0	113.88	2.68E-02	121.3	3.23E-06	2.1	24,813.8	134.1	6.77	2.60	1.38	5.37E-03	4.92E-04	3.91E-04	1.26E+00	7.65E+02	1.69E-06	0.01	0.01	
2-Methylphenol [3]	95-48-7	X	X	108.14	2200	2,200,000	7	8	1	0	0	0	0	0	116.82	2.70E-02	125.6	3.16E-06	2.1	24,813.8	133.8	6.77	2.60	1.39	5.32E-03	6.75E-05	4.92E-05	1.37E+00	1.01E+03	2.22E-06	0.02	0.02	0.02
3-Methylphenol [3]	108-39-4	X	X	108.14	17000	17,000,000	7	8	1	0	0	0	0	0	116.82	2.70E-02	125.6	3.16E-06	2.1	24,813.8	133.8	6.77	2.60	1.39	5.32E-03	4.88E-05	3.547E-05	1.38E+00	5.62E+03	1.24E-05	0.11	0.11	0.11
4-Chloroaniline [3]	106-47-8	X		127.57	3000	3,000,000	6	6	0	1	0	0	0	1	116.07	2.67E-02	133.2	3.06E-06	2.1	24,813.8	134.5	6.77	2.60	1.38	5.23E-03	1.87E-05	1.36E-05	1.37E+00	3.79E+02	8.35E-07	0.01	0.01	
4-Methylphenol [3]	106-44-5	X	X	108.13	17000	17,000,000	7	8	1	0	0	0	0	0	116.82	2.70E-02	125.6	3.16E-06	2.1	24,813.8	133.8	6.77	2.60	1.39	5.32E-03	4.48E-05	3.25E-05	1.38E+00	5.15E+03	1.14E-05	0.10	0.10	0.10
Acetophenone [3]	98-86-2	X	X	120.15	3400	3,400,000	8	8	1	0	0	0	0	0	133.32	2.52E-02	140.4	2.96E-06	2.2	24,813.8	136.9	6.77	2.60	1.33	5.15E-03	5.24E-04	4.39E-04	1.19E+00	1.20E+04	2.66E-05	0.23	0.23	0.23
Aniline [3]	62-53-3	X	X	93.13	2200	2,200,000	6	7	0	0	0	0	0	1	98.55	2.95E-02	115.3	3.33E-06	1.9	24,813.8	129.9	6.77	2.60	1.47	5.45E-03	1.13E-04	0.0000779	1.44E+00	1.68E+03	3.69E-06	0.03	0.03	0.03
Diethyl phthalate [3]	84-66-2	X		222.24	270	270,000	12	14	4	0	0	0	0	0	227.64	1.90E-02	244	2.14E-06	3.0	24,813.8	150.6	6.77	2.60	1.10	4.37E-03	2.02E-05	1.845E-05	1.09E+00	3.68E+01	8.12E-08	0.00	0.00	
Dimethyl phthalate [3]	131-11-3	X	X	194.18	280	280,000	10	10	4	0	0	0	0	0	186.72	2.09E-02	199.6	2.41E-06	2.7	24,813.8	145.8	6.77	2.60	1.17	4.64E-03	5.04E-06	4.305E-06	1.17E+00	9.55E+00	2.11E-08	0.00	0.00	0.00
Pentachlorobenzene [3]	608-93-5	X		250.34	300	300,000	6	1	0	5	0	0	0	0	178.48	2.10E-02	185.5	2.51E-06	2.7	24,813.8	145.5	6.77	2.60	1.18	4.74E-03	4.16E-03	2.91E-02	1.43E-01	8.46E+03	1.86E-05	0.16	0.16	
Pyridine [3]	110-86-1	X		79.1	4600	4,600,000	5	5	0	0	0	0	0	1	78.09	3.32E-02	93.1	3.77E-06	1.7	24,813.8	125.0	6.77	2.60	1.59	5.81E-03	5.28E-04	3.64E-04	1.45E+00	1.64E+04	3.62E-05	0.32	0.32	
Phenol [3]	108-95-2	X	X	94.11	140000	140,000,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9	24,813.8	129.6	6.77	2.60	1.48	5.63E-03	2.41E-05	1.63E-05	1.48E+00	2.28E+04	5.03E-05	0.44	0.44	0.44
Method 8015B - Nonhalogenated Organic Compounds																																	
Methanol	67-56-1	X	X	32.04	9.70E+05	970,000,000	1	4	1	0	0	0	0	0	29.9	5.65E-02	37	6.50E-06	1.0	24,813.8	104.6	6.77	2.60	2.27	7.62E-03	4.02E-04	1.87E-04	2.15E+00	2.64E+06	5.81E-03	50.94	50.94	50.94
Butyl alcohol, n-	71-36-3	X		74.12	290000	290,000,000	4	10	1	0	0	0	0	0	91.28	3.14E-02	103.6	3.54E-06	1.8	24,813.8	127.3	6.77	2.60	1.54	5.63E-03	5.05E-04	3.61E-04	1.40E+00	9.92E+05	2.19E-03	19.15	19.15	
Method 608 - Organochloride Pesticides in Water																																	
4,4'-DDD [3]	72-54-8	X		320.04	2.6	2,600	14	10	0	4	0	0	0	0	308.8	1.61E-02	315.6	1.84E-06	3.5	24,813.8	158.9	6.77	2.60	0.99	4.05E-03	1.56E-04	1.64E-04	9.48E-01	2.74E+00	6.03E-09	0.00005	0.00005	
4,4-DDT [3]	50-29-3	X		354.49	2.5	2,500	14	9	0	5	0	0	0	0	326.32	1.57E-02	333.5	1.78E-06	3.6	24,813.8	160.5	6.77	2.60	0.97	3.99E-03	2.97E-04	3.32E-04	8.94E-01	5.02E+00	1.11E-08	0.00010	0.00010	
alpha-BHC [3]	319-84-6	X		290.83	6.2	6,200	6	6	0	6	0	0	0	0	207.88	1.95E-02	225.6	2.24E-06	2.9	24,813.8	149.2	6.77	2.60	1.12	4.48E-03	4.38E-04	4.35E-04	1.01E+00	1.84E+01	4.05E-08	0.00036	0.00036	
beta-BHC [3]	319-85-7	X		290.83	13	13,000	6	6	0	6	0	0	0	0	207.88	1.95E-02	225.6	2.24E-06	2.9	24,813.8	149.2	6.77	2.60	1.12	4.48E-03	3.38E-05	3.046E-05	1.11E+00	2.97E+00	6.56E-09	0.00006	0.00006	
delta-BHC [3]	319-86-8	X		290.83	14	14,000	6	6	0	6	0	0	0	0	207.88	1.95E-02	225.6	2.24E-06	2.9	24,813.8	149.2	6.77	2.60	1.12	4.48E-03	1.96E-05	1.759E-05	1.11E+00	1.86E+00	4.09E-09	0.00004	0.00004	
Endrin [3]	72-20-8	X		380.91	1.4	1,400	12	8	1	6	0	0	0	0	316.32	1.58E-02	329.2	1.79E-06	3.6	24,813.8	159.9	6.77	2.60	0.97	4.00E-03	2.79E-04	3.08E-04	9.06E-01	2.65E+00	5.84E-09	0.00005	0.00005	
Lindane [3]	58-89-9	X	X	290.83	14	14,000	6	6	0	6	0	0	0	0	207.88	1.95E-02	225.6	2.24E-06	2.9	24,813.8	149.2	6.77	2.60	1.12	4.48E-03	5.61E-04	5.74E-04	9.78E-01	5.32E+01	1.17E-07	0.00103	0.00103	0.00103
Method 8151A - Herbicides																																	
2,4-D [3]	94-75-7	X		221.04	1300	1,300,000	8	6	3	2	0	0	0	0	179.32	2.11E-02	191	2.47E-06	2.7	24,813.8	145.3	6.77	2.60	1.18	4.70E-03	4.94E-07	4.18E-07	1.18E+00	4.34E+00	9.57E-09	0.00008	0.00008	
Method 8280A - Dioxins and Furans																																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [3]	35822-46-9	X		425.31	2.4	2,400	12	1	2	7	0	0	0	0	327.44	1.55E-02	332.3	1.78E-06	3.6	24,813.8	161.0	6.77	2.60	0.96	3.99E-03	7.07E-04	8.94E-04	7.91E-01	1.15E+01	2.53E-08	0.00022	0.00022	
OCDD [3]	3268-87-9	X		459.75	1.5	1,500	12	0	2	8	0	0	0	0	344.96	1.51E-02	350.2	1.73E-06	3.7	24,813.8	162.4	6.77	2.60	0.94	3.93E-03	2.43E-04	2.75E-04	8.85E-01	2.47E+00	5.44E-09	0.00005	0.00005	
OCDF [3, 13]	39001-02-0	X		443.75	1.3	1,300	12	0	1	8	0	0	0	0	339.48	1.52E-02	342.8	1.75E-06	3.7	24,813.8	162.0	6.77	2.60	0.95	3.96E-03	2.45E-04	2.75E-04	8.91E-01	2.15E+00	4.74E-09	0.00004	0.00004	
PCBs (from Tank T-130 sample)																																	
Aroclor 1242 [3]	53469-21-9	X	X	291.99	2810	2,810,000	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	24,813.8	155.2	6.77	2.60	1.03	4.24E-03	3.56E-03	2.13E-02	1.67E-01	6.76E+04	1.49E-04	1.31	1.31	1.31
Aroclor 1254 [3]	11097-69-1	X	X	326.44	795	795,000	12	5	0	5	0	0	0	0	285.4	1.67E-02	289.1	1.94E-06	3.4	24,813.8	157.0	6.77	2.60	1.01	4.16E-03	3.96E-03	8.20E-02	4.83E-02	2.13E+04	4.70E-05	0.41	0.41	0.41
Aroclor 1260 [3]	11096-82-5	X	X	395.33	690	690,000	12	3	0	7	0	0	0	0	320.44	1.57E-02	324.9	1.81E-06	3.6	24,813.8	160.3	6.77	2.60	0.97	4.02E-03	3.93E-03	1.89E-01	2.09E-02	1.84E+04	4.05E-05	0.35	0.35	0.35
																															TOTALS	**320.58**	**310.81**

Notes:

1 No value of atomic diffusion volume provided for fluorine atom; assumed total value of 114.8 for CCl_3F_2 to calculate air diffusivity
2 No value of atomic diffusion volume provided for bromine atom; referenced value of 67.2 for bromine molecule (2 bonded bromine atoms) to calculate air diffusivity
3 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)
4 Analytical results from sample taken at Tank 103 on March 21, 2013
5 Method for calculating total diffusion volume for air taken from Fuller et al., 1966
6 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008
7 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
8 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
9 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002
10 Total surface area of all standpipes in SLF 1-6 calculated as follows: (Pi) x ([(6 standpipes) x (0.102 m radius)^2] + [(10 standpipes) x (0.305 m radius)^2] + [(8 standpipes) x (0.381 m radius)^2]) = 6.77 m^2
11 Characteristic length calculated as the square root of the total surface area
12 Referenced materials provided on USEPA website and CHEMFATE provided by SRC
13 Henry's constant could not be located for OCDF; assumed value for OCDD

TABLE 4

ESTIMATED LIGHT NON-AQUEOUS PHASE LIQUID EMISSIONS FROM SLF 1-6 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Annual Leachate Collected From SLF 1-6 =	500,000	gallons / year
LNAPL Portion =	12,500	gallons / year (2.5% of total leachate)
LNAPL Portion =	47,318	liters / year (2.5% of total leachate)
Amount Volatilized =	1%	(for PCBs, pesticides or PAHs)
Amount Volatilized =	1%	(for compounds that are not PCBs, pesticides or PAHs)

Detected Compounds	CAS Number	VOC	HAP	Composition [1] (µg/L)	Emissions [2] (lb/year)	Emissions (lb/yr)	Emissions (lb/yr)
Acetone	67-64-1			340,000	0.4		
Anthracene	120-12-7	X		38,000	0.0	0.0	
Benzene	71-43-2	X	X	86,000	0.1	0.1	0.1
Bis(2-ethylhexyl)phthalate	117-81-7	X	X	730,000	0.8	0.8	0.8
2-Butanone	78-93-3	X		980,000	1.0	1.0	
Butyl benzyl Phthalate	85-68-7	X		35,000	0.0	0.0	
Carbon Tetrachloride	56-23-5	X	X	250,000	0.3	0.3	0.3
Chlorobenzene	108-90-7	X	X	2,200,000	2.3	2.3	2.3
Chloroform	67-66-3	X	X	570,000	0.6	0.6	0.6
1,1-Dichloroethane	75-34-3	X	X	88,000	0.1	0.1	0.1
1,2-Dichloroethane	107-06-2	X	X	200,000	0.2	0.2	0.2
Diethlyphthalate	84-66-2	X		90,000	0.1	0.1	
Di-n-Butyl phthalate	84-74-2	X		340,000	0.4	0.4	
Ethylbenzene	100-41-4	X	X	1,600,000	1.7	1.7	1.7
Methylene Chloride	75-09-2		X	5,400,000	5.6		5.6
4-Methyl-2-pentanone	108-10-1	X	X	1,700,000	1.8	1.8	1.8
Naphthalene	91-20-3	X	X	1,100,000	1.1	1.1	1.1
PCB-1242	53469-21-9	X	X	4,100,000	4.3	4.3	4.3
PCB-1254	11097-69-1	X	X	1,400,000	1.5	1.5	1.5
Phenol	108-95-2	X	X	490,000	0.5	0.5	0.5
Phenanthrene	85-01-8	X		98,000	0.1	0.1	
1,1,2,2-Tetrachloroethane	79-34-5	X	X	6,800,000	7.1	7.1	7.1
Tetrachloroethene	127-18-4	X	X	4,100,000	4.3	4.3	4.3
Toluene	108-88-3	X	X	6,500,000	6.8	6.8	6.8
1,2,4-Trichlorobenzene	120-82-1	X	X	4,800,000	5.0	5.0	5.0
1,1,1-Trichloroethane	71-55-6		X	6,300,000	6.6		6.6
1,1,2-Trichloroethane	79-00-5	X	X	290,000	0.3	0.3	0.3
Trichloroethene	79-01-6	X	X	12,000,000	12.5	12.5	12.5
Xylenes	1330-20-7	X	X	8,900,000	9.3	9.3	9.3
					TOTALS	**62**	**73**

Notes:

1 Referenced from study of SLF 1-6 Leachate conducted in 1994 (represents profile of light oil phase only)

2 Assumes 1% volatilization

TABLE 5

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 7 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [2] (µg/L)	Leachate Concentration (µg/m^3)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [3]	Gas Diffusion Coefficient D_a [4] (m^2/h)	Atomic Volume for D_l Calculation [5] (cm^3/mol)	Liquid Diffusion Coefficient D_l [6] (m^2/h)	Schmidt Number S_c [7]	Reynolds Number R_e [7]	Sherwood Number S_h [7]	Total Surface Area [8] (m^2)	Char. Length [9] (m)	k_G [7] (m/h)	k_L [7] (m/h)	K_{OL} [7] (m/h)	Henry's Constant [10]	K_{OG} [7] (m/h)	Emissions [7] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Toluene [1]	108-88-3	X	X	92.14	5990	5,990,000	7	8	0	0	0	0	0	0	111.34	2.81E-02	118.2	3.28E-06	2.0	12,631.3	94.3	1.75	1.32	2.00	5.41E-03	5.36E-03	2.71E-01	1.98E-02	5.63E+04	1.24E-04	1.09	1.09	1.09
Xylenes [1]	1330-20-7	X	X	106.16	17600	17,600,000	8	10	0	0	0	0	0	0	131.8	2.57E-02	140.4	2.96E-06	2.2	12,631.3	97.1	1.75	1.32	1.88	5.15E-03	5.09E-03	2.56E-01	1.99E-02	1.57E+05	3.46E-04	3.04	3.04	3.04
2-Butanone	78-93-3	X		72.11	179000	179,000,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	12,631.3	90.2	1.75	1.32	2.19	5.75E-03	2.67E-03	2.28E-03	1.17E+00	8.38E+05	1.85E-03	16.19	16.19	
Acetone	67-64-1			58.08	180000	180,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	12,631.3	86.0	1.75	1.32	2.40	6.22E-03	2.37E-03	1.59E-03	1.49E+00	7.47E+05	1.65E-03	14.42			
Methylene Chloride	75-09-2		X	84.93	167000	167,000,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	12,631.3	86.2	1.75	1.32	2.39	6.45E-03	6.26E-03	8.93E-02	7.01E-02	1.83E+06	4.04E-03	35.38		35.38
4-Methyl-2-pentanone	108-10-1	X	X	100.16	2500	2,500,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	12,631.3	96.5	1.75	1.32	1.91	5.14E-03	3.48E-03	5.63E-03	6.18E-01	1.52E+04	3.36E-05	0.29	0.29	0.29
Phenol [1]	108-95-2	X	X	94.11	73000	73,000,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9	12,631.3	92.5	1.75	1.32	2.08	5.63E-03	3.37E-05	1.63E-05	2.07E+00	4.31E+03	9.50E-06	0.08	0.08	0.08
Aroclor 1242 [1]	53469-21-9	X	X	291.99	480	480,000	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	12,631.3	110.7	1.75	1.32	1.45	4.24E-03	3.73E-03	2.13E-02	1.75E-01	3.14E+03	6.92E-06	0.06	0.06	0.06
																															TOTALS	**20.75**	**39.94**

Notes:

1. Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)
2. Sample results provided by CWM Chemical Services, LLC
3. Method for calculating total diffusion volume for air taken from Fuller et al., 1966
4. Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008
5. Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
6. Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
7. Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions," December 2002
8. Total surface area of all standpipes in SLF 7 calculated as follows: (6 standpipes) x (Pi) x (0.305 m radius)^2 = 1.75 m^2
9. Characteristic length calculated as the square root of the total surface area
10. Referenced materials provided on USEPA website and CHEMFATE provided by SRC

TABLE 6

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 10 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [1] (µg/L)	Leachate Concentration (µg/m^3)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [2]	Gas Diffusion Coefficient D_a [3] (m^2/h)	Atomic Volume for D_l Calculation [4] (cm^3/mol)	Liquid Diffusion Coefficient D_l [5] (m^2/h)	Schmidt Number S_c [6]	Reynolds Number R_e [6]	Sherwood Number S_h [6]	Total Surface Area [7] (m^2)	Char. Length [8] (m)	k_G [6] (m/h)	k_L [6] (m/h)	K_{OL} [6] (m/h)	Henry's Constant [9]	K_{OG} [6] (m/h)	Emissions [6] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
4-Methyl-2-pentanone	108-10-1	X	X	100.16	11900	11,900,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	23,061.6	130.4	5.84	2.42	1.41	5.14E-03	3.12E-03	5.63E-03	5.55E-01	2.17E+05	4.79E-04	4.20	4.20	4.20
2-Butanone	78-93-3	X		72.11	120000	120,000,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	23,061.6	121.8	5.84	2.42	1.62	5.75E-03	2.25E-03	2.28E-03	9.86E-01	1.58E+06	3.48E-03	30.45	30.45	
Acetone	67-64-1			58.08	236000	236,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	23,061.6	116.2	5.84	2.42	1.78	6.22E-03	1.94E-03	1.59E-03	1.22E+00	2.68E+06	5.91E-03	51.77			
Methylene Chloride	75-09-2		X	84.93	24900	24,900,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	23,061.6	116.5	5.84	2.42	1.77	6.45E-03	6.19E-03	8.93E-02	6.93E-02	9.01E+05	1.99E-03	17.41		17.41
Phenol [10]	108-95-2	X	X	94.11	28000	28,000,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9	23,061.6	124.9	5.84	2.42	1.54	5.63E-03	2.50E-05	1.63E-05	1.53E+00	4.09E+03	9.01E-06	0.08	0.08	0.08
Aroclor 1242 [10]	53469-21-9	X	X	291.99	2810	2,810,000	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	23,061.6	149.6	5.84	2.42	1.07	4.24E-03	3.58E-03	2.13E-02	1.68E-01	5.87E+04	1.30E-04	1.13	1.13	1.13
Aroclor 1254 [10]	11097-69-1	X	X	326.44	795	795,000	12	5	0	5	0	0	0	0	285.4	1.67E-02	289.1	1.94E-06	3.4	23,061.6	151.4	5.84	2.42	1.05	4.16E-03	3.97E-03	8.20E-02	4.84E-02	1.84E+04	4.07E-05	0.36	0.36	0.36
																															TOTALS	**36.21**	**23.17**

Notes:

1 Sample results provided by CWM Chemical Services, LLC
2 Method for calculating total diffusion volume for air taken from Fuller et al., 1966
3 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008
4 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
5 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
6 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002
7 Total surface area of all standpipes in SLF 10 calculated as follows: (5 standpipes) x (Pi) x (0.610 m radius)^2 = 5.84 m^2
8 Characteristic length calculated as the square root of the total surface area
9 Referenced materials provided on USEPA website and CHEMFATE provided by SRC
10 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)

TABLE 7

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 11 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [1] (µg/L)	Leachate Concentration (µg/m^3)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [2]	Gas Diffusion Coefficient D_a [3] (m^2/h)	Atomic Volume for D_l Calculation [4] (cm^3/mol)	Liquid Diffusion Coefficient D_l [5] (m^2/h)	Schmidt Number S_c [6]	Reynolds Number R_e [6]	Sherwood Number S_h [6]	Total Surface Area [7] (m^2)	Char. Length [8] (m)	k_G [6] (m/h)	k_L [6] (m/h)	K_{OL} [6] (m/h)	Henry's Constant [9]	K_{OG} [6] (m/h)	Emissions [6] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
4-Methyl-2-pentanone	108-10-1	X	X	100.16	2580	2,580,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	33,678.2	157.6	12.47	3.53	1.17	5.14E-03	2.89E-03	5.63E-03	5.13E-01	9.28E+04	2.05E-04	1.79	1.79	1.79
2-Butanone	78-93-3	X		72.11	14100	14,100,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	33,678.2	147.2	12.47	3.53	1.34	5.75E-03	1.99E-03	2.28E-03	8.75E-01	3.51E+05	7.73E-04	6.77	6.77	
Acetone	67-64-1			58.08	32000	32,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	33,678.2	140.4	12.47	3.53	1.47	6.22E-03	1.70E-03	1.59E-03	1.07E+00	6.78E+05	1.49E-03	13.10		
Methylene Chloride	75-09-2		X	84.93	500	500,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	33,678.2	140.8	12.47	3.53	1.46	6.45E-03	6.14E-03	8.93E-02	6.88E-02	3.83E+04	8.44E-05	0.74		0.74
Phenol [10]	108-95-2	X	X	94.11	1700	1,700,000	6	6	1	0	0	0	0	0	116.36	2.75E-02	118.4	3.28E-06	2.1	33,678.2	155.0	12.47	3.53	1.21	5.41E-03	1.96E-05	1.63E-05	1.20E+00	4.15E+02	9.16E-07	0.01	0.01	0.01
Aroclor 1242 [10]	53469-21-9	X	X	291.99	457	457,000	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	33,678.2	180.8	12.47	3.53	0.89	4.24E-03	3.46E-03	2.13E-02	1.62E-01	1.97E+04	4.35E-05	0.38	0.38	0.38
Aroclor 1254 [10]	11097-69-1	X	X	326.44	1590	1,590,000	12	5	0	5	0	0	0	0	285.4	1.67E-02	289.1	1.94E-06	3.4	33,678.2	182.9	12.47	3.53	0.87	4.16E-03	3.93E-03	8.20E-02	4.79E-02	7.79E+04	1.72E-04	1.50	1.50	1.50
Aroclor 1260 [10]	11096-82-5	X	X	395.33	892	892,000	12	3	0	7	0	0	0	0	320.44	1.57E-02	324.9	1.81E-06	3.6	33,678.2	186.7	12.47	3.53	0.83	4.02E-03	3.92E-03	1.89E-01	2.08E-02	4.36E+04	9.61E-05	0.84	0.84	0.84
																															TOTALS	**11.30**	**5.27**

Notes:

1 Sample results provided by CWM Chemical Services, LLC
2 Method for calculating total diffusion volume for air taken from Fuller et al., 1966
3 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008
4 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
5 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
6 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002
7 Total surface area of all standpipes in SLF 11 calculated as follows: (Pi) x ([(1 standpipes) x (0.229 m radius)^2] + [(4 standpipes) x (0.267 m radius)^2] + [(6 standpipes) x (0.330 m radius)^2]) + [(8 standpipes) x (0.610 m radius)^2]) = 12.47 m^2
8 Characteristic length calculated as the square root of the total surface area
9 Referenced materials provided on USEPA website and CHEMFATE provided by SRC
10 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)

TABLE 8

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 12 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [1] (µg/L)	Leachate Concentration (µg/m^3)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [2]	Gas Diffusion Coefficient D_a [3] (m^2/h)	Atomic Volume for D_l Calculation [4] (cm^3/mol)	Liquid Diffusion Coefficient D_l [5] (m^2/h)	Schmidt Number S_c [6]	Reynolds Number R_e [6]	Sherwood Number S_h [6]	Total Surface Area [7] (m^2)	Char. Length [8] (m)	k_G [6] (m/h)	k_L [6] (m/h)	K_{OL} [6] (m/h)	Henry's Constant [9]	K_{OG} [6] (m/h)	Emissions [6] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Acetone	67-64-1			58.08	362	362,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	11,859.6	83.3	1.55	1.24	2.48	6.22E-03	2.41E-03	1.59E-03	1.52E+00	1.35E+03	2.98E-06	0.03		
4-Methyl-2-pentanone	108-10-1	X	X	100.16	10	10,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	11,859.6	93.5	1.55	1.24	1.97	5.14E-03	3.51E-03	5.63E-03	6.24E-01	5.43E+01	1.20E-07	0.00	0.00	0.00
2-Butanone	78-93-3	X		72.11	10	10,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	11,859.6	87.4	1.55	1.24	2.26	5.75E-03	2.72E-03	2.28E-03	1.19E+00	4.20E+01	9.25E-08	0.00	0.00	
Methylene Chloride	75-09-2		X	84.93	2280	2,280,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	11,859.6	83.6	1.55	1.24	2.46	6.45E-03	6.26E-03	8.93E-02	7.01E-02	2.21E+04	4.87E-05	0.43		0.43
Phenol [10]	108-95-2	X	X	94.11	25	25,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9	11,859.6	89.6	1.55	1.24	2.15	5.63E-03	3.47E-05	1.63E-05	2.13E+00	1.34E+00	2.96E-09	0.00	0.00	0.00
Aroclor 1242 [10]	53469-21-9	X	X	291.99	226	226,000	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	11,859.6	107.3	1.55	1.24	1.50	4.24E-03	3.74E-03	2.13E-02	1.76E-01	1.31E+03	2.88E-06	0.03	0.03	0.03
Aroclor 1254 [10]	11097-69-1	X	X	326.44	289	289,000	12	5	0	5	0	0	0	0	285.4	1.67E-02	289.1	1.94E-06	3.4	11,859.6	108.5	1.55	1.24	1.46	4.16E-03	4.02E-03	8.20E-02	4.90E-02	1.80E+03	3.96E-06	0.03	0.03	0.03
Aroclor 1260 [10]	11096-82-5	X	X	395.33	227	227,000	12	3	0	7	0	0	0	0	320.44	1.57E-02	324.9	1.81E-06	3.6	11,859.6	110.8	1.55	1.24	1.40	4.02E-03	3.96E-03	1.89E-01	2.10E-02	1.39E+03	3.06E-06	0.03	0.03	0.03
																															TOTALS	**0.09**	**0.51**

Notes:

1 Sample results provided by CWM Chemical Services, LLC
2 Method for calculating total diffusion volume for air taken from Fuller et al., 1966
3 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008
4 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
5 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
6 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002
7 Total surface area of all standpipes in SLF 12 calculated as follows: (8 standpipes) x (Pi) x (0.248 m radius)^2 = 1.55 m^2
8 Characteristic length calculated as the square root of the total surface area
9 Referenced materials provided on USEPA website and CHEMFATE provided by SRC
10 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)

TABLE 9

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-1 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [2] (µg/L)	Leachate Concentration (µg/m^3)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [3]	Gas Diffusion Coefficient D_a [4] (m^2/h)	Atomic Volume for D_l Calculation [5] (cm^3/mol)	Liquid Diffusion Coefficient D_l [6] (m^2/h)	Schmidt Number S_c [7]	Reynolds Number R_e [7]	Sherwood Number S_h [7]	Total Surface Area [8] (m^2)	Char. Length [9] (m)	k_c [7] (m/h)	k_l [7] (m/h)	K_{OL} [7] (m/h)	Henry's Constant [10]	K_{OG} [7] (m/h)	Emissions [7] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Carbon disulfide	75-15-0	X	X	76.14	1090	1,090,000	1	0	0	0	0	2	0	0	50.5	3.96E-02	66.00	4.62E-06	1.4	22,966.1	113.3	5.80	2.41	1.87	6.43E-03	6.41E-03	1.24E+00	5.17E-03	4.05E+04	8.93E-05	0.78	0.78	0.78
Toluene [1]	108-88-3	X	X	92.14	1120	1,120,000	7	8	0	0	0	0	0	0	111.34	2.81E-02	118.2	3.28E-06	2.0	22,966.1	127.1	5.80	2.41	1.48	5.41E-03	5.34E-03	2.71E-01	1.97E-02	3.47E+04	7.65E-05	0.67	0.67	0.67
2-Butanone	78-93-3	X		72.11	4880	4,880,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06	1.8	22,966.1	121.6	5.80	2.41	1.62	5.75E-03	2.25E-03	2.28E-03	9.87E-01	6.37E+04	1.40E-04	1.23	1.23	
4-Methyl-2-pentanone	108-10-1	X	X	100.16	470	470,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06	2.2	22,966.1	130.1	5.80	2.41	1.41	5.14E-03	3.13E-03	5.63E-03	5.55E-01	8.52E+03	1.88E-05	0.16	0.16	0.16
Acetone	67-64-1			58.08	114000	114,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5	22,966.1	115.9	5.80	2.41	1.78	6.22E-03	1.95E-03	1.59E-03	1.22E+00	1.29E+06	2.84E-03	24.84			
Methylene Chloride	75-09-2		X	84.93	1780	1,780,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06	1.5	22,966.1	116.3	5.80	2.41	1.77	6.45E-03	6.19E-03	8.93E-02	6.94E-02	6.39E+04	1.41E-04	1.23		1.23
Vinyl Chloride	75-01-4	X	X	62.5	142	142,000	2	3	0	1	0	0	0	0	58.44	3.86E-02	62.3	4.78E-06	1.5	22,966.1	114.4	5.80	2.41	1.83	6.54E-03	6.52E-03	1.11E+00	5.87E-03	5.36E+03	1.18E-05	0.10	0.10	0.10
2,4-Dimethylphenol [1]	105-67-9	X		122.16	140	140,000	8	10	1	0	0	0	0	0	137.28	2.49E-02	147.8	2.87E-06	2.3	22,966.1	132.3	5.80	2.41	1.37	5.07E-03	1.10E-04	8.20E-05	1.34E+00	8.91E+01	1.96E-07	0.00	0.00		
4-Nitrophenol	100-02-7	X	X	139.11	500	500,000	6	5	3	0	0	0	0	1	111.03	2.70E-02	130.1	3.10E-06	2.1	22,966.1	128.9	5.80	2.41	1.44	5.26E-03	2.45E-08	1.70E-08	1.44E+00	7.11E-02	1.57E-10	0.00	0.00	0.00
Phenol [1]	108-95-2	X	X	94.11	1200	1,200,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9	22,966.1	124.7	5.80	2.41	1.54	5.63E-03	2.50E-05	1.63E-05	1.53E+00	1.74E+02	3.84E-07	0.00	0.00	0.00
Aroclor 1242 [1]	53469-21-9	X	X	291.99	29.6	29,600	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3	22,966.1	149.3	5.80	2.41	1.07	4.24E-03	3.58E-03	2.13E-02	1.68E-01	6.14E+02	1.35E-06	0.01	0.01	0.01
Aroclor 1260 [1]	11096-82-5	X	X	395.33	112	112,000	12	3	0	7	0	0	0	0	320.44	1.57E-02	324.9	1.81E-06	3.6	22,966.1	154.2	5.80	2.41	1.01	4.02E-03	3.94E-03	1.89E-01	2.09E-02	2.56E+03	5.63E-06	0.05	0.05	0.05

TOTALS **3.02** **3.02**

Notes:

1 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)

2 Analytical results from multiple samples taken from: 1.) RMU-1 standpipes over a period of May 2006 through February 2013; 2.) Tank T-160 (RMU-1 lift station) over a period of January 31, 2012 through February 15, 2012; and 3.) Tank T-102 over a period of April 3, 2012 through April 17, 2013 (applied highest detected value for each compound in this column)

3 Method for calculating total diffusion volume for air taken from Fuller et al., 1966

4 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008

5 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915

6 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012

7 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002

8 Total surface area of all standpipes in RMU-1 calculated as follows: (30 standpipes) x (PI) x (0.248 m radius)^2 = 5.80 m^2

9 Characteristic length calculated as the square root of the total surface area

10 Referenced materials provided on USEPA website and CHEMFATE provided by SRC

TABLE 10

TANK DIMENSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Tank ID#	Height (ft.)	Diameter (ft.)	Volume (gal.)	Throughput (gal/yr.)	Average Operating Temperature (F)	Comments
Frac Tank 3	11.00		21,000	20,000	50	Rectangular; 40' long by 8.5' wide
T-157	21.50	8.0	8,000	-		Tank out of service and closed
T-710	16.00	9.0	8,000	98,019	65	20% of 3 year ave of Bulk Receipt div by 3
T-810	16.00	9.0	8,000	98,019	65	20% of 3 year ave of Bulk Receipt div by 3
T-820	16.00	9.0	8,000	98,019	65	20% of 3 year ave of Bulk Receipt div by 3
T-210	15.00	18.5	30,000	359,527	50	T-1111/1112 -T-1410 divided by 3
T-220	15.00	18.5	30,000	359,527	50	T-1111 + T-1112 -T-1410 divided by 3
T-230	15.00	18.5	30,000	359,527	50	T-1111/1112 -T-1410 divided by 3
T-1010	9.00	14.0	10,000	551,790	65	T-100 divided by 2 - GW & Bulk Receipts
T-1020	10.00	12.0	8,000	551,790	65	T-100 divided by 2 - GW & Bulk Receipts
T-310	38.00	12.0	30,457	1,963,203	80	T-100 processing
T-320	38.00	12.0	30,457	1,963,203	80	T-100 processing
T-1111	4.00	3.8	300	551,790	65	T-100 divided by 2 - GW & Bulk Receipts
T-1112	7.00	3.5	600	551,790	65	T-100 divided by 2 - GW & Bulk Receipts
T-100	23.00	35.0	160,545	1,963,203	80	3 year average + GW + Bulk Receipts
T-125	12.00	80.0	394,271	7,513,307	70	3 year average divided by 2
T-58	23.50	81.0	488,529	7,513,307	70	Sideshell is 14' high; 9.5' high dome roof
T-111	6.58	3.2	350	144,866	65	Horizontal Tank; 3 year average
T-3002	5.66	5.0	900	1,963,203	50	T-100 processing
T-3003	6.50	5.0	1,210	15,026,614	50	T-100 processing
T-3009	16.00	8.0	5,000	250,000	50	Horizontal Tank; Double Walled
T-3011	3.50	4.5	375	1,963,203	80	T-100 processing
T-3012	3.92	4.0	375	1,963,203	80	T-100 processing
Stab Rec RC-01						Permanently Out of Service
Stab Rec RC-02						Permanently Out of Service
Stab Rec RC-03						Permanently Out of Service
Stab Rec RC-04						Permanently Out of Service
Fac Ponds 1/2				20,703,000		825' by 300' wide; vol based w/1' freeboard
T-101	32	44	350,000	350,000	50	
T-102	32	44	350,000	13,377,857	50	SLF 12 +RMU-1 - T-101
T-103	32	44	350,000	153,486	50	3 year average: SLF 1-6 - oil + gate receipts
T-107	6.58	3.2	350	67,283	65	3 year average

TABLE 10

TANK DIMENSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Tank ID#	Height (ft.)	Diameter (ft.)	Volume (gal.)	Throughput (gal/yr.)	Average Operating Temperature (F)	Comments
T-110	6.58	3.2	350	65,171	65	3 year average
T-109	8	8	3,000	65,171	65	3 year average
T-108	16	10.33	10,000	144,866	65	3 year average
T-105	8	8	3,000	144,648	65	3 year average
T-130	10	7.6	5,732	144,648	50	Cone bottom; 3 year average
T-158	18	12	17,000	204,648	65	Cone bottom; SLF 1-6 + Gate Receipts
T-150	14	10	8,000	974,571	60	3 year average; SLF12 + Site Waters
T-160	6.5	9	3,000	12,753,285	60	3 year average
T-830	8	6	2,000	6,000	65	Ferrous Sulfate
T-840	8	6	2,000	6,000	65	Ferrous Sulfate
T-1310	5	5.5	600	2,500	65	Caustic Scrubber Tank
T-850	4	6	846	1,000	65	Mix tank
T-1410	12	12	8,000	25,000	65	Lime Slurry Tank
T-910	9.5	12	8,000	15,000	65	Sulfuric Acid Tank
T-8001	13	8	5,000	733,487	70	Cone bottom
T-8002	4.66	4	550	733,487	70	Horizontal tank
T-8004	4.66	4	550	2,350	70	Horizontal tank
T-8005	6.25	2.83	300	3,973	70	Horizontal tank
T-8006	6.25	2.83	300	9,775	70	Horizontal tank
T-8007	4.66	4	550	7,383	70	Horizontal tank
T-8008	7.6	3.5	500	500	70	Horizontal tank
T-8009	5.9	4.1	525	305,000	70	Horizontal tank; Projected volume
T-8010	6.46	5.33	1,000	323,700	70	Projected volume

TABLE 11

SUMMARY OF TANKS MODELING OUTPUT: LEACHATE STORAGE AND TRANSFER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

| | | | Tank # | | |

TABLE 12

ESTIMATED VOC AND HAP EMISSIONS FROM TANK T-165
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [2] (µg/L)	Leachate Concentration ($\mu g/m^3$)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [3]	Gas Diffusion Coefficient D_a [4] (m^2/h)	Atomic Volume for D_l Calculation [5] (cm^3/mol)	Liquid Diffusion Coefficient D_l [6] (m^2/h)	Schmidt Number S_c [7]
Acetone	67-64-1			58.08	9040	9,040,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06	1.5
Aroclor 1242 [1]	53469-21-9	X	X	291.99	29.6	29,600	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06	3.3
Aroclor 1260 [1]	11096-82-5	X	X	360.88	112	112,000	12	4	0	6	0	0	0	0	302.92	1.62E-02	307	1.87E-06	3.5
2,4-Dimethylphenol [1]	105-67-9	X		122.16	140	140,000	8	10	1	0	0	0	0	0	137.28	2.49E-02	147.8	2.87E-06	2.3
4-Methylphenol [1]	106-44-5	X	X	108.13	500	500,000	7	8	1	0	0	0	0	0	116.82	2.70E-02	125.6	3.16E-06	2.1
Phenol [1]	108-95-2	X	X	94.11	1200	1,200,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06	1.9

Notes:

1 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)
2 Sample results provided by CWM Chemical Services, LLC
3 Method for calculating total diffusion volume for air taken from Fuller et al., 1966
4 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles*, *Practice and Economics of Plant and Process Design* , 2008
5 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915
6 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012
7 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002 (wind speed of 11.8 mph assumed)
8 Total surface area of tank calculated as follows: (Pi) x (10.67 m radius)^2 = 357.67 m^2
9 Characteristic length calculated as the square root of the total surface area
10 Referenced materials provided on USEPA website and CHEMFATE provided by SRC

TABLE 12

ESTIMATED VOC AND HAP EMISSIONS FROM TANK T-165
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Reynolds Number R_e [7]	Sherwood Number S_h [7]	Total Surface Area [8] (m^2)	Char. Length [9] (m)	k_G [7] (m/h)	k_L [7] (m/h)	K_{OL} [7] (m/h)	Henry's Constant [10]	K_{OG} [7] (m/h)	Emissions [7] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
180,400.9	325.0	357.67	18.91	0.64	6.22E-03	8.70E-04	1.59E-03	5.47E-01	2.81E+06	6.20E-03	54.30		
6,350,111.1	2,482.7	357.67	18.91	2.27	4.24E-03	3.90E-03	2.13E-02	1.83E-01	4.13E+04	9.10E-05	0.80	0.80	0.80
6,350,111.1	2,538.5	357.67	18.91	2.18	4.09E-03	4.05E-03	1.89E-01	2.15E-02	1.62E+05	3.57E-04	3.13	3.13	3.13
6,350,111.1	2,200.5	357.67	18.91	2.90	5.07E-03	3.50E-03	3.90E-03	8.97E-01	1.75E+05	3.86E-04	3.38	3.38	
6,350,111.1	2,141.1	357.67	18.91	3.06	5.32E-03	6.46E-08	2.112E-08	3.06E+00	1.15E+01	2.55E-08	0.00	0.00	0.00
6,350,111.1	2,073.0	357.67	18.91	3.26	5.63E-03	5.27E-05	1.63E-05	3.23E+00	2.26E+04	4.99E-05	0.44	0.44	0.44
											TOTALS	**7.75**	**4.37**

TABLE 13

SUMMARY OF TANKS MODELING OUTPUT: GROUNDWATER EXTRACTION SYSTEM
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

			Tank #																								
Tank Dimensions			**8001**			**8002**			**8004**			**8005**			**8006**			**8007**			**8008**			**8009**			**8010**		
Height (ft)			13			5			4.66			6.25			6.25			5			7.6			5.9			6.46		
Diameter (ft)			8			4			4			3			3			4			3.5			4.1			5.33		
Volume (gal)			5,000			470			550			300			300			470			500			525			1,000		
Throughput (gal/yr)			1,000,000			1,000,000			5,000			10,000			10,000			10,000			1,000			500,000			500,000		
Pollutants	**VOC**	**HAP**	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)	**Emissions** (lb/yr)	**VOC** (lb/yr)	**HAP** (lb/yr)
Acetone									-			-						-			-						-		
Benzene	X	X	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-
Carbon Tetrachloride	X	X	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-		0.00	0.00	0.00	0.00	0.00	0.00
Chlorobenzene	X	X	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00
Chloroform	X	X	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dibromomethane	X																							0.00	0.00			0.00		
Dichlorobenzene (1,2)	X		-	-		-	-		-	-		-	-		-			0.00	0.00		0.00	0.00		0.00	0.00		-	-		
Dichlorobenzene (1,3)	X																	0.00	0.00			0.00			0.00			0.00		
Dichlorobenzene (1,4)	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-			0.00	0.00	0.00	-	-	-	0.00	0.00	0.00	-	-	-	-
1,1-Dichloroethane	X	X																0.00	0.00	0.00		0.00	0.00		0.00	0.00			0.00	0.00
Ethylene dibromide	X	X																				0.00		0.00	0.00	0.00			0.00	0.00
Ethylene dichloride	X	X	0.00			0.00												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethyl acetate	X																	0.00	0.00			0.00			0.00			0.00		
Ethylbenzene	X	X																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00
1,1-Dichloroethene	X	X	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-Dichloropropane	X	X																0.00	0.00	0.00		0.00	0.00		0.00	0.00			0.00	0.00
Methylene Chloride		X	0.00		0.00	0.00		0.00	0.00		0.00	-		-	-			0.00		0.00	0.00		0.00	0.00		0.00	-		-	-
Methylisobutyl ketone	X	X																0.00	0.00	0.00		0.00	0.00		0.00	0.00			0.00	0.00
Tetrachloroethylene	X	X	0.00			0.00												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toluene	X	X							0.00	0.00	0.00	-	-	-				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichloroethane (1,1,1)		X	0.00		0.00	0.00		0.00	0.00		0.00	-		-	-			0.00		0.00	0.00		0.00			0.00	-		-	-
Trichloro (1,1,2) trifluoroethane	X		0.00	0.00		0.00	0.00					-	-					0.00	0.00		0.00	0.00		0.00	0.00			0.00		
Trichloroethane (1,1,2)	X	X	0.00			0.00						-	-	-	-				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetrachloroethane(1,1,1,2)	X																		0.00	0.00		0.00	0.00		0.00	0.00			0.00	
Tetrachloroethane(1,1,2,2)	X	X	0.00			0.00													0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichloroethylene	X	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vinyl chloride	X	X										0.00	0.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00
Xylenes	X	X							0.00	0.00	0.00							0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00			0.00	0.00
Water			57.48			27.37			1.80			2.27			2.27			2.60			1.49			15.79			19.04		
TOTAL (lbs):				0.01	0.01		0.01	0.01		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00

TABLE 14

SUMMARY OF TANKS MODELING OUTPUT: ATWS TANKS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

| | | | Tank # | | |

TABLE 15

ESTIMATED VOC AND HAP EMISSIONS FROM BIOTOWER EXHAUST
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Inluent Concentration [1] (ppb)	Midpoint Concentration [2] (ppb)	Effluent Concentration [3] (ppb)	Emission Rate (mg/m^3)	Emission Rate [4] (lb/hr)	Emission Rate (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
1,1,1-Trichloroethane	71-55-6		X	133.4	33	ND	ND	0	0	0		0.000
1,1,2,2-Tetrachloroethane	79-34-5	X	X	167.85	57	ND	ND	0	0	0	0.000	0.000
1,1,2-Trichloroethane	79-00-5	X	X	133.4	100	ND	ND	0	0	0	0.000	0.000
1,1-Dichloroethane	75-34-3	X	X	98.96	130	0.16	ND	0	0	0	0.000	0.000
1,2-Dichloroethane	107-06-2	X	X	98.96	330	0.34	ND	0	0	0	0.000	0.000
2-Butanone	78-93-3	X		72.11	4500	7.4	ND	0	0	0	0.000	
4-Methyl-2-pentanone	108-10-1	X	X	100.16	950	0.57	ND	0	0	0	0.000	0.000
Acetone	67-64-1			58.08	8500	32	1.9	0.0045104	1.953E-06	0.017		
Benzene	71-43-2	X	X	78.11	40	ND	ND	0	0	0	0.000	0.000
Bromomethane	74-83-9	X	X	94.94	38	ND	ND	0	0	0	0.000	0.000
Carbon disulfide	75-15-0	X	X	76.14	200	0.45	0.31	0.0009647	4.177E-07	0.004	0.004	0.004
Chlorobenzene	108-90-7	X	X	112.56	20	ND	ND	0	0	0	0.000	0.000
Chloroform	67-66-3	X	X	119.38	270	0.33	ND	0	0	0	0.000	0.000
Chloromethane	74-87-3	X	X	50.49	ND	1.2	ND	0	0	0	0.000	0.000
cis-Dichloroethene	156-59-2	X		96.94	200	0.35	ND	0	0	0	0.000	
Dichlorodifluoromethane	75-71-8			120.91	ND	0.5	ND	0	0	0		
Xylenes	1330-20-7	X	X	106.16	117	0.88	ND	0	0	0	0.000	0.000
Methylene Chloride	75-09-2		X	84.93	13000	15	0.27	0.0009373	4.058E-07	0.004		0.004
Toluene	108-88-3	X	X	92.14	140	0.42	ND	0	0	0	0.000	0.000
Trichloroethene	79-01-6	X	X	131.39	270	0.31	ND	0	0	0	0.000	0.000
Trichlorofluoromethane	75-69-4			137.37	ND	0.22	ND	0	0	0		
Vinyl Chloride	75-01-4	X	X	62.5	63	0.15	ND	0	0	0	0.000	0.000
											0.004	**0.007**

Notes:

1 Analytical results from sample taken on March 16, 2013 prior to carbon canister
2 Analytical results from sample taken on March 16, 2013 between 2 carbon canisters
3 Analytical results from sample taken on March 16, 2013 after 2 carbon canisters; represents exhaust leaving the stack
4 Emission rate converted to lb/hr using flowrate value of 115.6 acfm measured at exhaust on April 5, 2013

TABLE 16

ESTIMATED FILTER PRESS EMISSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Methylene chloride - release from filter press

Feed to filter press 71.7 mg/L x 20,000 gal x 3.78 L/gal equals 5420520 mg or 5420 g or 11.9 lbs methylene chloride in feed to lime slurry/press
after Fentons 9/20/12

15,260 lbs (6928 kg) of cake produced, 70% moisture (10682 lbs or 1280 gallons of aqueous feed remains in cake)
10/6/12 second drop
26.4 mg/kg x6928 kg equals 182.9 g or 0.4 lbs methylene chloride in cake

Filtrate 9/20/12 (18,720 gallons, 1280 gal remained with cake)
30.2 mg/L x70762 L equals 2137000 mg or 2137 g or 4.7 lbs in filtrate

Feed	minus cake	minus filtrate	equals release
11.9	0.4	4.7	6.8 lbs released by press per roll-off of filter cake

19 roll-offs of cake produced in 2012
129 lbs

Trichloroethylene - release from filter press

Feed to filter press less than 20.0 mg/L x 20,000 gal x 3.78 L/gal equals 1512000 mg or 1512 g or 3.33 lbs trichloroethylene in feed to lime slurry/press
after Fentons 9/20/12

15,260 lbs (6928 kg) of cake produced, 70% moisture (10682 lbs or 1280 gallons of aqueous feed remains in cake)
10/6/12 second drop
14.3 mg/kg x6928 kg equals 99.1 g or 0.2 lbs trichloroethylene in cake

Filtrate 9/20/12 (18,720 gallons, 1280 gal remained with cake)
5.17 mg/L x70762 L equals 365840 mg or 366 g or 0.8 lbs in filtrate

Feed	minus cake	minus filtrate	equals release
3.33	0.2	0.8	2.3 lbs released by press per roll-off of filter cake

19 roll-offs of cake produced in 2012
43.7 lbs

Methyl Ethyl Ketone - release from filter press

Feed to filter press 155 mg/L x 20,000 gal x 3.78 L/gal equals 11718000 mg or 11718 g or 25.8 lbs MEK in feed to lime slurry/press
after Fentons 9/20/12

15,260 lbs (6928 kg) of cake produced, 70% moisture (10682 lbs or 1280 gallons of aqueous feed remains in cake)
10/6/12 second drop
100 mg/kg x6928 kg equals 692.8 g or 1.5 lbs MEK in cake

Filtrate 9/20/12 (18,720 gallons, 1280 gal remained with cake)
119 mg/L x70762 L equals 8420678 mg or 8421 g or 18.5 lbs in filtrate

Feed	minus cake	minus filtrate	equals release
25.8	1.5	18.5	5.8 lbs released by press per roll-off of filter cake

19 roll-offs of cake produced in 2012
110.2 lbs

Methyl Isobutyl Ketone - release from filter press

Feed to filter press 20.2 mg/L x 20,000 gal x 3.78 L/gal equals 1527120 mg or 1527 g or 3.36 lbs MEK in feed to lime slurry/press
after Fentons 9/20/12

15,260 lbs (6928 kg) of cake produced, 70% moisture (10682 lbs or 1280 gallons of aqueous feed remains in cake)
10/6/12 second drop
less than 9.37 mg/kg x6928 kg equals 64.9 g or 0.14 lbs MEK in cake

Filtrate 9/20/12 (18,720 gallons, 1280 gal remained with cake)
12 mg/L x70762 L equals 849144 mg or 849.1 g or 1.87 lbs in filtrate

Feed	minus cake	minus filtrate	equals release
3.36	0.14	1.87	1.35 lbs released by press per roll-off of filter cake

19 roll-offs of cake produced in 2012
25.7 lbs

TABLE 17

HEATING EQUIPMENT EMISSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Unit	Comment
1. Two Steam Boilers (AWTF)	Propane Fired 1.633 MMBtu/hr
2. Hot Water Boiler	Propane Fired 1.0 MMBtu/hr
3. Propane Heaters	Propane Fired 2.709 MMBtu/hr (total for facility)
4. Fulton Model 50063 (Locker Room)	Propane Fired 0.506MMBtu/hr
5. Copper Hydronic Boiler (Firewater Pump Bld.)	Propane Fired 1.34 MMBtu/hr
6. Davo Hastings Heaters (Two - Drum Bld. Roof)	Propane Fired 0.160 MMBtu/hr each
7. Stabilization Main Heaters (One - Stab. Bld. Roof)	Propane Fired 4.0 MMBtu/hr
8. Pug Mill Heaters (One - Stab. Pug Mill Area)	Propane Fired 0.400 MMBtu/hr

Emission Factors for Propane Combustion

Emission Factors (lb/MMBtu)	
PM-10	0.008
NOx	0.143
SOx (% s)	0.0002
CO	0.082
VOC	0.011
CO_2	137.363
CH_4	0.002
N_2O	0.010

A = weight % ash in fuel. Multiply numeric value by A to obtain emission factor.
For ex.: if ash content is 5% then A = 5. Actual value is 0.01% Ash from NOCO Data Sheet
s = weight % sulfur in fuel. Multiply numeric value by s to obtain emission factor.
For ex.: if sulfur content is 3.4%, then s = 3.4. Actual Value is 0.2% Sulfur from Buckeye Pipe Line Co. Data Sheet

1. Two Steam Boilers (AWTF)		Emissions (for two units)	
Note: Two units run together for 1/2 year, so total 8760 hrs./yr	Pollutant	lb/yr	TPY
	PM-10	110.04	0.06
Rating (MMBtu/hr) 1.633	NOx	2043.58	1.02
Operation (hours/year) = 8760	SOx	3.14	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	1178.99	0.59
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	157.20	0.08
	CO_2	1964983.52	982.49
	CH_4	31.44	0.02
	N_2O	141.48	0.07

2. Hot Water Boiler		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	67.38	0.03
Rating (MMBtu/hr) 1.0	NOx	1251.43	0.63
Operation (hours/year) = 8760	SOx	1.93	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	721.98	0.36
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	96.26	0.05
	CO_2	1203296.70	601.65
	CH_4	19.25	0.01
	N_2O	86.64	0.04

3. Propane Heaters		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	91.27	0.05
Rating (MMBtu/hr) 2.709	NOx	1695.06	0.85
Operation (hours/year) = 4380	SOx	2.61	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	977.92	0.49
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	130.39	0.07
	CO_2	1629865.38	814.93
	CH_4	26.08	0.01
	N_2O	117.35	0.06

TABLE 17

HEATING EQUIPMENT EMISSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

4. Fulton Model 50063 (Locker Room)		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	17.05	0.01
Rating (MMBtu/hr) 0.506	NOx	316.61	0.16
Operation (hours/year) = 4380	SOx	0.49	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	182.66	0.09
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	24.35	0.01
	CO_2	304434.07	152.22
	CH_4	4.87	0.00
	N_2O	21.92	0.01

5. Copper Hydronic Boiler (Firewater Pump Bld.)		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	45.15	0.02
Rating (MMBtu/hr) 1.34	NOx	838.46	0.42
Operation (hours/year) = 4380	SOx	1.29	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	483.73	0.24
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	64.50	0.03
	CO_2	806208.79	403.10
	CH_4	12.90	0.01
	N_2O	58.05	0.03

6. Davo Hastings Heaters (Two - Drum Bld. Roof)		Emissions (for two units)	
	Pollutant	lb/yr	TPY
Note: Two units run together for 1/2 year, so total 8760 hrs./yr	PM-10	10.78	0.01
Rating (MMBtu/hr) 0.160	NOx	200.23	0.10
Operation (hours/year) = 8760	SOx	0.31	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	115.52	0.06
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	15.40	0.01
	CO_2	192527.47	96.26
	CH_4	3.08	0.00
	N_2O	13.86	0.01

7. Stabilization Main Heaters (One - Stab. Bld. Roof)		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	134.77	0.07
Rating (MMBtu/hr) 4.0	NOx	2502.86	1.25
Operation (hours/year) = 4380	SOx	3.85	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	1443.96	0.72
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	192.53	0.10
	CO_2	2406593.41	1203.30
	CH_4	38.51	0.02
	N_2O	173.27	0.09

8. Pug Mill Heaters (One - Stab. Pug Mill Area)		Emissions	
	Pollutant	lb/yr	TPY
	PM-10	13.48	0.01
Heat production (MMBtu/hr) 0.400	NOx	250.29	0.13
Operation (hours/year) = 4380	SOx	0.39	0.00
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(1)(i)	CO	144.40	0.07
Stationary combustion furnace with capacity <10MMBtu/hr	VOC	19.25	0.01
	CO_2	240659.34	120.33
	CH_4	3.85	0.00
	N_2O	17.33	0.01

Total Heating Equipment Combustion Emissions	Emissions	
Pollutant	lb/yr	TPY
PM-10	489.92	0.24
NOx	9098.51	4.55
SOx	14.00	0.01
CO	5249.14	2.62
VOC	699.89	0.35
CO_2	8748568.68	4374.28
CH_4	139.98	0.07
N_2O	629.90	0.31

TABLE 18

DIESEL ENGINE EMISSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Unit	**Comment**
Cummins Diesel Fire-Water Pump - Ser. No. 034302	187 Horsepower

Emission Factors for Diesel Industrial Engines - From AP-42 Table 3.3.1

Emission factors (lb/hp-hr):	
PM-10	0.0022
NOx	0.031
SOx	0.00205
CO	0.00668
VOC	0.0025
CO_2	1.15

Cummins Diesel Fire-Water Pump - Ser. No. 034302		Calculated Emissions lb/yr	TPY
Refer to Section 3.3 of USEPA's AP-42	PM-10	9.87	0.005
Horsepower Output = 187	NOx	139.13	0.070
Operation (hours/year) = 24	SOx	9.20	0.005
Exempt from Air Permitting 6NYCRR Part 201-3.2(c)(3)(ii)	CO	29.98	0.015
Stationary internal combustion engine <400bhp.	VOC	11.22	0.006
	CO_2	5161.20	2.581

Note: Diesel engine is operated one day per month, for a maximum of 2 hours each occurrence.

TABLE 19

ESTIMATED LABORATORY EMISSIONS
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

2012 Chemical Purchases (VOCs Only)

Chemical Name	Units Purchased	Liters/Unit	Total Gallons/Year	Specific Gravity	Weight (pounds/year)	Actual Emissions lb/yr	Actual Emissions TPY
Acetone	20	4	21.13	0.790	139.324	97.53	0.05
n-Hexane (85%)*	40	4	42.27	0.659	232.442	162.71	0.08
Methylene Chloride*	16	4	16.91	1.30	183.414	128.39	0.06

Calculated VOC emissions assumes that 70% of all chemicals purchased are evaporated when used in the laboratory.
Calculated Potential VOC emissions is based on Actual Usage x 2.
Chemicals indicated with a * are also Hazardous Air Pollutants (HAPs)

	lb/yr	TPY
Potential VOC Emissions =	325.42	0.39
Potential HAP Emissions =	582.20	0.29

2012 Chemical Purchases (Non VOC)

Chemical Name	Units Purchased	Liters/Unit	Total Gallons/Year	Specific Gravity	Weight (pounds/year)	Actual Emissions lb/yr	Actual Emissions TPY
30% Hydrogen Peroxide	1	0.5	0.13	1.19	1.312	0.13	0.00
Hydrochloric Acid*	6	2.5	3.96	1.30	42.988	4.30	0.00
Glacial Acetic Acid	18	0.5	2.38	1.05	20.833	2.08	0.00
Nitric Acid	16	2.5	10.57	1.41	124.157	12.42	0.01
1N Sodium Hydroxide	1	20	5.28	1.00	44.090	4.41	0.00
Sulfuric Acid	10	2.5	6.60	1.85	101.958	10.20	0.01

Calculated Non VOC emissions assumes that 10% of all chemicals purchased are evaporated when used in the laboratory.

	lb/yr	TPY
Potential Emissions (as Particulates) =	67.07	0.03
Potential HCl (HAP) Emissions =	8.60	0.00

Potential Emissions as Particulates is based on Actual Usage x 2, and assumes that these chemicals will be emitted as particulate matter.
Potential Emissions as Particulates does not include Hydrochloric Acid, which is calculated separately because it is a HAP.

	Total Laboratory Potential Emissions lb/yr	Total Laboratory Potential Emissions TPY
Particulates	67.07	0.03
VOCs	325.42	0.39
HAPs	590.80	0.39

TABLE 20

COMPOSITION OF SLF 1-6 LEACHATE ACCORDING TO 1994 STUDY
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Compound	CAS Number	VOC	HAP	Composition (µg/L) or (ppb)	Composition (% of total)	Average (µg/L) or (ppb)	Average (% of total)
Acetone	67-64-1			340,000	0.0340	969,665	0.09697
Anthracene	120-12-7	X		38,000	0.0038	2,873	0.00029
Benzene	71-43-2	X	X	86,000	0.0086	60,250	0.00603
Benz(A) Anthracene	56-55-3	X		0	0.0000	2,679	0.00027
Benzoic Acid	65-85-0	X		0	0.0000	678,085	0.06781
Benzyl alcohol	100-51-6	X		0	0.0000	12,626	0.00126
Bis(2-ethylhexyl)phthalate	117-81-7	X	X	730,000	0.0730	355,826	0.03558
2-Butanone	78-93-3	X		980,000	0.0980	838,723	0.08387
Butyl benzyl Phthalate	85-68-7	X		35,000	0.0035	6,778	0.00068
Carbon Disulfide	75-15-0	X	X	0	0.0000	25,238	0.00252
Carbon Tetrachloride	56-23-5	X	X	250,000	0.0250	71,768	0.00718
Chlorobenzene	108-90-7	X	X	2,200,000	0.2200	556,562	0.05566
Chloroform	67-66-3	X	X	570,000	0.0570	224,333	0.02243
1,1-Dichloroethane	75-34-3	X	X	88,000	0.0088	34,440	0.00344
1,2-Dichloroethane	107-06-2	X	X	200,000	0.0200	39,633	0.00396
1,1-Dichloroethene	75-35-4	X	X	0	0.0000	7,686	0.00077
1,2-Dichloroethene	156-59-2	X		0	0.0000	17,781	0.00178
1,2-Dichlorobenzene	95-50-1	X		0	0.0000	441,663	0.04417
1,3-Dichlorobenzene	541-73-1	X		0	0.0000	14,110	0.00141
1,4-Dichlorobenzene	106-46-7	X	X	0	0.0000	127,910	0.01279
Diethlyphthalate	84-66-2	X		90,000	0.0090	9,084	0.00091
Dimethlyphthalate	131-11-3	X	X	0	0.0000	5,277	0.00053
2,4-Dimethylphenol	105-67-9	X		0	0.0000	17,208	0.00172
Di-n-Butyl phthalate	84-74-2	X		340,000	0.0340	39,098	0.00391
Ethylbenzene	100-41-4	X	X	1,600,000	0.1600	436,369	0.04364
Fluoranthene	206-44-0	X		0	0.0000	952	0.00010
Hexachlorobenzene	118-74-1	X	X	0	0.0000	91,774	0.00918
Hexachlorobutadiene	87-68-3	X	X	0	0.0000	53,917	0.00539
Hexachloroethane	67-72-1	X	X	0	0.0000	14,913	0.00149
2-Hexanone	591-78-6	X		0	0.0000	29,827	0.00298
Isophorone	78-59-1	X	X	0	0.0000	2,124	0.00021
Methylene Chloride	75-09-2		X	5,400,000	0.5400	1,952,690	0.19527
2-Methylnapthalene	91-57-6	X		0	0.0000	31,547	0.00315
2-Methylphenol	95-48-7	X	X	0	0.0000	4,867	0.00049
4-Methyl-2-pentanone	108-10-1	X	X	1,700,000	0.1700	366,931	0.03669
4-Methylphenol	106-44-5	X	X	0	0.0000	25,745	0.00257
Naphthalene	91-20-3	X	X	1,100,000	0.1100	30,704	0.00307
PCB-1242	53469-21-9		X	4,100,000	0.4100	4,418,565	0.44186
PCB-1254	11097-69-1		X	1,400,000	0.1400	387	0.00004
PCB-1260	11096-82-5		X	0	0.0000	195,144	0.01951
Pentachlorophenol	87-86-5	X	X	0	0.0000	3,327	0.00033
Phenol	108-95-2	X	X	490,000	0.0490	583,406	0.05834
Phenanthrene	85-01-8	X		98,000	0.0098	8,172	0.00082
Pyrene	129-00-0	X		0	0.0000	1,147	0.00011
1,1,2,2-Tetrachloroethane	79-34-5	X	X	6,800,000	0.6800	1,286,782	0.12868
Tetrachloroethene	127-18-4	X	X	4,100,000	0.4100	1,667,635	0.16676
Toluene	108-88-3	X	X	6,500,000	0.6500	2,369,878	0.23699
1,2,4-Trichlorobenzene	120-82-1	X	X	4,800,000	0.4800	1,257,908	0.12579
1,1,1-Trichloroethane	71-55-6		X	6,300,000	0.6300	2,546,767	0.25468
1,1,2-Trichloroethane	79-00-5	X	X	290,000	0.0290	90,055	0.00901
Trichloroethene	79-01-6	X	X	12,000,000	1.2000	4,520,666	0.45207
2,4,5-Trichlorophenol	95-95-4	X	X	0	0.0000	16,061	0.00161
2,4,6-Trichlorophenol	88-06-2	X	X	0	0.0000	8,030	0.00080
Vinyl Chloride	75-01-4	X	X	0	0.0000	1,950	0.00020
Xylenes	1330-20-7	X	X	8,900,000	0.8900	2,127,698	0.21277
TOTALS				71,525,000	7.1525	28,705,233	2.87052
Remaining VOCs / HAPs				928,475,000	92.8475	221,294,767	22.12948
Remaining Water				0	0	750,000,000	75.00000

TABLE 21

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 1-6 LANDFILL
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (μg/L)	C_l	C_l / MW_i	X_l	H_{Ci} (m^3-atm/mol)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{Ji} (g/s)	Diffusion E_{Ji} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Leachate Transfer E_{Si} (g/truckload)	Leachate Transfer E_{Si} (lb/yr)	Leachate Transfer VOC Emissions (lb/yr)	Leachate Transfer HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
Method 8260B VOCs																						
1,1,1-Trichloroethane	71-55-6		X	133.4	3900	3.90E-06	2.92E-08	5.27E-07	1.72E-02	5.04E-05	2.75E-06	1.03E-14	5.84E-06	0.41		0.41	2.41E-02	2.76E-03		0.00		0.41
1,1,2-Trichloro-1,2,2-trichfluoroethane	76-13-1	X		187.376	39	3.90E-08	2.08E-10	3.75E-09	3.33E-01	6.95E-05	5.32E-07	2.00E-15	1.13E-06	0.08	0.08		2.41E-04	2.76E-05	0.00		0.08	
1,1,2-Trichloroethane	79-00-5	X	X	133.4	4800	4.80E-06	3.60E-08	6.49E-07	9.13E-04	3.29E-05	1.80E-07	6.74E-16	3.82E-07	0.03	0.03	0.03	2.96E-02	3.40E-03	0.00	0.00	0.03	0.03
1,1-Dichloroethane	75-34-3	X	X	98.96	2700	2.70E-06	2.73E-08	4.92E-07	5.62E-03	1.54E-04	6.22E-07	2.33E-15	1.32E-06	0.09	0.09	0.09	1.67E-02	1.91E-03	0.00	0.00	0.09	0.09
1,1-Dichloroethene	75-35-4	X	X	96.94	410	4.10E-07	4.23E-09	7.63E-08	2.61E-02	1.11E-04	4.39E-07	1.64E-15	9.32E-07	0.06	0.06	0.06	2.53E-03	2.90E-04	0.00	0.00	0.07	0.07
1,2-Dibromoethane	106-93-4	X	X	187.86	560	5.60E-07	2.98E-09	5.38E-08	6.73E-04	2.01E-06	1.54E-08	5.79E-17	3.28E-08	0.00	0.00	0.00	3.46E-03	3.97E-04	0.00	0.00	0.00	0.00
1,2-Dichloroethane	107-06-2	X	X	98.96	6900	6.90E-06	6.97E-08	1.26E-06	9.79E-04	6.84E-05	2.77E-07	1.04E-15	5.88E-07	0.04	0.04	0.04	4.26E-02	4.89E-03	0.00	0.00	0.05	0.05
1,4-Dioxane	123-91-1	X	X	88.11	95000	9.50E-05	1.08E-06	1.94E-05	1.07E-05	1.16E-05	4.17E-08	1.56E-16	8.85E-08	0.01	0.01	0.01	5.87E-01	6.73E-02	0.07	0.07	0.07	0.07
Acetonitrile	75-05-8	X	X	41.05	6400	6.40E-06	1.56E-07	2.81E-06	2.93E-05	4.58E-06	7.69E-09	2.88E-17	1.63E-08	0.00	0.00	0.00	3.95E-02	4.53E-03	0.00	0.00	0.01	0.01
Acrylonitrile	107-13-1	X	X	53.06	160	1.60E-07	3.02E-09	5.44E-08	1.38E-04	4.17E-07	9.05E-10	3.39E-18	1.92E-09	0.00	0.00	0.00	9.88E-04	1.13E-04	0.00	0.00	0.00	0.00
Benzene	71-43-2	X	X	78.11	920	9.20E-07	1.18E-08	2.12E-07	5.55E-03	6.55E-05	2.09E-07	7.85E-16	4.45E-07	0.03	0.03	0.03	5.68E-03	6.51E-04	0.00	0.00	0.03	0.03
Carbon disulfide	75-15-0	X	X	76.14	27	2.70E-08	3.55E-10	6.40E-09	3.03E-02	1.08E-05	3.35E-08	1.26E-16	7.12E-08	0.00	0.00	0.00	1.67E-04	1.91E-05	0.00	0.00	0.00	0.00
Chlorobenzene	108-90-7	X	X	112.56	1000	1.00E-06	8.88E-09	1.60E-07	3.70E-03	3.29E-05	1.52E-07	5.69E-16	3.22E-07	0.02	0.02	0.02	6.18E-03	7.08E-04	0.00	0.00	0.02	0.02
Chloroethane	75-00-3	X	X	64.51	110	1.10E-07	1.71E-09	3.08E-08	1.11E-02	1.90E-05	5.00E-08	1.88E-16	1.06E-07	0.01	0.01	0.01	6.79E-04	7.79E-05	0.00	0.00	0.01	0.01
Chloroform	67-66-3	X	X	119.38	7800	7.80E-06	6.53E-08	1.18E-06	3.67E-03	2.40E-04	1.17E-06	4.40E-15	2.49E-06	0.17	0.17	0.17	4.82E-02	5.52E-03	0.01	0.01	0.18	0.18
Chloromethane	74-87-3	X	X	50.49	84	8.40E-08	1.66E-09	3.00E-08	8.54E-03	1.42E-05	2.94E-08	1.10E-16	6.25E-08	0.00	0.00	0.00	5.19E-04	5.95E-05	0.00	0.00	0.00	0.00
Dibromomethane	74-95-3	X		173.83	3500	3.50E-06	2.01E-08	3.63E-07	8.22E-04	1.66E-05	1.18E-07	4.42E-16	2.51E-07	0.02	0.02		2.16E-02	2.48E-03	0.00		0.02	
Ethyl ether	60-29-7	X		74.12	9400	9.40E-06	1.27E-07	2.29E-06	1.35E-03	1.72E-04	5.20E-07	1.95E-15	1.11E-06	0.08	0.08		5.81E-02	6.66E-03	0.01		0.08	
Ethylbenzene	100-41-4	X	X	106.17	170	1.70E-07	1.60E-09	2.89E-08	7.88E-03	1.26E-05	5.49E-08	2.06E-16	1.17E-07	0.01	0.01	0.01	1.05E-03	1.20E-04	0.00	0.00	0.01	0.01
Isobutanol	78-83-1	X		74.12	37000	3.70E-05	4.99E-07	9.00E-06	1.19E-05	5.95E-06	1.80E-08	6.77E-17	3.83E-08	0.00	0.00		2.29E-01	2.62E-02	0.03		0.03	
Tetrachloroethene	127-18-4	X	X	165.83	500	5.00E-07	3.02E-09	5.44E-08	1.84E-02	5.56E-05	3.77E-07	1.41E-15	8.01E-07	0.06	0.06	0.06	3.09E-03	3.54E-04	0.00	0.00		0.06
Toluene	108-88-3	X	X	92.14	4800	4.80E-06	5.21E-08	9.40E-07	6.64E-03	3.47E-04	1.31E-06	4.90E-15	2.78E-06	0.19	0.19	0.19	2.96E-02	3.40E-03	0.00	0.00	0.20	0.20
trans-1,2-Dichloroethene	156-60-5	X		96.94	300	3.00E-07	3.09E-09	5.58E-08	9.38E-03	2.91E-05	1.15E-07	4.33E-16	2.45E-07	0.02	0.02		1.85E-03	2.12E-04	0.00		0.02	
Xylenes	1330-20-7	X	X	106.16	820	8.20E-07	7.72E-09	1.39E-07	7.04E-03	5.45E-05	2.37E-07	8.87E-16	5.03E-07	0.03	0.03	0.03	5.06E-03	5.81E-04	0.00	0.00	0.04	0.04
Cyclohexanone	108-94-1	X		98.15	2100	2.10E-06	2.14E-08	3.86E-07	1.20E-05	2.57E-07	1.03E-09	3.87E-18	2.19E-09	0.00	0.00		1.30E-02	1.49E-03	0.00		0.00	
1,1,2,2-Tetrachloroethane	79-34-5	X	X	167.85	12000	1.20E-05	7.15E-08	1.29E-06	3.45E-04	2.47E-05	1.70E-07	6.36E-16	3.61E-07	0.03	0.03	0.03	7.41E-02	8.50E-03	0.01	0.01	0.03	0.03
2-Butanone	78-93-3	X		72.11	550000	5.50E-04	7.63E-06	1.38E-04	1.05E-05	8.03E-05	2.37E-07	8.88E-16	5.03E-07	0.03	0.03		3.40E+00	3.89E-01	0.39		0.42	
4-Methyl-2-pentanone	108-10-1	X	X	100.16	79000	7.90E-05	7.89E-07	1.42E-05	3.90E-04	3.08E-04	1.26E-06	4.74E-15	2.68E-06	0.19	0.19	0.19	4.88E-01	5.59E-02	0.06	0.06	0.24	0.24
Acetone	67-64-1			58.08	740000	7.40E-04	1.27E-05	2.30E-04	3.88E-05	4.95E-04	1.18E-06	4.41E-15	2.50E-06	0.17			4.57E+00	5.24E-01				
Methylene Chloride	75-09-2		X	84.93	220000	2.20E-04	2.59E-06	4.67E-05	2.19E-03	5.69E-03	1.97E-05	7.41E-14	4.20E-05	2.92		2.92	1.36E+00	1.56E-01		0.16		3.07
Trichloroethene	79-01-6	X	X	131.39	13000	1.30E-05	9.89E-08	1.78E-06	1.03E-02	1.02E-03	5.49E-06	2.06E-14	1.17E-05	0.81	0.81	0.81	8.03E-02	9.21E-03	0.01	0.01	0.82	0.82
Method 8270C SVOCs																						
1,2,4,5-Tetrachlorobenzene	95-94-3	X		215.89	210	2.10E-07	9.73E-10	1.75E-08	1.00E-03	9.75E-07	8.61E-09	3.23E-17	1.83E-08	0.00	0.00		1.30E-03	1.49E-04	0.00		0.00	
2,4-Dichlorophenol	120-83-2	X		163	1300	1.30E-06	7.98E-09	1.44E-07	3.16E-06	2.53E-08	1.68E-10	6.31E-19	3.58E-10	0.00	0.00		8.03E-03	9.21E-04	0.00		0.00	
2,4-Dimethylphenol	105-67-9	X		122.16	2600	2.60E-06	2.13E-08	3.84E-07	2.00E-06	4.27E-08	2.13E-10	7.99E-19	4.53E-10	0.00	0.00		1.61E-02	1.84E-03	0.00		0.00	
2-Chlorophenol	95-57-8	X		128.56	230	2.30E-07	1.79E-09	3.23E-08	3.91E-04	7.01E-07	3.69E-09	1.38E-17	7.83E-09	0.00	0.00		1.42E-03	1.63E-04	0.00		0.00	
2-Methylphenol	95-48-7	X	X	108.14	2200	2.20E-06	2.03E-08	3.67E-07	1.20E-06	2.45E-08	1.08E-10	4.06E-19	2.30E-10	0.00	0.00	0.00	1.36E-02	1.56E-03	0.00	0.00	0.00	0.00
3-Methylphenol	108-39-4	X	X	108.14	17000	1.70E-05	1.57E-07	2.84E-06	8.65E-07	1.36E-07	6.03E-10	2.26E-18	1.28E-09	0.00	0.00	0.00	1.05E-01	1.20E-02	0.01	0.01	0.01	0.01
4-Chloroaniline	106-47-8	X		127.57	3000	3.00E-06	2.35E-08	4.24E-07	3.31E-07	7.80E-09	4.07E-11	1.53E-19	8.65E-11	0.00	0.00		1.85E-02	2.12E-03	0.00		0.00	
4-Methylphenol	106-44-5	X	X	108.13	17000	1.70E-05	1.57E-07	2.84E-06	7.92E-07	1.25E-07	5.52E-10	2.07E-18	1.17E-09	0.00	0.00	0.00	1.05E-01	1.20E-02	0.01	0.01	0.01	0.01
Acetophenone	98-86-2	X	X	120.15	3400	3.40E-06	2.83E-08	5.10E-07	1.04E-05	2.95E-07	1.45E-09	5.43E-18	3.08E-09	0.00	0.00	0.00	2.10E-02	2.41E-03	0.00	0.00	0.00	0.00
Aniline	62-53-3	X	X	93.13	2200	2.20E-06	2.36E-08	4.26E-07	2.01E-06	4.76E-08	1.81E-10	6.80E-19	3.85E-10	0.00	0.00	0.00	1.36E-02	1.56E-03	0.00	0.00	0.00	0.00
Diethyl phthalate	84-66-2	X		222.24	270	2.70E-07	1.21E-09	2.19E-08	4.50E-07	5.48E-10	4.98E-12	1.87E-20	1.06E-11	0.00	0.00		1.67E-03	1.91E-04	0.00		0.00	
Dimethyl phthalate	131-11-3	X	X	194.18	280	2.80E-07	1.44E-09	2.60E-08	1.10E-07	1.59E-10	1.26E-12	4.73E-21	2.68E-12	0.00	0.00	0.00	1.73E-03	1.98E-04	0.00	0.00	0.00	0.00
Pentachlorobenzene	608-93-5	X		250.34	300	3.00E-07	1.20E-09	2.16E-08	7.03E-04	8.44E-07	8.64E-09	3.24E-17	1.84E-08	0.00	0.00		1.85E-03	2.12E-04	0.00		0.00	
Pyridine	110-86-1	X		79.1	4600	4.60E-06	5.82E-08	1.05E-06	1.10E-05	6.41E-07	2.07E-09	7.78E-18	4.41E-09	0.00	0.00		2.84E-02	3.26E-03	0.00		0.00	
Phenol	108-95-2	X	X	94.11	140000	1.40E-04	1.49E-06	2.68E-05	3.97E-07	5.92E-07	2.28E-09	8.54E-18	4.84E-09	0.00	0.00	0.00	8.65E-01	9.91E-02	0.10	0.10	0.10	0.10
Method 8015B - Nonhalogenated Organic Compounds																						
Methanol	67-56-1	X	X	32.04	9.70E+05	9.70E-04	3.03E-05	5.46E-04	1.35E-04	4.10E-03	5.37E-06	2.01E-14	1.14E-05	0.79	0.79	0.79	5.99E+00	6.87E-01	0.69	0.69	1.48	1.48
Butyl alcohol, n-	71-36-3	X		74.12	290000	2.90E-04	3.91E-06	7.06E-05	5.57E-06	2.18E-05	6.62E-08	2.48E-16	1.41E-07	0.01	0.01		1.79E+00	2.05E-01	0.21		0.22	
Method 608 - Organochloride Pesticides in Water																						
4,4'-DDD	72-54-8	X		320.04	2.6	2.60E-09	8.12E-12	1.47E-10	6.60E-06	5.37E-11	7.03E-13	2.64E-21	1.49E-12	0.00	0.00		1.61E-05	1.84E-06	0.00		0.00	
4,4-DDT	50-29-3	X		354.49	2.5	2.50E-09	7.05E-12	1.27E-10	1.29E-05	9.12E-11	1.32E-12	4.96E-21	2.81E-12	0.00	0.00		1.54E-05	1.77E-06	0.00		0.00	
alpha-BHC	319-84-6	X		290.83	6.2	6.20E-09	2.13E-11	3.85E-10	6.70E-06	1.43E-10	1.70E-12	6.38E-21	3.62E-12	0.00	0.00		3.83E-05	4.39E-06	0.00		0.00	
beta-BHC	319-85-7	X		290.83	13	1.30E-08	4.47E-11	8.06E-10	4.40E-07	1.97E-11	2.34E-13	8.79E-22	4.98E-13	0.00	0.00		8.03E-05	9.21E-06	0.00		0.00	
delta-BHC	319-86-8	X		290.83	14	1.40E-08	4.81E-11	8.68E-10	4.30E-07	2.07E-11	2.47E-13	9.25E-22	5.24E-13	0.00	0.00		8.65E-05	9.91E-06	0.00		0.00	
Endrin	72-20-8	X		380.91	1.4	1.40E-09	3.68E-12	6.63E-11	7.51E-06	2.77E-11	4.31E-13	1.62E-21	9.16E-13	0.00	0.00		8.65E-06	9.91E-07	0.00		0.00	
Lindane	58-89-9	X	X	290.83	14	1.40E-08	4.81E-11	8.68E-10	5.14E-06	2.48E-10	2.95E-12	1.11E-20	6.27E-12	0.00	0.00	0.00	8.65E-05	9.91E-06	0.00	0.00	0.00	0.00
Method 8151A - Herbicides																						
2,4-D	94-75-7	X		221.04	1300	1.30E-06	5.88E-09	1.06E-07	8.60E-06	5.07E-08	4.58E-10	1.72E-18	9.74E-10	0.00	0.00		8.03E-03	9.21E-04	0.00		0.00	
Method 8280A - Dioxins and Furans																						
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [3]	35822-46-9	X		425.31	2.4	2.40E-09	5.64E-12	1.02E-10	2.18E-05	1.23E-10	2.14E-12	8.04E-21	4.56E-12	0.00	0.00		1.48E-05	1.70E-06	0.00		0.00	
OCDD	3268-87-9	X		459.75	1.5	1.50E-09	3.26E-12	5.89E-11	6.70E-06	2.19E-11	4.12E-13	1.54E-21	8.75E-13	0.00	0.00		9.26E-06	1.06E-06	0.00		0.00	
OCDF	39001-02-0	X		443.75	1.3	1.30E-09	2.93E-12	5.28E-11	1.90E-06	5.58E-12	1.01E-13	3.80E-22	2.15E-13	0.00	0.00		8.03E-06	9.21E-07	0.00		0.00	
PCBs (from Tank T-130 sample)																						
Aroclor 1242	53469-21-9	X	X	291.99	2810	2.81E-06	9.62E-09	1.74E-07	5.20E-04	5.02E-06	5.99E-08	2.25E-16	1.27E-07	0.01	0.01	0.01	1.74E-02	1.99E-03	0.00	0.00	0.01	0.01
Aroclor 1254	11097-69-1	X	X	326.44	795	7.95E-07	2.44E-09	4.39E-08	2.00E-03	4.88E-06	6.52E-08	2.44E-16	1.38E-07	0.01	0.01	0.01	4.91E-03	5.63E-04	0.00	0.00	0.01	0.01
Aroclor 1260	11096-82-5	X	X	395.33	690	6.90E-07	1.75E-09	3.15E-08	4.60E-03	8.05E-06	1.30E-07	4.88E-16	2.76E-07	0.02	0.02	0.02	4.26E-03	4.89E-04	0.00	0.00	0.02	0.02
																					#VALUE!	#VALUE!
Water				18	9.97E+08	9.97E-01	5.54E-02	9.99E-01	---												0.00	#VALUE!

Variables of Interest

D_{si} =	7.5E-09	cm^2/s	(PVC liner)	
l =	2.0	cm	(5 feet of clay + 20-mil PVC liner)	
A =	14	acres =	5.7E+08	cm^2
V_{truck} =	21	m^3		
P_t =	303	mmHg		
N_v =	342.4	mol		
# Trucks / year =	52	ıce per week)		

	Diffusion	Leachate Transfer	Total
TOTALS	2.86	1.63	4.49
	5.95	1.15	7.09

Notes:
1 Analytical results provided by CWM

TABLE 22

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 7 LANDFILL
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

													Diffusion			Leachate Transfer			Total	
Detected Compounds	**CAS Number**	**VOC**	**HAP**	**MW_i (g/mol)**	**Leachate Concentration [1] (µg/L)**	**C_l**	**C_l/ MW_i**	**X_i**	**H_{ti} (m^3-atm/mol)**	**P_i (atm)**	**C_{si} (g/cm^3)**	**J_i (g/cm^2-s)**	**E_{1i} (g/s)**	**E_{1i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**	**E_{3i} (g/truckload)**	**E_{3i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**
Toluene	108-88-3	X	X	92.14	5990	5.99E-06	6.50E-08	1.17E-06	6.64E-03	4.32E-04	1.63E-06	6.10E-15	2.77E-06	0.19	0.19	0.19	3.69E-02	4.23E-03	0.00	0.00	0.20	0.20
Xylenes	1330-20-7	X	X	106.16	17600	1.76E-05	1.66E-07	2.99E-06	7.04E-03	1.17E-03	5.07E-06	1.90E-14	8.62E-06	0.60	0.60	0.60	1.09E-01	1.24E-02	0.01	0.01	0.61	0.61
2-Butanone	78-93-3	X		72.11	179000	1.79E-04	2.48E-06	4.47E-05	1.05E-05	2.61E-05	7.69E-08	2.88E-16	1.31E-07	0.01	0.01		1.10E+00	1.27E-01	0.13		0.14	
Acetone	67-64-1			58.08	180000	1.80E-04	3.10E-06	5.58E-05	3.88E-05	1.20E-04	2.86E-07	1.07E-15	4.86E-07	0.03			1.11E+00	1.27E-01				
Methylene Chloride	75-09-2		X	84.93	167000	1.67E-04	1.97E-06	3.54E-05	2.19E-03	4.31E-03	1.50E-05	5.61E-14	2.54E-05	1.77		1.77	1.03E+00	1.18E-01		0.12		1.89
4-Methyl-2-pentanone	108-10-1	X	X	100.16	2500	2.50E-06	2.50E-08	4.49E-07	3.90E-04	9.74E-06	3.99E-08	1.50E-16	6.78E-08	0.00	0.00	0.00	1.54E-02	1.77E-03	0.00	0.00		0.01
Phenol	108-95-2	X	X	94.11	73000	7.30E-05	7.76E-07	1.40E-05	3.97E-07	3.08E-07	1.19E-09	4.45E-18	2.02E-09	0.00	0.00	0.00	4.50E-01	5.16E-02	0.05	0.05		0.05
Aroclor 1242	53469-21-9	X	X	291.99	480	4.80E-07	1.64E-09	2.96E-08	5.20E-04	8.55E-07	1.02E-08	3.83E-17	1.74E-08	0.00	0.00	0.00	2.96E-03	3.39E-04	0.00	0.00	0.00	0.00
														TOTALS	0.81	2.57			0.20	0.19	1.00	2.75

Variables of Interest

D_{ei} = 7.5E-09 cm^2/s (PVC liner)
l = 2.0 cm (4.5 feet of clay + 20-mil PVC liner)
A = 11.2 acres = 4.5E+08 cm^2

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 23

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 10 LANDFILL
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (µg/L)	C_l	C_l / MW_i	X_i	H_{ci} (m^3-atm/mol)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{1i} (g/s)	Diffusion E_{1i} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Leachate Transfer E_{3i} (g/truckload)	Leachate Transfer E_{3i} (lb/yr)	Leachate Transfer VOC Emissions (lb/yr)	Leachate Transfer HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
4-Methyl-2-pentanone	108-10-1	X	X	100.16	11900	1.19E-05	1.19E-07	2.14E-06	3.90E-04	4.64E-05	1.90E-07	7.12E-16	1.99E-07	0.01	0.01	0.01	7.34E-02	8.41E-03	0.01	0.01	0.02	0.02
2-Butanone	78-93-3	X		72.11	120000	1.20E-04	1.66E-06	3.00E-05	1.05E-05	1.75E-05	5.15E-08	1.93E-16	5.40E-08	0.00	0.00		7.40E-01	8.48E-02	0.08		0.09	
Acetone	67-64-1			58.08	236000	2.36E-04	4.06E-06	7.32E-05	3.88E-05	1.58E-04	3.75E-07	1.40E-15	3.92E-07	0.03			1.46E+00	1.67E-01				
Methylene Chloride	75-09-2		X	84.93	24900	2.49E-05	2.93E-07	5.28E-06	2.19E-03	6.42E-04	2.23E-06	8.37E-15	2.34E-06	0.16		0.16	1.54E-01	1.76E-02		0.02		0.18
Phenol	108-95-2	X	X	94.11	28000	2.80E-05	2.98E-07	5.36E-06	3.97E-07	1.18E-07	4.55E-10	1.71E-18	4.76E-10	0.00	0.00	0.00	1.73E-01	1.98E-02	0.02	0.02		0.02
Aroclor 1242	53469-21-9	X	X	291.99	2810	2.81E-06	9.62E-09	1.73E-07	5.20E-04	5.01E-06	5.98E-08	2.24E-16	6.26E-08	0.00	0.00	0.00	1.73E-02	1.99E-03	0.00	0.00	0.01	0.01
Aroclor 1254	11097-69-1	X	X	326.44	795	7.95E-07	2.44E-09	4.39E-08	2.00E-03	4.87E-06	6.50E-08	2.44E-16	6.81E-08	0.00	0.00	0.00	4.90E-03	5.62E-04	0.00	0.00	0.01	0.01
														TOTALS	0.03	0.19			0.12	0.05	0.14	0.23

Variables of Interest

D_{ei} = 7.5E-09 cm^2/s (PVC liner)
l = 2.0 cm (4.5 feet of clay + 20-mil PVC liner)
A = 6.9 acres = 2.8E+08 cm^2

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 24

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 11 LANDFILL
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

													Diffusion			Leachate Transfer			Total	
Detected Compounds	**CAS Number**	**VOC**	**HAP**	**MW_i (g/mol)**	**Leachate Concentration [1] (µg/L)**	**C_i**	**C_i / MW_i**	**X_i**	**H_{ci} (m^3-atm/mol)**	**P_i (atm)**	**C_{si} (g/cm^3)**	**J_i (g/cm^2-s)**	**E_{1i} (g/s)**	**E_{1i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**	**E_{3i} (g/truckload)**	**E_{3i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**
Chloromethane	74-87-3	X	X	50.49	1000	1.00E-06	1.98E-08	3.57E-07	8.54E-03	1.69E-04	3.49E-07	3.27E-16	3.41E-07	0.02	0.02	0.02	6.16E-03	7.07E-04	0.00	0.00	0.02	0.02
4-Methyl-2-pentanone	108-10-1	X	X	100.16	2580	2.58E-06	2.58E-08	4.64E-07	3.90E-04	1.00E-05	4.12E-08	3.86E-17	4.01E-08	0.00	0.00	0.00	1.59E-02	1.82E-03	0.00	0.00	0.00	0.00
2-Butanone	78-93-3	X		72.11	14100	1.41E-05	1.96E-07	3.52E-06	1.05E-05	2.05E-06	6.06E-09	5.68E-18	5.90E-09	0.00	0.00		8.69E-02	9.96E-03	0.01		0.01	
Acetone	67-64-1			58.08	32000	3.20E-05	5.51E-07	9.92E-06	3.88E-05	2.14E-05	5.08E-08	4.76E-17	4.95E-08	0.00			1.97E-01	2.26E-02				
Methylene Chloride	75-09-2		X	84.93	500	5.00E-07	5.89E-09	1.06E-07	2.19E-03	1.29E-05	4.48E-08	4.20E-17	4.37E-08	0.00		0.00	3.08E-03	3.53E-04		0.00		
Phenol	108-95-2	X	X	94.11	1700	1.70E-06	1.81E-08	3.25E-07	3.97E-07	7.17E-09	2.76E-11	2.59E-20	2.69E-11	0.00	0.00	0.00	1.05E-02	1.20E-03	0.00	0.00		
Aroclor 1242	53469-21-9	X	X	291.99	457	4.57E-07	1.57E-09	2.82E-08	5.20E-04	8.14E-07	9.72E-09	9.11E-18	9.48E-09	0.00	0.00	0.00	2.82E-03	3.23E-04	0.00	0.00	0.00	0.00
Aroclor 1254	11097-69-1	X	X	326.44	1590	1.59E-06	4.87E-09	8.77E-08	2.00E-03	9.74E-06	1.30E-07	1.22E-16	1.27E-07	0.01	0.01	0.01	9.80E-03	1.12E-03	0.00	0.00	0.01	0.01
Aroclor 1260	11096-82-5	X	X	395.33	892	8.92E-07	2.26E-09	4.06E-08	4.60E-03	1.04E-05	1.68E-07	1.57E-16	1.64E-07	0.01	0.01	0.01	5.50E-03	6.30E-04	0.00	0.00	0.01	0.01
														TOTALS	0.05	0.05			0.02	0.01	0.06	0.06

Variables of Interest

D_{si} = 3.75E-09 cm^2/s (HDPE liner)
l = 4.0 cm (3 feet of clay + 40-mil HDPE liner)
A = 25.7 acres = 1E+09 cm^2

V_{truck} = 21 m^3
P_i = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 25

ESTIMATED VOC AND HAP EMISSIONS FROM SLF 12 LANDFILL
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (μg/L)	C_l	C_l / MW_i	X_l	H_{ci} (m^3-atm/mol)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{1i} (g/s)	Diffusion E_{1i} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Leachate Transfer E_{3i} (g/truckload)	Leachate Transfer E_{3i} (lb/yr)	Leachate Transfer VOC Emissions (lb/yr)	Leachate Transfer HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
Acetone	67-64-1			58.08	362	3.62E-07	6.23E-09	1.12E-07	3.88E-05	2.42E-07	5.74E-10	5.39E-19	4.82E-10	0.00			2.23E-03	2.56E-04				
4-Methyl-2-pentanone	108-10-1	X	X	100.16	10	1.00E-08	9.98E-11	1.80E-09	3.90E-04	3.89E-08	1.60E-10	1.50E-19	1.34E-10	0.00	0.00	0.00	6.16E-05	7.07E-06	0.00	0.00		
2-Butanone	78-93-3	X		72.11	10	1.00E-08	1.39E-10	2.50E-09	1.05E-05	1.46E-09	4.29E-12	4.03E-21	3.60E-12	0.00	0.00		6.16E-05	7.07E-06	0.00			
Methylene Chloride	75-09-2		X	84.93	2280	2.28E-06	2.68E-08	4.83E-07	2.19E-03	5.88E-05	2.04E-07	1.91E-16	1.71E-07	0.01		0.01	1.41E-02	1.61E-03		0.00		
Phenol	108-95-2	X	X	94.11	25	2.50E-08	2.66E-10	4.78E-09	3.97E-07	1.05E-10	4.06E-13	3.81E-22	3.40E-13	0.00	0.00	0.00	1.54E-04	1.77E-05	0.00	0.00		
Aroclor 1242	53469-21-9	X	X	291.99	226	2.26E-07	7.74E-10	1.39E-08	5.20E-04	4.02E-07	4.81E-09	4.51E-18	4.03E-09	0.00	0.00	0.00	1.39E-03	1.60E-04	0.00	0.00	0.00	0.00
Aroclor 1254	11097-69-1	X	X	326.44	289	2.89E-07	8.85E-10	1.59E-08	2.00E-03	1.77E-06	2.36E-08	2.22E-17	1.98E-08	0.00	0.00	0.00	1.78E-03	2.04E-04	0.00	0.00	0.00	0.00
Aroclor 1260	11096-82-5	X	X	395.33	227	2.27E-07	5.74E-10	1.03E-08	4.60E-03	2.64E-06	4.27E-08	4.00E-17	3.58E-08	0.00	0.00	0.00	1.40E-03	1.60E-04	0.00	0.00	0.00	0.00
														TOTALS	0.00	0.02			0.00	0.00	0.00	0.00

Variables of Interest

D_{si} = 3.75E-09 cm^2/s (HDPE liner)
l = 4.0 cm (2 feet of clay + 40-mil HDPE liner)
A = 22.1 acres = 8.9E+08 cm^2

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 nce per week)

Notes:
1 Analytical results provided by CWM

TABLE 26A

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-1 LANDFILL (FINAL COVER AREAS ONLY)
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Waste Concentration [1] (ppm)	C_i	C_i / MW_i	X_i	P_i* (atm)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{1i} (g/s)	Diffusion E_{1i} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6		X	133.4	1.15	1.15E-06	8.60E-09	2.45E-06	1.62E-01	3.97E-07	2.17E-09	2.03E-18	2.61E-09	1.82E-04		0.00		0.00
1,1,2-Trichloroethane (Cloroethene)	79-00-5	X	X	133.4	0.01	1.10E-08	8.27E-11	2.36E-08	3.29E-02	7.76E-10	4.23E-12	3.97E-21	5.11E-12	3.55E-07	0.00	0.00	0.00	0.00
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	X	X	181.5	9.99	9.99E-06	5.50E-08	1.57E-05	2.37E-04	3.72E-09	2.76E-11	2.59E-20	3.33E-11	2.32E-06	0.00	0.00	0.00	0.00
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	X	X	98.96	0.03	2.90E-08	2.93E-10	8.35E-08	1.05E-01	8.80E-09	3.56E-11	3.34E-20	4.29E-11	2.99E-06	0.00	0.00	0.00	0.00
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	X	X	147	0.35	3.52E-07	2.39E-09	6.83E-07	1.58E-03	1.08E-09	6.49E-12	6.08E-21	7.82E-12	5.44E-07	0.00	0.00	0.00	0.00
Acrylonitrile	107-13-1	X	X	53.1	0.00	3.10E-10	5.84E-12	1.67E-09	1.50E-01	2.50E-10	5.43E-13	5.09E-22	6.56E-13	4.56E-08	0.00	0.00	0.00	0.00
Benzene (Benzol, Coal naphhtha)	71-43-2	X	X	78.1	0.35	3.46E-07	4.42E-09	1.26E-06	1.25E-01	1.58E-07	5.05E-10	4.74E-19	6.09E-10	4.24E-05	0.00	0.00	0.00	0.00
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	117-81-7	X	X	390.56	7.33	7.33E-06	1.88E-08	5.36E-06	2.63E-10	1.41E-15	2.25E-17	2.11E-26	2.72E-17	1.89E-12	0.00	0.00	0.00	0.00
Carbon disulfide (Carbon bisulfide)	75-15-0	X	X	76.1	0.12	1.20E-07	1.57E-09	4.49E-07	4.82E-01	2.16E-07	6.73E-10	6.31E-19	8.12E-10	5.65E-05	0.00	0.00	0.00	0.00
Carbon tetrachloride (Tetrachloromethane)	56-23-5	X	X	153.8	0.01	8.09E-09	5.26E-11	1.50E-08	1.49E-01	2.23E-09	1.40E-11	1.32E-20	1.69E-11	1.18E-06	0.00	0.00	0.00	0.00
Chlordane	57-74-9	X	X	409.8	0.05	5.43E-08	1.32E-10	3.78E-08	1.30E-08	4.91E-16	8.23E-18	7.72E-27	9.93E-18	6.91E-13	0.00	0.00	0.00	0.00
Chlorobenzene (Benzene chloride)	108-90-7	X	X	112.6	6.77	6.77E-06	6.01E-08	1.71E-05	1.55E-02	2.66E-07	1.23E-09	1.15E-18	1.48E-09	1.03E-04	0.00	0.00	0.00	0.00
Chloroform (Trichloromethane)	67-66-3	X	X	119.38	0.04	3.93E-08	3.29E-10	9.39E-08	2.74E-01	2.57E-08	1.25E-10	1.18E-19	1.51E-10	1.05E-05	0.00	0.00	0.00	0.00
Cresol - mixed isomers	1319-77-3	X	X	108.1	0.00	9.42E-10	8.72E-12	2.49E-09	3.95E-04	9.82E-13	4.34E-15	4.07E-24	5.24E-15	3.64E-10	0.00	0.00	0.00	0.00
Dibutyl phthalate (DBP)	84-74-2	X	X	278.3	6.01	6.01E-06	2.16E-08	6.17E-06	1.30E-07	8.02E-13	9.12E-15	8.55E-24	1.10E-14	7.65E-10	0.00	0.00	0.00	0.00
Dichloromethane (Methylene chloride, DCM)	75-09-2		X	85	0.72	7.16E-07	8.42E-09	2.40E-06	5.76E-01	1.39E-06	4.82E-09	4.51E-18	5.81E-09	4.04E-04		0.00		0.00
Ethyl benzene (Phenylethane)	100-41-4	X	X	106.2	3.48	3.48E-06	3.27E-08	9.34E-06	1.15E-03	1.07E-08	4.65E-11	4.35E-20	5.60E-11	3.90E-06	0.00	0.00	0.00	0.00
Ethylene glycol	107-21-1	X	X	62.08	0.27	2.68E-07	4.32E-09	1.23E-06	1.66E-04	2.04E-10	5.19E-13	4.87E-22	6.26E-13	4.36E-08	0.00	0.00	0.00	0.00
Methyl ethyl ketone (MEK)	78-93-3	X		72.1	1.99	1.99E-06	2.76E-08	7.88E-06	1.32E-01	1.04E-06	3.06E-09	2.87E-18	3.69E-09	2.57E-04	0.00		0.00	
Naphthalene (and Methylnaphthalenes)	91-20-3	X	X	128.2	5.26	5.26E-06	4.11E-08	1.17E-05	3.03E-04	3.55E-09	1.86E-11	1.74E-20	2.24E-11	1.56E-06	0.00	0.00	0.00	0.00
Phenol (Benzenol, Carbolic acid)	108-95-2	X	X	94.1	0.00	8.81E-10	9.36E-12	2.67E-09	4.49E-04	1.20E-12	4.61E-15	4.32E-24	5.56E-15	3.87E-10	0.00	0.00	0.00	0.00
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	X	X	147	15.04	1.50E-05	1.02E-07	2.92E-05	3.02E-05	8.82E-10	5.30E-12	4.97E-21	6.39E-12	4.45E-07	0.00	0.00	0.00	0.00
Pyridine	110-86-1	X		79.1	0.00	7.17E-10	9.06E-12	2.59E-09	2.63E-02	6.81E-11	2.20E-13	2.06E-22	2.66E-13	1.85E-08	0.00		0.00	
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	127-18-4	X	X	165.83	0.90	9.00E-07	5.43E-09	1.55E-06	2.50E-02	3.87E-08	2.63E-10	2.46E-19	3.17E-10	2.20E-05	0.00	0.00	0.00	0.00
Toluene (Methylbenzene)	108-88-3	X	X	92.4	13.55	1.36E-05	1.47E-07	4.19E-05	3.95E-02	1.65E-06	6.24E-09	5.85E-18	7.53E-09	5.24E-04	0.00	0.00	0.00	0.00
Trichloroethylene (Acetylene trichloride)	79-01-6	X	X	131.4	0.60	6.02E-07	4.58E-09	1.31E-06	9.87E-02	1.29E-07	6.93E-10	6.50E-19	8.37E-10	5.82E-05	0.00	0.00	0.00	0.00
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	X	X	62.6	0.01	1.00E-08	1.60E-10	4.57E-08	3.50E+00	1.60E-07	4.10E-10	3.84E-19	4.95E-10	3.44E-05	0.00	0.00	0.00	0.00
Xylene (mixed isomers)	1330-20-7	X	X	106.16	10.26	1.03E-05	9.66E-08	2.76E-05	1.12E-02	3.08E-07	1.34E-09	1.25E-18	1.61E-09	1.12E-04	0.00	0.00	0.00	0.00
Polychlorinated Biphenyls (PCB's)	1336-36-3	X	X	292	1,715.17	1.72E-03	5.87E-06	1.68E-03	5.40E-06	9.04E-09	1.08E-10	1.01E-19	1.30E-10	9.06E-06	0.00	0.00	0.00	0.00
Anthracene	120-12-7	X		178.23	1.60	1.60E-06	9.00E-09	2.57E-06	1.71E-09	4.39E-15	3.20E-17	3.00E-26	3.86E-17	2.68E-12	0.00		0.00	
Phenathrene	85-01-8	X		178.23	5.54	5.54E-06	3.11E-08	8.87E-06	6.80E-04	6.03E-09	4.39E-11	4.12E-20	5.30E-11	3.69E-06	0.00		0.00	
benzo(ghi)perylene	191-24-2	X		276.33	0.14	1.43E-07	5.18E-10	1.48E-07	1.32E-13	1.95E-20	2.20E-22	2.07E-31	2.66E-22	1.85E-17	0.00		0.00	
2,4-Dimethylphenol	105-67-9	X		122.16	0.00	4.81E-09	3.94E-11	1.12E-08	1.33E-02	1.50E-10	7.47E-13	7.01E-22	9.01E-13	6.27E-08	0.00		0.00	
p-phenylenediamine	106-50-3	X	X	108.14	0.01	1.14E-08	1.05E-10	3.00E-08	6.10E-06	1.83E-13	8.09E-16	7.59E-25	9.76E-16	6.79E-11	0.00	0.00	0.00	0.00
Mercury	7439-97-6	X	X	200.59	0.03	2.58E-08	1.29E-10	3.68E-08	1.70E-06	6.25E-14	5.13E-16	4.81E-25	6.18E-16	4.30E-11	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	95-63-6	X		120.19	0.00	1.27E-09	1.06E-11	3.02E-09	6.00E-03	1.81E-11	8.89E-14	8.34E-23	1.07E-13	7.46E-09	0.00		0.00	
														TOTALS	0.001	0.002	0.001	0.002

Variables of Interest

D_{ei} = 3.75E-09 cm^2/s (HDPE liner)
l = 4.0 cm (GCL + 40-mil HDPE liner)
A = 31.8 acres = 1.3E+09 cm^2 (final cover area only)

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 26B

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-1 LANDFILL (INTERIM COVER AREAS ONLY)
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Waste Concentration [1] (ppm)	C_i	C_i / MW_i	X_i	P_i* (atm)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{1i} (g/s)	Diffusion E_{1i} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6		X	133.4	1.15	1.15E-06	8.60E-09	2.45E-06	1.62E-01	3.97E-07	2.17E-09	9.38E-15	2.92E-06	2.03E-01		0.20		0.20
1,1,2-Trichloroethane (Cloroethene)	79-00-5	X	X	133.4	0.01	1.10E-08	8.27E-11	2.36E-08	3.29E-02	7.76E-10	4.23E-12	1.83E-17	5.71E-09	3.97E-04	0.00	0.00	0.00	0.00
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	X	X	181.5	9.99	9.99E-06	5.50E-08	1.57E-05	2.37E-04	3.72E-09	2.76E-11	1.20E-16	3.73E-08	2.59E-03	0.00	0.00	0.00	0.00
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	X	X	98.96	0.03	2.90E-08	2.93E-10	8.35E-08	1.05E-01	8.80E-09	3.56E-11	1.54E-16	4.80E-08	3.34E-03	0.00	0.00	0.00	0.00
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	X	X	147	0.35	3.52E-07	2.39E-09	6.83E-07	1.58E-03	1.08E-09	6.49E-12	2.81E-17	8.75E-09	6.08E-04	0.00	0.00	0.00	0.00
Acrylonitrile	107-13-1	X	X	53.1	0.00	3.10E-10	5.84E-12	1.67E-09	1.50E-01	2.50E-10	5.43E-13	2.35E-18	7.33E-10	5.10E-05	0.00	0.00	0.00	0.00
Benzene (Benzol, Coal naphhtha)	71-43-2	X	X	78.1	0.35	3.46E-07	4.42E-09	1.26E-06	1.25E-01	1.58E-07	5.05E-10	2.19E-15	6.82E-07	4.74E-02	0.05	0.05	0.05	0.05
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	117-81-7	X	X	390.56	7.33	7.33E-06	1.88E-08	5.36E-06	2.63E-10	1.41E-15	2.25E-17	9.75E-23	3.04E-14	2.11E-09	0.00	0.00	0.00	0.00
Carbon disulfide (Carbon bisulfide)	75-15-0	X	X	76.1	0.12	1.20E-07	1.57E-09	4.49E-07	4.82E-01	2.16E-07	6.73E-10	2.92E-15	9.09E-07	6.32E-02	0.06	0.06	0.06	0.06
Carbon tetrachloride (Tetrachloromethane)	56-23-5	X	X	153.8	0.01	8.09E-09	5.26E-11	1.50E-08	1.49E-01	2.23E-09	1.40E-11	6.08E-17	1.89E-08	1.32E-03	0.00	0.00	0.00	0.00
Chlordane	57-74-9	X	X	409.8	0.05	5.43E-08	1.32E-10	3.78E-08	1.30E-08	4.91E-16	8.23E-18	3.57E-23	1.11E-14	7.72E-10	0.00	0.00	0.00	0.00
Chlorobenzene (Benzene chloride)	108-90-7	X	X	112.6	6.77	6.77E-06	6.01E-08	1.71E-05	1.55E-02	2.66E-07	1.23E-09	5.31E-15	1.65E-06	1.15E-01	0.12	0.12	0.12	0.12
Chloroform (Trichloromethane)	67-66-3	X	X	119.38	0.04	3.93E-08	3.29E-10	9.39E-08	2.74E-01	2.57E-08	1.25E-10	5.43E-16	1.69E-07	1.18E-02	0.01	0.01	0.01	0.01
Cresol - mixed isomers	1319-77-3	X	X	108.1	0.00	9.42E-10	8.72E-12	2.49E-09	3.95E-04	9.82E-13	4.34E-15	1.88E-20	5.86E-12	4.07E-07	0.00	0.00	0.00	0.00
Dibutyl phthalate (DBP)	84-74-2	X	X	278.3	6.01	6.01E-06	2.16E-08	6.17E-06	1.30E-07	8.02E-13	9.12E-15	3.95E-20	1.23E-11	8.56E-07	0.00	0.00	0.00	0.00
Dichloromethane (Methylene chloride, DCM)	75-09-2		X	85	0.72	7.16E-07	8.42E-09	2.40E-06	5.76E-01	1.39E-06	4.82E-09	2.09E-14	6.50E-06	4.52E-01		0.45		0.45
Ethyl benzene (Phenylethane)	100-41-4	X	X	106.2	3.48	3.48E-06	3.27E-08	9.34E-06	1.15E-03	1.07E-08	4.65E-11	2.01E-16	6.27E-08	4.36E-03	0.00	0.00	0.00	0.00
Ethylene glycol	107-21-1	X	X	62.08	0.27	2.68E-07	4.32E-09	1.23E-06	1.66E-04	2.04E-10	5.19E-13	2.25E-18	7.01E-10	4.87E-05	0.00	0.00	0.00	0.00
Methyl ethyl ketone (MEK)	78-93-3	X		72.1	1.99	1.99E-06	2.76E-08	7.88E-06	1.32E-01	1.04E-06	3.06E-09	1.32E-14	4.13E-06	2.87E-01	0.29		0.29	
Naphthalene (and Methylnaphthalenes)	91-20-3	X	X	128.2	5.26	5.26E-06	4.11E-08	1.17E-05	3.03E-04	3.55E-09	1.86E-11	8.05E-17	2.51E-08	1.74E-03	0.00	0.00	0.00	0.00
Phenol (Benzenol, Carbolic acid)	108-95-2	X	X	94.1	0.00	8.81E-10	9.36E-12	2.67E-09	4.49E-04	1.20E-12	4.61E-15	2.00E-20	6.22E-12	4.33E-07	0.00	0.00	0.00	0.00
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	X	X	147	15.04	1.50E-05	1.02E-07	2.92E-05	3.02E-05	8.82E-10	5.30E-12	2.30E-17	7.15E-09	4.97E-04	0.00	0.00	0.00	0.00
Pyridine	110-86-1	X		79.1	0.00	7.17E-10	9.06E-12	2.59E-09	2.63E-02	6.81E-11	2.20E-13	9.54E-19	2.97E-10	2.07E-05	0.00		0.00	
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	127-18-4	X	X	165.83	0.90	9.00E-07	5.43E-09	1.55E-06	2.50E-02	3.87E-08	2.63E-10	1.14E-15	3.54E-07	2.46E-02	0.02	0.02	0.02	0.02
Toluene (Methylbenzene)	108-88-3	X	X	92.4	13.55	1.36E-05	1.47E-07	4.19E-05	3.95E-02	1.65E-06	6.24E-09	2.70E-14	8.42E-06	5.86E-01	0.59	0.59	0.59	0.59
Trichloroethylene (Acetylene trichloride)	79-01-6	X	X	131.4	0.60	6.02E-07	4.58E-09	1.31E-06	9.87E-02	1.29E-07	6.93E-10	3.00E-15	9.36E-07	6.51E-02	0.07	0.07	0.07	0.07
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	X	X	62.6	0.01	1.00E-08	1.60E-10	4.57E-08	3.50E+00	1.60E-07	4.10E-10	1.78E-15	5.53E-07	3.85E-02	0.04	0.04	0.04	0.04
Xylene (mixed isomers)	1330-20-7	X	X	106.16	10.26	1.03E-05	9.66E-08	2.76E-05	1.12E-02	3.08E-07	1.34E-09	5.80E-15	1.81E-06	1.26E-01	0.13	0.13	0.13	0.13
Polychlorinated Biphenyls (PCB's)	1336-36-3	X	X	292	1,715.17	1.72E-03	5.87E-06	1.68E-03	5.40E-06	9.04E-09	1.08E-10	4.68E-16	1.46E-07	1.01E-02	0.01	0.01	0.01	0.01
Anthracene	120-12-7	X		178.23	1.60	1.60E-06	9.00E-09	2.57E-06	1.71E-09	4.39E-15	3.20E-17	1.39E-22	4.32E-14	3.00E-09	0.00		0.00	
Phenathrene	85-01-8	X		178.23	5.54	5.54E-06	3.11E-08	8.87E-06	6.80E-04	6.03E-09	4.39E-11	1.90E-16	5.93E-08	4.12E-03	0.00		0.00	
benzo(ghi)perylene	191-24-2	X		276.33	0.14	1.43E-07	5.18E-10	1.48E-07	1.32E-13	1.95E-20	2.20E-22	9.55E-28	2.98E-19	2.07E-14	0.00		0.00	
2,4-Dimethylphenol	105-67-9	X		122.16	0.00	4.81E-09	3.94E-11	1.12E-08	1.33E-02	1.50E-10	7.47E-13	3.24E-18	1.01E-09	7.01E-05	0.00		0.00	
p-phenylenediamine	106-50-3	X	X	108.14	0.01	1.14E-08	1.05E-10	3.00E-08	6.10E-06	1.83E-13	8.09E-16	3.51E-21	1.09E-12	7.59E-08	0.00	0.00	0.00	0.00
Mercury	7439-97-6	X	X	200.59	0.03	2.58E-08	1.29E-10	3.68E-08	1.70E-06	6.25E-14	5.13E-16	2.22E-21	6.92E-13	4.81E-08	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	95-63-6	X		120.19	0.00	1.27E-09	1.06E-11	3.02E-09	6.00E-03	1.81E-11	8.89E-14	3.85E-19	1.20E-10	8.34E-06	0.00		0.00	
														TOTALS	1.39	1.76	1.39	1.76

Variables of Interest

D_{ei} = 1.32E-04 cm^2/s (interim cover)
l = 30.5 cm (12 inches of interim cover)
A = 7.7 acres = 3.1E+08 cm^2 interim cover area only)

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 27

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8004 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (µg/L)	C_i	C_i / MW_i	X_i	E_{3i} (g/truckload)	Transfer by Tanker Trucks E_{3i} (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Methylene chloride	75-09-2		X	84.93	13300	1.33E-05	1.57E-07	2.82E-06	8.20E-02	9.40E-03		0.01
Trichloroethane (1,1,1)	71-55-6		X	133.4	23800	2.38E-05	1.78E-07	3.21E-06	1.47E-01	1.68E-02		0.02
Trichloroethylene	79-01-6	X	X	131.39	7280	7.28E-06	5.54E-08	9.97E-07	4.49E-02	5.14E-03	0.01	0.01
Xylenes	1330-20-7	X	X	106.16	9550	9.55E-06	9.00E-08	1.62E-06	5.89E-02	6.75E-03	0.01	0.01
Toluene	108-88-3	X	X	92.14	5460	5.46E-06	5.93E-08	1.07E-06	3.37E-02	3.86E-03	0.00	0.00
										TOTALS	0.02	0.04

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:

1 Analytical results provided by CWM

TABLE 28

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8005 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

										Transfer by Tanker Trucks		
Detected Compounds	**CAS Number**	**VOC**	**HAP**	**MW_i (g/mol)**	**Leachate Concentration [1] (µg/L)**	**C_i**	**C_i / MW_i**	**X_i**	**E_{3i} (g/truckload)**	**E_{3i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**
Trichloroethene	79-01-6	X	X	131.39	15400	1.54E-05	1.17E-07	2.11E-06	9.49E-02	1.09E-02	0.01	0.01
Vinyl chloride	75-01-4	X	X	62.498	6.7	6.70E-09	1.07E-10	1.93E-09	4.13E-05	4.73E-06	0.00	0.00
										TOTALS	0.01	0.01

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:
1 Analytical results provided by CWM

TABLE 29

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8006 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (µg/L)	C_i	C_i / MW_i	X_i	Transfer by Tanker Trucks E_{3i} (g/truckload)	Transfer by Tanker Trucks E_{3i} (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Carbon tetrachloride	56-23-5	X	X	153.81	116000	1.16E-04	7.54E-07	1.36E-05	7.15E-01	8.20E-02	0.08	0.08
Chloroform	67-66-3	X	X	119.38	8710	8.71E-06	7.30E-08	1.31E-06	5.37E-02	6.15E-03	0.01	0.01
										TOTALS	0.09	0.09

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:
1 Analytical results provided by CWM

TABLE 30

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8007 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

									Transfer by Tanker Trucks			
Detected Compounds	**CAS Number**	**VOC**	**HAP**	**MW_i (g/mol)**	**Leachate Concentration [1] (µg/L)**	**C_i**	**C_i / MW_i**	**X_i**	**E_{3i} (g/truckload)**	**E_{3i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**
Chlorobenzene	108-90-7	X	X	112.56	3380	3.38E-06	3.00E-08	5.41E-07	2.08E-02	2.39E-03	0.00	0.00
Methylene chloride	75-09-2		X	84.93	2900	2.90E-06	3.41E-08	6.15E-07	1.79E-02	2.05E-03		0.00
Trichloro (1,1,2) trifluoroethane	76-13-1	X		187.376	2900	2.90E-06	1.55E-08	2.79E-07	1.79E-02	2.05E-03	0.00	
Trichloroethane (1,1,1)	71-55-6		X	133.4	2200	2.20E-06	1.65E-08	2.97E-07	1.36E-02	1.55E-03		0.00
Trichloroethylene	79-01-6	X	X	131.39	3840	3.84E-06	2.92E-08	5.26E-07	2.37E-02	2.71E-03	0.00	0.00
Dichloroethane(1,1)	75-34-3	X	X	98.96	390	3.90E-07	3.94E-09	7.09E-08	2.40E-03	2.76E-04	0.00	0.00
Dichloroethene(1,1)	75-35-4	X	X	96.94	250	2.50E-07	2.58E-09	4.64E-08	1.54E-03	1.77E-04	0.00	0.00
Ethylene dichloride	107-06-2	X	X	98.95	270	2.70E-07	2.73E-09	4.91E-08	1.66E-03	1.91E-04	0.00	0.00
Dichloropropane(1,2)	78-87-5	X	X	112.98	25	2.50E-08	2.21E-10	3.98E-09	1.54E-04	1.77E-05	0.00	0.00
Methyl isobutyl ketone	108-10-1	X	X	100.16	57	5.70E-08	5.69E-10	1.02E-08	3.51E-04	4.03E-05	0.00	0.00
Benzene	71-43-2	X	X	78.11	69	6.90E-08	8.83E-10	1.59E-08	4.25E-04	4.88E-05	0.00	0.00
Carbon Tetrachloride	56-23-5	X	X	153.84	930	9.30E-07	6.05E-09	1.09E-07	5.73E-03	6.57E-04	0.00	0.00
Chloroform	67-66-3	X	X	119.38	520	5.20E-07	4.36E-09	7.84E-08	3.21E-03	3.67E-04	0.00	0.00
Ethylbenzene	100-41-4	X	X	106.17	48	4.80E-08	4.52E-10	8.14E-09	2.96E-04	3.39E-05	0.00	0.00
Xylenes (mixed isomers)	1330-20-7	X	X	106.16	276	2.76E-07	2.60E-09	4.68E-08	1.70E-03	1.95E-04	0.00	0.00
Tetrachloroethylene	127-18-4	X	X	165.83	52	5.20E-08	3.14E-10	5.64E-09	3.21E-04	3.67E-05	0.00	0.00
Toluene	108-88-3	X	X	92.14	130	1.30E-07	1.41E-09	2.54E-08	8.01E-04	9.19E-05	0.00	0.00
Chloroethene	75-01-4	X	X	62.498	190	1.90E-07	3.04E-09	5.47E-08	1.17E-03	1.34E-04	0.00	0.00
Ethyl acetate	141-78-6	X		88.11	45	4.50E-08	5.11E-10	9.19E-09	2.77E-04	3.18E-05	0.00	
o-Dichlorobenzene	95-50-1	X		147.01	11300	1.13E-05	7.69E-08	1.38E-06	6.96E-02	7.98E-03	0.01	
m-Dichlorobenzene	541-73-1	X		147	390	3.90E-07	2.65E-09	4.78E-08	2.40E-03	2.76E-04	0.00	
p-Dichlorobenzene	104-46-7	X	X	147	2720	2.72E-06	1.85E-08	3.33E-07	1.68E-02	1.92E-03	0.00	0.00
Water				18	1.00E+09	1.00E+00	5.56E-02	1.00E+00				
										TOTALS	0.02	0.01

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:

1 Analytical results provided by CWM

TABLE 31

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8008 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (µg/L)	C_i	C_i / MW_i	X_i	Transfer by Tanker Trucks E_{3i} (g/truckload)	E_{3i} (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Chlorobenzene	108-90-7	X	X	112.56	2500	2.50E-06	2.22E-08	4.00E-07	1.54E-02	1.77E-03	0.00	0.00
Methylene chloride	75-09-2		X	84.93	29000	2.90E-05	3.41E-07	6.15E-06	1.79E-01	2.05E-02		0.02
Tetrachloroethane(1,1,1,2)	630-20-6	X	X	167.85	7300	7.30E-06	4.35E-08	7.83E-07	4.50E-02	5.16E-03	0.01	0.01
Trichloroethane(1,1,2)	79-00-5	X	X	133.4	880	8.80E-07	6.60E-09	1.19E-07	5.42E-03	6.22E-04	0.00	0.00
Trichloroethane (1,1,1)	71-55-6		X	133.4	12000	1.20E-05	9.00E-08	1.62E-06	7.40E-02	8.48E-03		0.01
Trichloroethylene	79-01-6	X	X	131.39	18000	1.80E-05	1.37E-07	2.47E-06	1.11E-01	1.27E-02	0.01	0.01
Dichloroethene(1,1)	75-35-4	X	X	96.94	1600	1.60E-06	1.65E-08	2.97E-07	9.86E-03	1.13E-03	0.00	0.00
Ethylene dichloride	107-06-2	X	X	98.95	400	4.00E-07	4.04E-09	7.28E-08	2.47E-03	2.83E-04	0.00	0.00
Benzene	71-43-2	X	X	78.11	600	6.00E-07	7.68E-09	1.38E-07	3.70E-03	4.24E-04	0.00	0.00
Chloroform	67-66-3	X	X	119.38	1100	1.10E-06	9.21E-09	1.66E-07	6.78E-03	7.77E-04	0.00	0.00
Ethylbenzene	100-41-4	X	X	106.17	2400	2.40E-06	2.26E-08	4.07E-07	1.48E-02	1.70E-03	0.00	0.00
Tetrachloroethylene	127-18-4	X	X	165.83	37000	3.70E-05	2.23E-07	4.02E-06	2.28E-01	2.61E-02	0.03	0.03
Toluene	108-88-3	X	X	92.14	10000	1.00E-05	1.09E-07	1.95E-06	6.16E-02	7.07E-03	0.01	0.01
Chloroethene	75-01-4	X	X	62.498	1200	1.20E-06	1.92E-08	3.46E-07	7.40E-03	8.48E-04	0.00	0.00
o-Dichlorobenzene	95-50-1	X		147.01	4300	4.30E-06	2.92E-08	5.27E-07	2.65E-02	3.04E-03	0.00	
										TOTALS	0.06	0.09

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:
1 Analytical results provided by CWM

TABLE 32

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8009 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (µg/L)	C_i	C_i / MW_i	X_i	E_{3i} (g/truckload)	Transfer by Tanker Trucks E_{3i} (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
Acetone	67-64-1			58.08	1000	1.00E-06	1.72E-08	3.10E-07	6.16E-03	7.07E-04		
Carbon tetrachloride	56-23-5	X	X	153.84	13000	1.30E-05	8.45E-08	1.52E-06	8.01E-02	9.19E-03	0.01	0.01
Chlorobenzene	108-90-7	X	X	112.6	2920	2.92E-06	2.59E-08	4.67E-07	1.80E-02	2.06E-03	0.00	0.00
Chloroform	67-66-3	X	X	119.39	4100	4.10E-06	3.43E-08	6.18E-07	2.53E-02	2.90E-03	0.00	0.00
Methylene chloride	75-09-2		X	84.94	8000	8.00E-06	9.42E-08	1.70E-06	4.93E-02	5.65E-03		0.01
Trichloroethane (1,1,2)	79-00-5	X	X	133.4	1800	1.80E-06	1.35E-08	2.43E-07	1.11E-02	1.27E-03	0.00	0.00
Trichloroethylene	79-01-6	X	X	131.4	8480	8.48E-06	6.45E-08	1.16E-06	5.23E-02	5.99E-03	0.01	0.01
Tetrachloroethane(1,1,1,2)	630-20-6	X		167.848	230	2.30E-07	1.37E-09	2.47E-08	1.42E-03	1.63E-04	0.00	
Trichloroethane(1,1,1)	71-55-6		X	133.4	590	5.90E-07	4.42E-09	7.96E-08	3.64E-03	4.17E-04		0.00
Tetrachloroethane(1,1,2,2)	79-34-5	X	X	167.848	520	5.20E-07	3.10E-09	5.58E-08	3.21E-03	3.67E-04	0.00	0.00
Dichloroethene(1,1)	75-35-4	X	X	96.94	66	6.60E-08	6.81E-10	1.23E-08	4.07E-04	4.66E-05	0.00	0.00
Ethylene dichloride	107-06-2	X	X	98.95	1200	1.20E-06	1.21E-08	2.18E-07	7.40E-03	8.48E-04	0.00	0.00
Benzene	71-43-2	X	X	78.11	120	1.20E-07	1.54E-09	2.77E-08	7.40E-04	8.48E-05	0.00	0.00
Dibromomethane	74-95-3	X		187.86	470	4.70E-07	2.50E-09	4.50E-08	2.90E-03	3.32E-04	0.00	
Ethylbenzene	100-41-4	X	X	106.17	200	2.00E-07	1.88E-09	3.39E-08	1.23E-03	1.41E-04	0.00	0.00
Ethylene dibromide	106-93-4	X	X	187.86	1500	1.50E-06	7.98E-09	1.44E-07	9.25E-03	1.06E-03	0.00	0.00
Xylenes (mixed isomers)	1330-20-7	X	X	106.16	160	1.60E-07	1.51E-09	2.71E-08	9.86E-04	1.13E-04	0.00	0.00
Tetrachloroethylene	127-18-4	X	X	165.83	730	7.30E-07	4.40E-09	7.92E-08	4.50E-03	5.16E-04	0.00	0.00
Toluene	108-88-3	X	X	92.14	1130	1.13E-06	1.23E-08	2.21E-07	6.96E-03	7.98E-04	0.00	0.00
Chloroethene	75-01-4	X	X	62.498	180	1.80E-07	2.88E-09	5.18E-08	1.11E-03	1.27E-04	0.00	0.00
Trichloro(1,1,2)trifluoroethane	76-13-1	X		187.376	1800	1.80E-06	9.61E-09	1.73E-07	1.11E-02	1.27E-03	0.00	
o-Dichlorobenzene	95-50-1	X		147.01	4550	4.55E-06	3.10E-08	5.57E-07	2.80E-02	3.21E-03	0.00	
p-Dichlorobenzene	104-46-7	X	X	147	1100	1.10E-06	7.48E-09	1.35E-07	6.78E-03	7.77E-04	0.00	0.00
										TOTALS	0.03	0.03

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:

1 Analytical results provided by CWM

TABLE 33

ESTIMATED VOC AND HAP EMISSIONS FROM TRUCKING OF T-8010 GROUNDWATER
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

									Transfer by Tanker Trucks			
Detected Compounds	**CAS Number**	**VOC**	**HAP**	**MW_i (g/mol)**	**Leachate Concentration [1] (µg/L)**	**C_i**	**C_i / MW_i**	**X_i**	**E_{3i} (g/truckload)**	**E_{3i} (lb/yr)**	**VOC Emissions (lb/yr)**	**HAP Emissions (lb/yr)**
Carbon tetrachloride	56-23-5	X	X	153.84	1.3	1.30E-09	8.45E-12	1.52E-10	8.01E-06	9.19E-07	0.00	0.00
Chloroform	67-66-3	X	X	119.39	13.8	1.38E-08	1.16E-10	2.08E-09	8.51E-05	9.75E-06	0.00	0.00
Trichloroethane (1,1,2)	79-00-5	X	X	133.4	0.69	6.90E-10	5.17E-12	9.31E-11	4.25E-06	4.88E-07	0.00	0.00
Trichloroethylene	79-01-6	X	X	131.4	49	4.90E-08	3.73E-10	6.71E-09	3.02E-04	3.46E-05	0.00	0.00
Tetrachloroethane(1,1,1,2)	630-20-6	X		167.848	1.3	1.30E-09	7.75E-12	1.39E-10	8.01E-06	9.19E-07	0.00	
Dichloroethene(1,1)	75-35-4	X	X	96.94	0.61	6.10E-10	6.29E-12	1.13E-10	3.76E-06	4.31E-07	0.00	0.00
Ethylene dichloride	107-06-2	X	X	98.95	0.72	7.20E-10	7.28E-12	1.31E-10	4.44E-06	5.09E-07	0.00	0.00
Tetrachloroethylene	127-18-4	X	X	165.83	1.1	1.10E-09	6.63E-12	1.19E-10	6.78E-06	7.77E-07	0.00	0.00
Toluene	108-88-3	X	X	92.14	11.9	1.19E-08	1.29E-10	2.32E-09	7.33E-05	8.41E-06	0.00	0.00
										TOTALS	0.00	0.00

Variables of Interest

V_{truck} =	21	m^3
P_t =	303	mmHg
N_v =	342.4	mol
# Trucks / year =	52	(once per week)

Notes:

1 Analytical results provided by CWM

TABLE 34

STABILIZATION FACILITY EMISSIONS
EMISSION INVENTORY
CWM CHEMCIAL SERVICES, LLC

Quantities of chemicals processed in Stabilization

	2012 (pounds)	% of waste & reagent	lbs released in particulate		2008 (pounds)	% of waste & reagent	lbs released in particulate
arsenic compounds	82.8	3.0994E-06	0.00069738		116.6	2.675E-06	0.000751807
cadmium compounds	32.5	1.2166E-06	0.00027373		0	0	0
chromium compounds	17,131	0.00064126	0.1442844		1273	2.921E-05	0.008207978
lead compounds	5,377	0.00020128	0.04528733		75,647	0.0017358	0.487752465
manganese compounds	804.2	3.0104E-05	0.00677331		1458	3.345E-05	0.00940081
nickel compounds	1665	6.2326E-05	0.01402332		149,338	0.0034267	0.962893143
PACs	79.8	2.9872E-06	0.00067211	POM	41.4	9.5E-07	0.000266937
ethylbenzene	2.54	9.508E-08			5	1.17E-07	
2,4-dimethylphenol	0				2.35	5.392E-08	
p-cresol	0				0.46	1.056E-08	
p-phenylenediamine	0				5.50	1.262E-07	
ethylene glycol	0				131.00	3.006E-06	
m-cresol	0				0.12	2.753E-09	
1,3-phenylenediamine	0				5.50	1.262E-07	
toluene	0.965	3.6123E-08			36.80	8.444E-07	
chlorobenzene	0.827	3.0957E-08			0.95	2.18E-08	
di(2-ethylhexyl) phthalate	91.9	3.4401E-06	0.00077402	POM	13.00	2.983E-07	8.38207E-05
phenol	0				0.43	9.867E-09	
pyridine	0				0.35	8.031E-09	
anthracene	5.15	1.9278E-07	4.3375E-05	POM	1.80	4.13E-08	1.16059E-05
1,1,2-trichloroethane	0				0.27	6.195E-09	
1,1,2,2-tetrachloroethane	0				0.00	0	
1,2-dichloroethane	0				0.00	0	
tetrachloroethylene	0				24.20	5.553E-07	
xylenes	10.65	3.9866E-07			30.30	6.953E-07	
PCBs	830.5	3.1088E-05	0.00699482		2,209	5.069E-05	0.014243066
benzo(ghi)perylene	3.7	1.385E-07	3.1163E-05	POM	1.47	3.373E-08	9.47818E-06
carbon tetrachloride	0				0.13	2.983E-09	
chlordane	0				0.23	5.278E-09	
chloroform	0				0.086	1.973E-09	
1,2-dichloroethylene	0.19	7.1123E-09			0	0	
benzene	0.59	2.2085E-08			0.46	1.056E-08	
1,1,1-trichloroethane	0				0.13	2.983E-09	
mercury	16.1	6.0267E-07			12.5	2.868E-07	
methylene chloride	0.1	3.7433E-09			0.73	1.675E-08	
methyl ethyl ketone	0				2.02	4.635E-08	
1,1,2-trichloroethane	0						
trichloroethylene	1.1	4.1176E-08			25.6	5.874E-07	
phenanthrene	25.8	9.6577E-07	0.0002173	POM	5.18	1.189E-07	3.33993E-05
n-methyl-2-pyrrolidone	0.6	2.246E-08			0	0	
naphthalene	2.88	1.0781E-07	2.4257E-05	POM	0.81	1.859E-08	
o-cresol	0				0.123	2.822E-09	
1,2-dichlorobenzene	0				1.23	2.822E-08	
1,2-phenylenediamine	0				5.5	1.262E-07	
1,2,4-trimethylbenzene	0				0.62	1.423E-08	
cumene	1.19	4.4545E-08			0	0	
acetophenone	0.16	5.9893E-09			0	0	
			0.00875704	Ttl POM			

2008 = highest organics in past 5 years.

	Approach
VVOC	50% emitted in stabilization facility (< 100 deg C)
VOC	25% emitted in stabilization facility (100 to 250 deg C)
SVOC	1% emitted in stabilization facility (> 250 deg C)

Compound	Boiling Point (^{o}C)	Class	Factor	Emissions (lb)
PACs	~200	VOC	0.25	10.35
ethylbenzene	136	VOC	0.25	1.275
2,4-dimethylphenol	211	VOC	0.25	0.5875
p-cresol	202	VOC	0.25	0.115
p-phenylenediamine	267	SVOC	0.01	0.055
ethylene glycol	197	VOC	0.25	32.75
m-cresol	203	VOC	0.25	0.03
1,3-phenylenediamine	283	SVOC	0.01	0.055
toluene	111	VOC	0.25	9.2
chlorobenzene	132	VOC	0.25	0.2375
di(2-ethylhexyl) phthalate	385	SVOC	0.01	0.13
phenol	182	VOC	0.25	0.1075
pyridine	115	VOC	0.25	0.0875
anthracene	340	SVOC	0.01	0.018
1,1,2-trichloroethane	114	VOC	0.25	0.0675
1,1,2,2-tetrachloroethane	147	VOC	0.25	0
1,2-dichloroethane	84	VVOC	0.5	0
tetrachloroethylene	121	VOC	0.25	6.05
xylenes	140	VOC	0.25	7.575
PCBs [1]	360	SVOC	0.00044	0.97196
benzo(ghi)perylene	278	SVOC	0.01	0.0147
carbon tetrachloride	76	VVOC	0.5	0.065
chlordane	175	VOC	0.25	0.0575
chloroform	61	VVOC	0.5	0.043
1,2-dichloroethylene	60	VVOC	0.5	0
benzene	80	VVOC	0.5	0.23
1,1,1-trichloroethane	74	VVOC	0.5	0.065
mercury	357	SVOC	0.01	0.125
methylene chloride	40	VVOC	0.5	0.365
methyl ethyl ketone	80	VVOC	0.5	1.01
1,1,2-trichloroethane	114	VOC	0.25	0
trichloroethylene	87	VVOC	0.5	12.8
phenanthrene	340	SVOC	0.01	0.0518
n-methyl-2-pyrrolidone	203	VOC	0.25	0
naphthalene	218	VOC	0.25	0.2025
o-cresol	191	VOC	0.25	0.03075
1,2-dichlorobenzene	181	VOC	0.25	0.3075
1,2-phenylenediamine	252	SVOC	0.01	0.055
1,2,4-trimethylbenzene	170	VOC	0.25	0.155
cumene	152	VOC	0.25	0
acetophenone	202	VOC	0.25	0
			TOTAL	**85.2**

1 Release rate for PCBs based on laboratory study (March 31, 2000)

TABLE 35

FUGITIVE EMISSIONS FROM PIPE VALVES/FLANGES
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

									Correlation rate from Table 2-10				
								EF	10 ppm X EF	kg/hr/source			
		kg/hr/source	#	hours/year	kg/year	lb/yr	ton/yr				kg/year	lb/yr	
Valves	Light llquid	0.000165	139	8,760.00	200.91	442.93	0.22	0.00000229	5.57	1.27553E-05	15.53	34.24	
Pump Seals	Light llquid	0.00187	4	8,760.00	65.52	144.46	0.07	0.0000503	4.07	0.000204721	7.17	15.81	
Compressor Seals	Gas	0.0894	0	8,760.00	-	-	-						
Pressure Relief Valves	Gas	0.0447	2	8,760.00	783.14	1,726.52	0.86						
Connectors	All	0.000081	475	8,760.00	337.04	743.04	0.37	0.00000461	5.06	2.33266E-05	97.06	213.98	
						3,056.94	1.53				119.77	264.04	
												26.40	10% Volatile

TABLE 36A

FACULTATIVE POND 1-2 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

The rate of vaporization of a liquid can be modeled as a function of several characteristic factors of the compound being considered. [Crowl & Louvar, 2002]

$$E_{n-i} = \frac{M_i K_i A\left(P_i^{sat} - P_i\right)}{RT_L} \qquad \text{Eq. 3-23}$$

Where E_n is the evaporation rate (mass/time).
M_i is the molecular weight of the volatile substance,
K_i is a mass transfer coefficient (length/time),
A is the evaporation surface area,
P_i^{sat} is the saturated solvent vapor pressure,
P_i is the actual vapor pressure near the liquid surface,
R is the ideal gas constant, and
T_L is the absolute temperature of the liquid.

For many cases, Psat >> p, and *Eq. 3-23* may be simplified to

$$E_{n-1} = \frac{M_i K_i A P_i^{sat}}{RT_L} \qquad \text{Eq. 3-24}$$

Eq. 3-24 may be used to estimate the vaporization rate of a volatile liquid from an open vessel or a liquid spill.

Combining *Eq. 3-25* and *Eq. 3-26* results in a relationship that can be used to estimate the mass transfer coefficient of a given volatile compound.

$$K_i = K_o \left(\frac{M_o}{M_i}\right)^{1/3} \qquad \text{Eq. 3-27}$$

Water is commonly used as a base reference for estimating the mass transfer coefficient for many compounds of interest. The mass transfer coefficient of water at 77 F and 760 mm Hg. is 0.83 cm/s.

MW_{mix} = 18.00 P_{mix} = 2,339 Pa
(mixture is essentially >99.99% water)
K = 0.8303 cm/sec = 0.0083 m/s
A = 23,005 m^2 (825 feet x 300 feet)
R = 8.31446 (m^3-Pa)/(K-mol)
T = 293.15 K
E_{H2O} = 3,299.5 g/s = 436.4 lb/min
198.0 L/min
E_{H2O} = 1.04E+08 L/yr (water)

TABLE 36A

FACULTATIVE POND 1-2 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

Compound	MDL (µg/L)	0.5*MDL (µg/L)	E (µg/yr)	E (lb/yr)
Vinyl Chloride	0.3	0.15	1.56E+07	0.034
Diethyl ether	Not Analyzed	---	---	
1,1,2-Trichloro-1,2,2-triflourorethane	Not Analyzed	---	---	
Acetone	1.8	0.9	9.36E+07	0.206
Methylene chloride	0.65	0.325	3.38E+07	0.075
1,1-Dichloroethane	0.31	0.155	1.61E+07	0.036
2-Butanone	2.2	1.1	1.14E+08	0.252
Chloroform	0.29	0.145	1.51E+07	0.033
1,1,1-Trichloroethane	0.3	0.15	1.56E+07	0.034
Carbon Tetrachloride	0.33	0.165	1.72E+07	0.038
1,2-Dichloroethane	0.36	0.18	1.87E+07	0.041
Benzene	0.31	0.155	1.61E+07	0.036
Trichloroethene	0.33	0.165	1.72E+07	0.038
4-Methyl-2-Pentanone	2.4	1.2	1.25E+08	0.275
Toluene	0.35	0.175	1.82E+07	0.04
1,1,2-Trichloroethane	0.34	0.17	1.77E+07	0.039
Tetrachloroethene	0.38	0.19	1.98E+07	0.044
Chlorobenzene	0.32	0.16	1.66E+07	0.037
Xylenes (total)	Not Analyzed	---	---	
1,1,2,2-Tetrachloroethane	0.35	0.175	1.82E+07	0.04
1,4-Dichlorobenzene	0.85	0.425	4.42E+07	0.097
1,2-Dichlorobenzene	0.75	0.375	3.90E+07	0.086
			TOTAL	**1.5 lb/yr**

TABLE 36B

FACULTATIVE POND 3 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERIVCES, LLC

The rate of vaporization of a liquid can be modeled as a function of several characteristic factors of the compound being considered. [Crowl & Louvar, 2002]

$$E_{n-i} = \frac{M_i K_i A\left(P_i^{sat} - P_i\right)}{RT_L} \qquad \text{Eq. 3-23}$$

Where E_n is the evaporation rate (mass/time).
M_i is the molecular weight of the volatile substance,
K_i is a mass transfer coefficient (length/time),
A is the evaporation surface area,
P_i^{sat} is the saturated solvent vapor pressure,
P_i is the actual vapor pressure near the liquid surface,
R is the ideal gas constant, and
T_L is the absolute temperature of the liquid.

For many cases, Psat >> p, and *Eq. 3-23* may be simplified to

$$E_{n-1} = \frac{M_i K_i A P_i^{sat}}{RT_L} \qquad \text{Eq. 3-24}$$

Combining *Eq. 3-25* and *Eq. 3-26* results in a relationship that can be used to estimate the mass transfer coefficient of a given volatile compound.

$$K_i = K_o \left(\frac{M_o}{M_i}\right)^{1/3} \qquad \text{Eq. 3-27}$$

Water is commonly used as a base reference for estimating the mass transfer coefficient for many compounds of interest. The mass transfer coefficient of water at 77 F and 760 mm Hg. is 0.83 cm/s.

MW_{mix} =	18.00		P_{mix} =	2,339	Pa
	(mixture is essentially >99.99% water)				
K =	0.8303	cm/sec =		0.0083	m/s
A =	43,015	m^2 (865 feet x 535 feet)			
R =	8.31446	(m^3-Pa)/(K-mol)			
T =	293.15	K			
E_{H2O} =	6,169.4	g/s =		816.1	lb/min
				370.2	L/min
E_{H2O} =	1.95E+08	L/yr (water)			

TABLE 36B

FACULTATIVE POND 3 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERIVCES, LLC

Compound	MDL (µg/L)	0.5*MDL (µg/L)	E (µg/yr)	E (lb/yr)
Vinyl Chloride	0.3	0.15	2.92E+07	0.0643
Diethyl ether	Not Analyzed	---	---	
1,1,2-Trichloro-1,2,2-triflourorethane	Not Analyzed	---	---	
Acetone	1.8	0.9	1.75E+08	0.386
Methylene chloride	0.65	0.325	6.32E+07	0.1394
1,1-Dichloroethane	0.31	0.155	3.02E+07	0.0665
2-Butanone	2.2	1.1	2.14E+08	0.4718
Chloroform	0.29	0.145	2.82E+07	0.0622
1,1,1-Trichloroethane	0.3	0.15	2.92E+07	0.0643
Carbon Tetrachloride	0.33	0.165	3.21E+07	0.0708
1,2-Dichloroethane	0.36	0.18	3.50E+07	0.0772
Benzene	0.31	0.155	3.02E+07	0.0665
Trichloroethene	0.33	0.165	3.21E+07	0.0708
4-Methyl-2-Pentanone	2.4	1.2	2.33E+08	0.5147
Toluene	0.35	0.175	3.40E+07	0.0751
1,1,2-Trichloroethane	0.34	0.17	3.31E+07	0.0729
Tetrachloroethene	0.38	0.19	3.70E+07	0.0815
Chlorobenzene	0.32	0.16	3.11E+07	0.0686
Xylenes (total)	Not Analyzed	---	---	
1,1,2,2-Tetrachloroethane	0.35	0.175	3.40E+07	0.0751
1,4-Dichlorobenzene	0.85	0.425	8.27E+07	0.1823
1,2-Dichlorobenzene	0.75	0.375	7.30E+07	0.1608
			TOTAL	**2.8 lb/yr**

TABLE 37

EMISSIONS FROM DRUM SPILLS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

Month end inventory (includes drums in Drum Warehouse, PCB Warehouse and AWT dock)

		12/31/2015	11/30/2015	10/30/2015	9/30/2015	8/31/2015	7/31/2015	6/30/2015	5/31/2015	4/30/2015	3/31/2015	2/27/2015	1/31/2015	TOTAL	percent of drums	MONTHLY AVERAGE NUMBER	ANNUAL AVERAGE NUMBER	ANNUAL THRUPUT (Mg/yr)	EMISSIONS (Mg/yr)	(lb/yr)
American	asbestos, petroleum soil		138	149	50	112	29	13	19	62	33	24	30	659	5.84					
Arlington			381	449	147	181	112	10						1280	11.35					
AWT	aqueous waste		33	88	82	56	38	46	81	195	139	156	181	1095	9.71	99.5	1,195	258.4041	0.00129202	2.848388
Emelle						3	110	108	83	104	109	189	145	851	7.54					
EQ			21	18	6									45	0.40					
Fuels	oil, solvent, paint		22	14	24	35	35	58	32	72	42	53	41	428	3.79	38.9	467	101.0018	0.000505009	1.113343
Lamptracker	fluorescent bulbs		37	42	40	21	16	80	81	67	126	111	77	698						
Luminaire	PCB ballasts		6	5	5	11	11	30	26	20	9	10	9	142						
micro	debris					8	27	13	116	34	6	56	53	313						
PCB TKR	PCB liquids to be bulked		23	10	10	7	27	17	13	39	33	41	44	264	2.34	24	288	62.30016	0.000311501	0.686735
PTA	PCB incinerables		134	156	144	103	99	110	109	98	90	135	195	1373	12.17	124.8	1,498	324.008	0.00162004	3.571541
Repack	lab packs		11	35	36	29	32	34	38	51	24	27	25	342						
RMU-1						2	10	9	51	30	19	89	102	312						
Ross	non-PCB incinerables		28	125	48	120	164	133	165	96	65	128	102	1174	10.41	106.7	1,281	277.0469	0.001385235	3.053888
SRR	paint sludge				5	4	6	6	5	5	3	3	3	40	0.35	4.4	53	11.53707	5.76853E-05	0.127173
Stabilization						5	93	140	193	124	120	161	234	1070						
Stablex	HF & other acid waste		19	101	100	19	103	40	99	52	34	84	57	708						
Sunnking	electronics		18	18	18	3	3	3		34	8	8	7	120						
TWI	(gas cylinders, odd items)		1	1	12	13	12	8	7	8	5	5	4	76						
Veolia	mercury articles, batteries		2	41	39	33	30	25	24	16	14	13	6	243						
WTI	non-PCB incinerables		3	2	9	8	6	5	5	3	2	2	2	47	0.42	4.3	51	11.09132	5.54566E-05	0.12226
			877	1254	775	773	963	888	1147	1110	881	1295	1317	11280						

Parking containment areas:

macro box X00299			1	1	1	1	1	1	1	2	1	1
Filtercake X00106				1		2	2	1	1	4	3	2
NY296240 tanker	pretreated leachate for Vickery		2		1		2	2	1		1	
X00264	AWT tank sludge		1		2	4 (T-165,)	1		1	1 (T3001)	1 (T3001)	1 (T3001)
X00427	Spent carbon PCBs 51 ppm		1					1				
192419			1	2		1	1					
X00257 tanker	PCB liquid			1		2 (4000, 2500 gal)			1(4615 gal)	1 (4615 gal)	1 (4615 gal)	1 (4615 gal)
X00458	AWT tank sludge (VOCs <500 ppm)			2 (T-125)								
NY305747	Soil 56 ppm PCBs OFFS				1							
AA09094 tanker	non-chlor fuel				1 (2033 gal)	1 (2033 gal)		1 (5300 gal)		1 (3087 gal)	1 (3087 gal)	1 (3087 gal)
X00024 tanker	DNAPL				1 (2537 gal)							
stab residues						8	3	3	7			5
X00314	Soil from T-101 spill										1	1

Attachments

Attachment 1
Calculation of Fugitive PM-10 Emissions

PM_{10} CALCULATIONS
TRUCK AND WASTE SUMMARY
CWM CHEMICAL SERVICES, LLC

Truck and Waste Summary

Vehicle Type	Code	Average Vehicle Weight (tons) Gross Weight	Empty Weight	Payload	Total Vehicles	Vehicle Route
Dump Truck	DT	43.9	17.0	26.8	3,454	Landfill
Rolloff Truck	CM	33.4	21.1	12.2	2,446	Landfill
Tanker Truck	TT	30.8	17.4	13.4	132	AWTS
Vacuum Tanker	VT	31.3	15.9	15.4	8	AWTS
Rolloff Truck	CM	32.1	21.7	10.3	1,023	Stabilization
Dump Truck	DT	39.9	17.1	22.9	634	Stabilization
Pneumatic Truck	PT	33.8	17.0	16.8	22	Stabilization
Tanker Truck	TT	27.6	17.7	9.9	4	Stabilization
Off-Road Truck	---	33.0	19.0	14.0	3,366	Post-Stabilization [a]
Rolloff Truck	CM	37.5	22.1	15.4	50	Transship [b]
Dump Truck	DT	38.8	16.8	22.0	4	Transship [b]
Tanker Truck	TT	25.5	17.8	7.7	34	Transship [b]
Vacuum Tanker	VT	20.4	17.5	2.9	4	Transship [b]
Drum Truck	---	26.4	17.5	8.9	833	Drum Building
Site Vehicles	---	2.5	2.5	---	5,200	AWTS
Delivery Trucks	---	5.0	5.0	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	5,200	Main Office

* Based on CWM waste tracking data and non-waste vehicle estimates for the 12-month period of July 2006 - June 2007

Notes:

a Assumes 2 loaded vehicles for each stabilization vehicle

b Total # vehicles equals twice the actual amount of vehicles since each transship load requires 2 round trips

Total Bulk Waste = (3,454 veh)(26.8 tons/veh) + (2,446 veh)(12.2 tons/veh) + (1,023 veh)(10.3 tons/veh) + (634 veh)(22.9 tons/veh) + (22 veh)(16.8 tons/veh) + (4 veh)(9.9 tons/veh)

Total Bulk Waste = 148,024.6 tpy

Fractions

Dump Trucks = 107,251.2 tons / 148,024.6 tons = 0.724

Rolloff Trucks = 40,795.0 tons / 148,024.6 tons = 0.273

Pneumatic Trucks = 368.8 tons / 148,024.6 tons = 0.002

Tanker Trucks = 39.6 tons / 148,024.6 tons = 0.0003

To be conservative, assume bulk waste increase of 10%

Total Bulk Waste = 162,827.0 tpy

Waste Densities (according to CWM facility records):

Truck	Density (lb/ft^3)
Dump	96
Rolloff	81.5

Volume Calculations

$$Volume_{(dump)} = \frac{(0.726)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(96 \text{ lb})(1 \text{ ton})} = 2.46E{+}06 \ ft^3$$

$$Volume_{(rolloff)} = \frac{(0.274)(162{,}827.07 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.09E{+}06 \ ft^3$$

$$Volume_{(pneumatic)} = \frac{(0.002)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 9.96E{+}03 \ ft^3$$

$$Volume_{(tanker)} = \frac{(0.0003)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.07E{+}03 \ ft^3$$

Total Volume = 3.56E+06 ft^3 = 1.32E+05 yd^3

PM_{10} CALCULATIONS
LANDFILL OPERATIONS
CWM CHEMICAL SERVICES, LLC

Landfill Operation

Waste Unloading

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\ (0.0032)\ \frac{(u / 5)^{1.3}}{(M / 2)^{1.4}}$$

where:
E = emission factor (lb/ton)
k = 0.35 (for PM_{10})
u = mean wind speed (mph) = 6.8 (2006 average wind speed - Model City, NY)
M = % moisture in clay/dirt mix = 14 (from AP-42, Table 13.2.4-1)

$$E = k\ (0.0032)\ \frac{(6.8 / 5)^{1.3}}{(14 / 2)^{1.4}} = 1.089E\text{-}04 \text{ lb/ton}$$

Total Waste Unloaded =	166,645	tons/year	(Includes stabilization materials)
Total Emissions =	18.1	lb/year	
Total Emissions (90% Control)[1] =	1.81	lb/year	
Total Emissions (90% Control)[1] =	0.001	tons/year	

Waste Compaction

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.75)\ (1.0)\ (\text{silt}\%)^{1.5}}{(\text{moisture}\%)^{1.4}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay/dirt mix:
Silt % = 9.2
Moisture % = 14

$$E = \frac{(0.75)\ (1.0)\ (9.2)^{1.5}}{(14)^{1.4}} = 0.520 \text{ lb/hr}$$

Total Operation hours / year =	1560		(6 hours/day, 5 days/week, 52 weeks/year)
Total Bulldozers Operating =	2		
Total Emissions =	0.8	tons/year	
Total Emissions (90% Control)[1] =	0.08	tons/year	

Notes:
1 During disposal of identified dusty wastes, CWM Model City applies a water spray to minimize dust emissions. In addition, a dust suppressant material called Con-Cover is used to cover the waste on a daily basis. A 90% control efficiency is used to account for the reduction in PM emissions due to these operational procedures which are required by the

Facility's permit.

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Landfill Construction
Landfill Unit: RMU-1

Material Requirements

Cover Construction (GCL Design)

Material	Volume (yd^3)	Weight (tons)
Soils	157,280	154,999

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Coarse Stone	107
Soils	73

Cover Construction Materials Usage per Phase ***

Material	Volume (yd^3)	Weight (tons)
Soils	17,476	17,222

Landfill Activity Span = 9 phases of cover
Total Landfill Life = 18 years (1995 - 2012)

*** No more than one phase of cover is constructed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{17{,}222 \text{ tpy}}{20 \text{ tons / truck}} = 861.1 \text{ trucks/year} = 862 \text{ trucks/year}$$

Roadway Construction Inside Active Landfill

Each layer of landfill material is 6 ft high.
Uncapped landfill height = 115 ft
Total layers = 20 (Road surface on 1st 19 layers only)
Total Cells = 14

Assume length of roadway surface as 1/2 the diagonal across 1 RMU-1 cell, then multiplied by 19

RMU-1 Length = 330 ft Diagonal = 466.7 ft
RMU-1 Width = 330 ft 1/2 Diagonal = 233.3 ft

$$\text{Length} = \frac{(233.3 \text{ ft})(14 \text{ cells})(19 \text{ lifts})}{(\text{cell-lift})} = 62{,}069.8 \text{ ft}$$

Length / year = 3,448.3 ft
Depth = 0.5 ft (6 inches)
Width = 40 ft

Volume (stone) = 68,966.5 ft^3/yr
Volume (stone) = 2,554.3 yd^3/yr
Trucks needed = 185 /year

Operations Stone

Assume 5 trucks per week or 260 trucks per year for miscellaneous stone usage

Total Stone = 5,200.0 tons/year
Total Stone = 97,196.3 ft^3/yr
Total Stone = 3,599.9 yd^3/yr

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u / 5)^{1.3}}{(M / 2)^{1.4}}$$

where:

E =	emission factor (lb/ton)		
k =	0.35 (for PM_{10})		
u =	mean wind speed (mph) =	6.8	(2006 average wind speed - Model City, NY)
M_{stone} =	% moisture in stone =	0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =	12	(from AP-42, Table 13.2.4-1)

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8 / 5)^{1.3}}{(0.7 / 2)^{1.4}} = 7.217E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8 / 5)^{1.3}}{(12 / 2)^{1.4}} = 1.351E\text{-}04 \text{ lb/ton}$$

Summary - Cover Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Soils	17,222	1.351E-04	2.3

Summary - Road Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Coarse Stone	3,690	7.217E-03	26.6

Summary - Miscellaneous Stone Usage

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Coarse Stone	5,200	7.217E-03	37.5

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.75)\ (1.0)\ (\text{silt}\%)^{1.5}}{(\text{moisture}\%)^{1.4}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Stone:
Silt % = 1.6
Moisture % = 0.7

Topsoil/Dirt:
Silt % = 9
Moisture % = 12

$$E_{(stone)} = \frac{(0.75)\ (1.0)\ (1.6)^{1.5}}{(0.7)^{1.4}} = 2.501E+00 \text{ lb/hr}$$

$$E_{(topsoil/dirt)} = \frac{(0.75)\ (1.0)\ (9)^{1.5}}{(12)^{1.4}} = 6.246E-01 \text{ lb/hr}$$

Total Cover Construction hours / year =	600	(10 hours/day, 5 days/week, 12 weeks/year)
Roadway Construction hours/year =	80	
Miscellaneous Stone operation hours/year =	100	
Total Bulldozers Operating / Activity =	2	

Summary - Cover Construction

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Soils	600	6.246E-01	749.5

Summary - Road Construction

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Coarse Stone	80	2.501E+00	400.2

Summary - Miscellaneous Stone Usage

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Coarse Stone	100	2.501E+00	500.2

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = (0.60)\ (0.51)\ (\text{veh speed})^2$$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 16.711 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.017 lb PM_{10} / yd^3

Summary - Cover Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Soils	17,476	1.709E-02	298.7

Summary - Road Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Coarse Stone	2,554	1.709E-02	43.7

Summary - Miscellaneous Stone Usage

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Coarse Stone	3,600	1.709E-02	61.5

PM_{10} CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Paved / Unpaved Roads - RMU-1

Road Segment #	*Vehicles on Segment*	*NO. OF VEHICLES [a] PER YEAR*	*AVERAGE FULL VEHICLE WEIGHT [b] (tons)*	*AVERAGE EMPTY VEHICLE WEIGHT [b] (tons)*	*ACTUAL MEAN VEHICLE WEIGHT [b] (tons)*	*MILES TRAVELED (c) (MILES)*	*SILT CONTENT [d] (g/m^2)*	*PM10 Emission Rate (lb/VMT) [f]*	*Uncontrolled PM10 (TPY)*	*Efficiency (%) [g] PM10 (TPY)*	*Controlled PM10 [h] (TPY)*
PAVED										**PAVED**	
1-2	Landfill Disposal	5,900	39.5	18.7	29.1	4,800.5	7.4				
	AWTS	140	30.8	17.3	24.0	113.9	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,369.4	7.4				
	Transship	92	32.4	20.1	26.2	74.9	7.4				
	Drums	833	26.4	17.5	22.0	677.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	4,230.9	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	1,057.7	7.4				
	Personal Veh.	6,500	1.5	1.5	1.5	5,288.6	7.4				
Total/Average		21,648			12.5	17,613.6	7.4	0.179	1.580	90	0.16
2-3	Landfill Disposal	5,900	39.5	18.7	29.1	3,857.3	7.4				
	AWTS	140	30.8	17.3	24.0	91.5	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,100.3	7.4				
	Transship	92	32.4	20.1	26.2	60.1	7.4				
	Drums	833	26.4	17.5	22.0	544.6	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	3,399.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	849.9	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	849.9	7.4				
Total/Average		16,448			16.0	10,753.5	7.4	0.230	1.239	90	0.12
4-10	Landfill Disposal	5,900	39.5	18.7	29.1	1,423.6	7.4				
	AWTS	140	30.8	17.3	24.0	33.8	7.4				
	Stabilization	1,683	35.1	19.9	27.5	406.1	7.4				
	Transship	92	32.4	20.1	26.2	22.2	7.4				
	Drums	833	26.4	17.5	22.0	201.0	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,254.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	313.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	313.7	7.4				
Total/Average		16,448			16.0	3,968.7	7.4	0.230	0.457	90	0.05
5-6	Stabilization	1,683	35.1	19.9	27.5	458.4	7.4				
Total/Average		1,683			27.5	458.4	7.4	0.399	0.092	90	0.01
7-8	Post-Stabilization	3,366	33.0	19.0	26.0	998.3	7.4				
Total/Average		3,366			26.0	998.3	7.4	0.377	0.188	90	0.02
8-14	Post-Stabilization	3,366	33.0	19.0	26.0	606.9	7.4				
	Drums	833	26.4	17.5	22.0	150.2	7.4				
Total/Average		4,199			25.2	757.1	7.4	0.365	0.138	90	0.01
10-11	Landfill Disposal	5,900	39.5	18.7	29.1	969.9	7.4				
	AWTS	140	30.8	17.3	24.0	23.0	7.4				
	Stabilization	1,683	35.1	19.9	27.5	276.7	7.4				
	Drums	833	26.4	17.5	22.0	136.9	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	854.8	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	213.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	213.7	7.4				
Total/Average		16,356			16.0	2,688.8	7.4	0.230	0.309	90	0.03
11-12	AWTS	140	30.8	17.3	24.0	37.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,402.4	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	350.6	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	350.6	7.4				
Total/Average		7,940			3.1	2,141.4	7.4	0.043	0.047	90	0.00
11-13	Landfill Disposal	5,900	39.5	18.7	29.1	1,068.3	7.4				
	Drums	833	26.4	17.5	22.0	150.8	7.4				
Total/Average		6,733			28.2	1,219.1	7.4	0.411	0.250	90	0.03
13-14	Drums	833	26.4	17.5	22.0	215.8	7.4				
Total/Average		833			22.0	215.8	7.4	0.318	0.034	90	0.00
15-16	Landfill Disposal	5,900	39.5	18.7	29.1	3,479.7	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	1,985.2	7.4				
	Construction	22,282	36.8	16.8	26.8	13,141.3	7.4				
Total/Average		31,548			27.1	18,606.2	7.4	0.394	3.664	90	0.37
16-17	Landfill Disposal	5,900	39.5	18.7	29.1	1,591.2	7.4				
	Construction	22,282	36.8	16.8	26.8	6,009.4	7.4				
Total/Average		28,182			27.2	7,600.6	7.4	0.396	1.504	90	0.15
18-19	Construction	22,282	36.8	16.8	26.8	8,507.7	7.4				
Total/Average		22,282			26.8	8,507.7	7.4	0.388	1.652	90	0.17
										Total	**1.12**

PM_{10} CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

										UNPAVED	
3-4	Landfill Disposal	5,900	39.5	18.7	29.1	1,644.8	6.4				
	AWTS	140	30.8	17.3	24.0	39.0	6.4				
	Stabilization	1,683	35.1	19.9	27.5	469.2	6.4				
	Transship	92	32.4	20.1	26.2	25.6	6.4				
	Drums	833	26.4	17.5	22.0	232.2	6.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,449.7	6.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	362.4	6.4				
	Personal Veh.	1,300	1.5	1.5	1.5	362.4	6.4				
Total/Average		16,448			16.0	4,585.5	6.4	1.811	4.152	90	0.42
4-5	Stabilization	1,683	35.1	19.9	27.5	443.7	6.4				
Total/Average		1,683			27.5	443.7	6.4	2.308	0.512	90	0.05
9-10	Transship	92	32.4	20.1	26.2	14.1	6.4				
Total/Average		92			26.2	14.1	6.4	2.261	0.016	90	0.00
14-16	Post-Stabilization	3,366	33.0	19.0	26.0	1,354.1	6.4				
Total/Average		3,366			26.0	1,354.1	6.4	2.251	1.524	90	0.15
13-17	Landfill Disposal	5,900	39.5	18.7	29.1	2,344.4	6.4				
Total/Average		5,900			29.1	2,344.4	6.4	2.370	2.778	90	0.28
17-18	Construction	22,282	36.8	16.8	26.8	12,947.2	6.4				
Total/Average		22,282			26.8	12,947.2	6.4	2.280	14.761	90	1.48
19-20	Construction	22,282	36.8	16.8	26.8	21,623.7	6.4				
Total/Average		22,282			26.8	21,623.7	6.4	2.280	24.654	90	2.47
										Total	**4.84**

EQUATIONS:

A Fugitive emissions from paved site roads are based on emission factors from AP-42 Section 13.2.1.3 (Equation 1 for paved roads).
Constant 'k' (particle size multiplier) from AP-42 Table 13.2-1.1.

Calculations

$E\ (lb/VMT) = [k(sL)^{.91}(W)^{1.02}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/d)*(d/week)*(week/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
K(PM10) = 0.0022 lb/VMT
W = Average weight of vehicle in tons
sL = silt loading sL = 7.4 g/m^2

B Fugitive emissions from trucks driving on unpaved surfaces, will use emission factor equation in AP-42 Section 13.2.2.4 (Equation 1a for unpaved roads)

Calculations

$E\ (lb/VMT) = [k(s/12)^{a}(W/3)^{b}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
k(PM10) = 1.5 lb/VMT

a = Constant a(PM10) = 0.9
b = Constant b(PM10) = 0.45
s = silt content (%)
(measured or estimated - varies for different sources/materials - see below)
s = 6.4 %

NOTES:

a Number of vehicles information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
b Vehicle weight information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
c The round-trip distance traveled on the roads determined from analysis of CAD drawing of site (See Below)
d Silt content was referenced from Section 13.2.1 or 13.2.2 from AP-42.
f PM emissions were calculated using equations as shown above.
g Control efficiencies for paved and unpaved roads (and surfaces treated as unpaved roads) were referenced from Table B.2-3 of Appendix B of AP-42; water trucks are used at the Facility to control dust emissions from paved and unpaved roads, and are required by the Facility's permit.
h Controlled PM emissions were calculated by applying the control efficiency to the calculated PM-TPY value.

Distances determined from AutoCAD analysis of Site Drawing

Segment	Length (ft)
1-2	2148
2-3	1726
4-10	637
5-6	719
7-8	783
8-14	476
10-11	434
11-12	712
11-13	478
13-14	684
15-16	1557
16-17	712
18-19	1008
3-4	736
4-5	696
9-10	405
14-16	1062
13-17	1049
17-18	1534
19-20	2562

PM_{10} CALCULATIONS
SILO LOADING / STABILIZATION BAGHOUSES
CWM CHEMICAL SERVICES, LLC

Cement Kiln Silo Loading

- Cement Kiln Silo

Total Waste Stabilized at Facility = 25,454.0 tons/year

- Assume that 15% CKD is added to treat waste

CKD Consumption = 3,818.1 tons/year

* Section 11.12 of AP-42 (6/06) lists controlled emission factor for cement loading to elevated storage silo (pneumatic) as 0.00099 lb/ton loaded (Table 11.12-2)

** Assume that all particulate matter is PM_{10} to be conservative

PM_{10} emissions = 3.78 lb/year
PM_{10} emissions = 0.002 TPY

Lime Silo (AWTS Facility)

From Facility Records:

2005 Lime Consumption = 110 tons
2006 Lime Consumption = 110 tons

* Section 11.17 of AP-42 (2/98) lists emission factor for lime loading (enclosed truck) as:
0.61 lb/ton (Table 11.17-4)

** Assume that all particulate matter is PM_{10} to be conservative

PM_{10} emissions = 67.10 lb/year
PM_{10} emissions = 0.03 TPY

Stabilization Baghouses

- 2 stabilization baghouses in operation

- Facility records indicate that approximately 200 lb of particulates are removed from hoppers every 2 weeks

Collected PM = 5,200 lb/year

- Assume 99 percent capture efficiency in stabilization baghouse
- Assume that all particulate matter is PM_{10}

PM_{10} Emissions = 52.5 lb/year (Controlled emissions)

Baghouse Flowrates:

			Fraction of Total
Baghouse 1 =	90,000	cfm	0.643
Baghouse 2 =	50,000	cfm	0.357

- Proportion emissions according to flowrate in each baghouse

Baghouse #1 Emissions = 33.8 lb/year
Baghouse #1 Emissions = 0.02 tons/year
Baghouse #2 Emissions = 18.8 lb/year
Baghouse #2 Emissions = 0.01 tons/year

PM_{10} CALCULATIONS
LANDFILL TOTALS
CWM CHEMICAL SERVICES, LLC

Totals

Process	**PM_{10} Emissions (lb/year)**	**PM_{10} Emissions (TPY)**
Landfill Operation		
Waste Unloading	1.8	0.00
Waste Compaction	162.3	0.08
Paved Roads	2,230.8	1.12
Unpaved Roads	9,679.4	4.84
Totals	**12,074.3**	**6.04**
Landfill Construction (RMU-1)		
Material Loading/Unloading	66.5	0.03
Bulldozing/Compaction	1,649.8	0.82
Grading	403.9	0.20
Totals	**2,120.1**	**1.06**
Silo Loading		
Cement Kiln Silo	3.8	0.002
Lime Silo (AWTS Facility)	67.1	0.03
Totals	**70.9**	**0.04**
Stabilization Baghouses		
Baghouse # 1	33.8	0.02
Baghouse # 2	18.8	0.01
Totals	**52.5**	**0.03**
Facility Totals	**14,317.9**	**7.16**

Attachment 2
Calculation of Fugitive PM2.5 Emissions

$PM_{2.5}$ CALCULATIONS
TRUCK AND WASTE SUMMARY
CWM CHEMICAL SERVICES, LLC

Truck and Waste Summary

Vehicle Type	Code	Average Vehicle Weight (tons) Gross Weight	Empty Weight	Payload	Total Vehicles	Vehicle Route
Dump Truck	DT	43.9	17.0	26.8	3,454	Landfill
Rolloff Truck	CM	33.4	21.1	12.2	2,446	Landfill
Tanker Truck	TT	30.8	17.4	13.4	132	AWTS
Vacuum Tanker	VT	31.3	15.9	15.4	8	AWTS
Rolloff Truck	CM	32.1	21.7	10.3	1,023	Stabilization
Dump Truck	DT	39.9	17.1	22.9	634	Stabilization
Pneumatic Truck	PT	33.8	17.0	16.8	22	Stabilization
Tanker Truck	TT	27.6	17.7	9.9	4	Stabilization
Off-Road Truck	---	33.0	19.0	14.0	3,366	Post-Stabilization [a]
Rolloff Truck	CM	37.5	22.1	15.4	50	Transship [b]
Dump Truck	DT	38.8	16.8	22.0	4	Transship [b]
Tanker Truck	TT	25.5	17.8	7.7	34	Transship [b]
Vacuum Tanker	VT	20.4	17.5	2.9	4	Transship [b]
Drum Truck	---	26.4	17.5	8.9	833	Drum Building
Site Vehicles	---	2.5	2.5	---	5,200	AWTS
Delivery Trucks	---	5.0	5.0	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	5,200	Main Office

* Based on CWM waste tracking data and non-waste vehicle estimates for the 12-month period of July 2006 - June 2007

Notes:

a Assumes 2 loaded vehicles for each stabilization vehicle

b Total # vehicles equals twice the actual amount of vehicles since each transship load requires 2 round trips

Total Bulk Waste = (3,454 veh)(26.8 tons/veh) + (2,446 veh)(12.2 tons/veh) + (1,023 veh)(10.3 tons/veh) + (634 veh)(22.9 tons/veh) + (22 veh)(16.8 tons/veh) + (4 veh)(9.9 tons/veh)

Total Bulk Waste = 148,024.6 tpy

Fractions

Dump Trucks = 107,251.2 tons / 148,024.6 tons = 0.724

Rolloff Trucks = 40,795.0 tons / 148,024.6 tons = 0.273

Pneumatic Trucks = 368.8 tons / 148,024.6 tons = 0.002

Tanker Trucks = 39.6 tons / 148,024.6 tons = 0.0003

To be conservative, assume bulk waste increase of 10%

Total Bulk Waste = 162,827.0 tpy

Waste Densities (according to CWM facility records):

Truck	Density (lb/ft^3)
Dump	96
Rolloff	81.5

Volume Calculations

$$Volume_{(dump)} = \frac{(0.726)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(96 \text{ lb})(1 \text{ ton})} = 2.46E+06 \ ft^3$$

$$Volume_{(rolloff)} = \frac{(0.274)(162{,}827.07 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.09E+06 \ ft^3$$

$$Volume_{(pneumatic)} = \frac{(0.002)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 9.96E+03 \ ft^3$$

$$Volume_{(tanker)} = \frac{(0.0003)(162{,}827.0 \text{ tons})(1ft3)(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.07E+03 \ ft^3$$

Total Volume = 3.56E+06 ft^3 = 1.32E+05 yd^3

$PM_{2.5}$ CALCULATIONS
LANDFILL OPERATIONS
CWM CHEMICAL SERVICES, LLC

Landfill Operation

Waste Unloading

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\ (0.0032)\ \frac{(u / 5)^{1.3}}{(M / 2)^{1.4}}$$

where:
E = emission factor (lb/ton)
k = 0.053 (for $PM_{2.5}$)
u = mean wind speed (mph) = 6.8 (2006 average wind speed - Model City, NY)
M = % moisture in clay/dirt mix = 14 (from AP-42, Table 13.2.4-1)

$$E = k\ (0.0032)\ \frac{(6.8 / 5)^{1.3}}{(14 / 2)^{1.4}} = 1.649E\text{-}05 \text{ lb/ton}$$

Total Waste Unloaded =	166,645	tons/year	(Includes stabilization materials)
Total Emissions =	2.7	lb/year	
Total Emissions (40% Control)[1] =	1.65	lb/year	
Total Emissions (40% Control)[1] =	0.001	tons/year	

Waste Compaction

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.105)\ (5.7)\ (\text{silt}\%)^{1.2}}{(\text{moisture}\%)^{1.3}}$$

where: E = Emission rate of $PM_{2.5}$ in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay/dirt mix:
Silt % = 9.2
Moisture % = 14

$$E = \frac{(0.105)\ (5.7)\ (9.2)^{1.2}}{(14)^{1.3}} = 0.278 \text{ lb/hr}$$

Total Operation hours / year =	1560		(6 hours/day, 5 days/week, 52 weeks/year)
Total Bulldozers Operating =	2		
Total Emissions =	0.4	tons/year	
Total Emissions (40% Control)[1] =	0.26	tons/year	

Notes:
1 During disposal of identified dusty wastes, CWM Model City applies a water spray to minimize dust emissions. In addition, a dust suppressant material called Con-Cover is used to cover the waste on a daily basis. A 40% control efficiency is used to account for the reduction in PM emissions due to these operational procedures which are required by the

Facility's permit.

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Landfill Construction
Landfill Unit: RMU-1

Material Requirements

Cover Construction (GCL Design)

Material	Volume (yd^3)	Weight (tons)
Soils	157,280	154,999

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Coarse Stone	107
Soils	73

Cover Construction Materials Usage / Phase ***

Material	Volume (yd^3)	Weight (tons)
Soils	17,476	17,222

Landfill Activity Span = 9 phases of cover
Total Landfill Life = 18 years (1995 - 2012)

*** No more than one phase of cover is constructed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{17{,}222 \text{ tpy}}{20 \text{ tons / truck}} = 861.1 \text{ trucks/year} = 862 \text{ trucks/year}$$

Roadway Construction Inside Active Landfill

Each layer of landfill material is 6 ft high.
Uncapped landfill height = 115 ft
Total layers = 20 (Road surface on 1st 19 layers only)
Total Cells = 14

Assume length of roadway surface as 1/2 the diagonal across 1 RMU-1 cell, then multiplied by 19

RMU-1 Length = 330 ft Diagonal = 466.7 ft
RMU-1 Width = 330 ft 1/2 Diagonal = 233.3 ft

$$\text{Length} = \frac{(233.3 \text{ ft})(14 \text{ cells})(19 \text{ lifts})}{(\text{cell-lift})} = 62{,}069.8 \text{ ft}$$

Length / year = 3,448 ft
Depth = 0.5 ft (6 inches)
Width = 40 ft

Volume (stone) = 68,966 ft^3/yr
Volume (stone) = 2,554 yd^3/yr
Trucks needed = 185 /year

Operations Stone

Assume 5 trucks per week or 260 trucks per year for miscellaneous stone usage

Total Stone = 5,200 tons/year
Total Stone = 97,196 ft^3/yr
Total Stone = 3,600 yd^3/yr

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u / 5)^{1.3}}{(M / 2)^{1.4}}$$

where:

E =	emission factor (lb/ton)		
k =	0.053 (for $PM_{2.5}$)		
u =	mean wind speed (mph) =	6.8	(2006 average wind speed - Model City, NY)
M_{stone} =	% moisture in stone =	0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =	12	(from AP-42, Table 13.2.4-1)

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8 / 5)^{1.3}}{(0.7 / 2)^{1.4}} = 1.093E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8 / 5)^{1.3}}{(12 / 2)^{1.4}} = 2.046E\text{-}05 \text{ lb/ton}$$

Summary - Cover Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Soils	17,222	2.046E-05	0.4

Summary - Road Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	3,690	1.093E-03	4.0

Summary - Miscellaneous Stone Usage

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	5,200	1.093E-03	5.7

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.105)\ (5.7)\ (\text{silt}\%)^{1.2}}{(\text{moisture}\%)^{1.3}}$$

where: E = Emission rate of $PM_{2.5}$ in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Stone:
Silt % = 1.6
Moisture % = 0.7

Topsoil/Dirt:
Silt % = 9
Moisture % = 12

$$E_{(\text{stone})} = \frac{(0.105)\ (5.7)\ (1.6)^{1.2}}{(0.7)^{1.3}} = 1.673\text{E+00}\ \text{lb/hr}$$

$$E_{(\text{topsoil/dirt})} = \frac{(0.105)\ (5.7)\ (9)^{1.2}}{(12)^{1.3}} = 3.305\text{E-01}\ \text{lb/hr}$$

Total Cover Construction hours / year =	600	(10 hours/day, 5 days/week, 12 weeks/year)
Roadway Construction hours/year =	80	
Miscellaneous Stone operation hours/year =	100	
Total Bulldozers Operating / Activity =	2	

Summary - Cover Construction

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Soils	600	3.305E-01	396.6

Summary - Road Construction

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	80	1.673E+00	267.6

Summary - Miscellaneous Stone Usage

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	100	1.673E+00	334.5

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = (0.031)\ (0.040)\ (\text{veh speed})^{2.5}$$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 0.184 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.0002 lb $PM_{2.5}$ / yd^3

Summary - Cover Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Soils	17,476	1.883E-04	3.3

Summary - Road Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	2,554	1.883E-04	0.5

Summary - Miscellaneous Stone Usage

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	3,600	1.883E-04	0.7

$PM_{2.5}$ CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Paved / Unpaved Roads - RMU-1

Road Segment #	*Vehicles on Segment*	*NO. OF VEHICLES [a] PER YEAR*	*AVERAGE FULL VEHICLE WEIGHT [b] (tons)*	*AVERAGE EMPTY VEHICLE WEIGHT [b] (tons)*	*ACTUAL MEAN VEHICLE WEIGHT [b] (tons)*	*MILES TRAVELED (c) (MILES)*	*SILT CONTENT [d] (g/m^2)*	*PM2.5 Emission Rate (lb/VMT) [f]*	*Uncontrolled PM2.5 (TPY)*	*Efficiency (%) [g] PM2.5 (TPY)*	*Controlled PM2.5 [h] (TPY)*
PAVED										**PAVED**	
1-2	Landfill Disposal	5,900	39.5	18.7	29.1	4,800.5	7.4				
	AWTS	140	30.8	17.3	24.0	113.9	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,369.4	7.4				
	Transship	92	32.4	20.1	26.2	74.9	7.4				
	Drums	833	26.4	17.5	22.0	677.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	4,230.9	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	1,057.7	7.4				
	Personal Veh.	6,500	1.5	1.5	1.5	5,288.6	7.4				
Total/Average		21,648			12.5	17,613.6	7.4	0.044	0.388	40	0.23
2-3	Landfill Disposal	5,900	39.5	18.7	29.1	3,857.3	7.4				
	AWTS	140	30.8	17.3	24.0	91.5	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,100.3	7.4				
	Transship	92	32.4	20.1	26.2	60.1	7.4				
	Drums	833	26.4	17.5	22.0	544.6	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	3,399.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	849.9	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	849.9	7.4				
Total/Average		16,448			16.0	10,753.5	7.4	0.057	0.304	40	0.18
4-10	Landfill Disposal	5,900	39.5	18.7	29.1	1,423.6	7.4				
	AWTS	140	30.8	17.3	24.0	33.8	7.4				
	Stabilization	1,683	35.1	19.9	27.5	406.1	7.4				
	Transship	92	32.4	20.1	26.2	22.2	7.4				
	Drums	833	26.4	17.5	22.0	201.0	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,254.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	313.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	313.7	7.4				
Total/Average		16,448			16.0	3,968.7	7.4	0.057	0.112	40	0.07
5-6	Stabilization	1,683	35.1	19.9	27.5	458.4	7.4				
Total/Average		1,683			27.5	458.4	7.4	0.098	0.022	40	0.01
7-8	Post-Stabilization	3,366	33.0	19.0	26.0	998.3	7.4				
Total/Average		3,366			26.0	998.3	7.4	0.093	0.046	40	0.03
8-14	Post-Stabilization	3,366	33.0	19.0	26.0	606.9	7.4				
	Drums	833	26.4	17.5	22.0	150.2	7.4				
Total/Average		4,199			25.2	757.1	7.4	0.090	0.034	40	0.02
10-11	Landfill Disposal	5,900	39.5	18.7	29.1	969.9	7.4				
	AWTS	140	30.8	17.3	24.0	23.0	7.4				
	Stabilization	1,683	35.1	19.9	27.5	276.7	7.4				
	Drums	833	26.4	17.5	22.0	136.9	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	854.8	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	213.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	213.7	7.4				
Total/Average		16,356			16.0	2,688.8	7.4	0.056	0.076	40	0.05
11-12	AWTS	140	30.8	17.3	24.0	37.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,402.4	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	350.6	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	350.6	7.4				
Total/Average		7,940			3.1	2,141.4	7.4	0.011	0.011	40	0.01
11-13	Landfill Disposal	5,900	39.5	18.7	29.1	1,068.3	7.4				
	Drums	833	26.4	17.5	22.0	150.8	7.4				
Total/Average		6,733			28.2	1,219.1	7.4	0.101	0.061	40	0.04
13-14	Drums	833	26.4	17.5	22.0	215.8	7.4				
Total/Average		833			22.0	215.8	7.4	0.078	0.008	40	0.01
15-16	Landfill Disposal	5,900	39.5	18.7	29.1	3,479.7	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	1,985.2	7.4				
	Construction	22,282	36.8	16.8	26.8	13,141.3	7.4				
Total/Average		31,548			27.1	18,606.2	7.4	0.097	0.899	40	0.54
16-17	Landfill Disposal	5,900	39.5	18.7	29.1	1,591.2	7.4				
	Construction	22,282	36.8	16.8	26.8	6,009.4	7.4				
Total/Average		28,182			27.2	7,600.6	7.4	0.097	0.369	40	0.22
18-19	Construction	22,282	36.8	16.8	26.8	8,507.7	7.4				
Total/Average		22,282			26.8	8,507.7	7.4	0.095	0.406	40	0.24
										Total	**1.64**

$PM_{2.5}$ CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

UNPAVED										UNPAVED	
3-4	Landfill Disposal	5,900	39.5	18.7	29.1	1,644.8	6.4				
	AWTS	140	30.8	17.3	24.0	39.0	6.4				
	Stabilization	1,683	35.1	19.9	27.5	469.2	6.4				
	Transship	92	32.4	20.1	26.2	25.6	6.4				
	Drums	833	26.4	17.5	22.0	232.2	6.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,449.7	6.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	362.4	6.4				
	Personal Veh.	1,300	1.5	1.5	1.5	362.4	6.4				
Total/Average		16,448			16.0	4,585.5	6.4	0.181	0.415	40	0.25
4-5	Stabilization	1,683	35.1	19.9	27.5	443.7	6.4				
Total/Average		1,683			27.5	443.7	6.4	0.231	0.051	40	0.03
9-10	Transship	92	32.4	20.1	26.2	14.1	6.4				
Total/Average		92			26.2	14.1	6.4	0.226	0.002	40	0.00
14-16	Post-Stabilization	3,366	33.0	19.0	26.0	1,354.1	6.4				
Total/Average		3,366			26.0	1,354.1	6.4	0.225	0.152	40	0.09
13-17	Landfill Disposal	5,900	39.5	18.7	29.1	2,344.4	6.4				
Total/Average		5,900			29.1	2,344.4	6.4	0.237	0.278	40	0.17
17-18	Construction	22,282	36.8	16.8	26.8	12,947.2	6.4				
Total/Average		22,282			26.8	12,947.2	6.4	0.228	1.476	40	0.89
19-20	Construction	22,282	36.8	16.8	26.8	21,623.7	6.4				
Total/Average		22,282			26.8	21,623.7	6.4	0.228	2.465	40	1.48
										Total	**2.90**

EQUATIONS:

A Fugitive emissions from paved site roads are based on emission factors from AP-42 Section 13.2.1.3 (Equation 1 for paved roads).
Constant 'k' (particle size multiplier) from AP-42 Table 13.2-1.1.

Calculations

$E\ (lb/VMT) = [k(sL)^{.91}(W)^{1.02}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/d)*(d/week)*(week/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
K(PM2.5) = 0.00054 lb/VMT
W = Average weight of vehicle in tons
sL = silt loading sL = 7.4 g/m^2

B Fugitive emissions from trucks driving on unpaved surfaces, will use emission factor equation in AP-42 Section 13.2.2.4 (Equation 1a for unpaved roads)

Calculations

$E\ (lb/VMT) = [k(s/12)^{a}(W/3)^{b}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
k(PM2.5) = 0.15 lb/VMT

a = Constant a(PM2.5) = 0.9
b = Constant b(PM2.5) = 0.45
s = silt content (%)
(measured or estimated - varies for different sources/materials - see below)
s = 6.4 %

NOTES:

a Number of vehicles information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
b Vehicle weight information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
c The round-trip distance traveled on the roads determined from analysis of CAD drawing of site (See Below)
d Silt content was referenced from Section 13.2.1 or 13.2.2 from AP-42.
f PM emissions were calculated using equations as shown above.
g Control efficiencies for paved and unpaved roads (and surfaces treated as unpaved roads) were referenced from Table B.2-3 of Appendix B of AP-42; water trucks are used at the Facility to control dust emissions from paved and unpaved roads, and are required by the Facility's permit.
h Controlled PM emissions were calculated by applying the control efficiency to the calculated PM-TPY value.

Distances determined from AutoCAD analysis of Site Drawing

Segment	Length (ft)
1-2	2148
2-3	1726
4-10	637
5-6	719
7-8	783
8-14	476
10-11	434
11-12	712
11-13	478
13-14	684
15-16	1557
16-17	712
18-19	1008
3-4	736
4-5	696
9-10	405
14-16	1062
13-17	1049
17-18	1534
19-20	2562

$PM_{2.5}$ CALCULATIONS
SILO LOADING AND STABILIZATION BAGHOUSES
CWM CHEMICAL SERVICES, LLC

Cement Kiln Silo Loading

- Cement Kiln Silo

Total Waste Stabilized at Facility = 25,454.0 tons/year

- Assume that 15% CKD is added to treat waste

CKD Consumption = 3,818.1 tons/year

* Section 11.12 of AP-42 (6/06) lists controlled emission factor for cement loading to elevated storage silo (pneumatic) as 0.00099 lb/ton loaded (Table 11.12-2)

** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ emissions = 3.78 lb/year
$PM_{2.5}$ emissions = 0.002 TPY

Lime Silo (AWTS Facility)

From Facility Records:

2005 Lime Consumption = 110 tons
2006 Lime Consumption = 110 tons

* Section 11.17 of AP-42 (2/98) lists emission factor for lime loading (enclosed truck) as:
0.61 lb/ton (Table 11.17-4)

** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ emissions = 67.10 lb/year
$PM_{2.5}$ emissions = 0.03 TPY

Stabilization Baghouses

- 2 stabilization baghouses in operation

- Facility records indicate that approximately 200 lb of particulates are removed from hoppers every 2 weeks

Collected PM = 5,200 lb/year

- Assume 99 percent capture efficiency in stabilization baghouse
** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ Emissions = 52.5 lb/year (Controlled emissions)

Baghouse Flowrates:

			Fraction of Total
Baghouse 1 =	90,000	cfm	0.643
Baghouse 2 =	50,000	cfm	0.357

- Proportion emissions according to flowrate in each baghouse

Baghouse #1 Emissions = 33.8 lb/year
Baghouse #1 Emissions = 0.02 tons/year
Baghouse #2 Emissions = 18.8 lb/year
Baghouse #2 Emissions = 0.01 tons/year

$PM_{2.5}$ CALCULATIONS
LANDFILL TOTALS
CWM CHEMICAL SERVICES, LLC

Totals

Process	**$PM_{2.5}$ Emissions (lb/year)**	**$PM_{2.5}$ Emissions (TPY)**
Landfill Operation		
Waste Unloading	1.6	0.00
Waste Compaction	519.9	0.26
Paved Roads	3,285.3	1.64
Unpaved Roads	5,807.6	2.90
Totals	**9,614.6**	**4.81**
Landfill Construction (RMU-1)		
Material Loading/Unloading	10.1	0.01
Bulldozing/Compaction	998.8	0.50
Grading	4.4	0.00
Totals	**1,013.3**	**0.51**
Silo Loading		
Cement Kiln Silo	3.8	0.002
Lime Silo (AWTS Facility)	67.1	0.03
Totals	**70.9**	**0.04**
Stabilization Baghouses		
Baghouse # 1	33.8	0.02
Baghouse # 2	18.8	0.01
Totals	**52.5**	**0.03**
Facility Totals	**10,751.3**	**5.38**

Attachment 3

USEPA Paper *"Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions"*

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Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions

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Small chamber tests were conducted to experimentally determine the overall mass transfer coefficient for pollutant emissions from still aqueous solutions under simulated indoor (residential or occupational) environmental conditions. The tests covered six organic compounds with a Henry's constant range from 3.33×10^{-7} to 3.67×10^{-3} (atm m^3/mol). The estimated overall liquid phase mass transfer coefficients for still solutions varied from 1.8×10^{-6} to 5.7×10^{-3} m/h; the estimated liquid phase mass transfer coefficients were 9.7×10^{-3} m/h for the reference compound (oxygen) and 5.00×10^{-3} to 6.04×10^{-3} m/h for the test compounds. An empirical model is proposed to estimate the overall mass transfer coefficient, which can be used to predict pollutant emissions from still aqueous solutions (e.g. pools and puddles) in indoor environments.

Keywords: aqueous solution; emission; indoor environment; mass transfer coefficient; water

INTRODUCTION

The overall mass transfer coefficient, also known as the total transfer velocity, is a key parameter in predicting the rate of pollutant emissions from aqueous solutions. It is well established that, based on the classic two-resistance theory, the emission rate can be estimated by equation (1) or, equivalently, equation (2) (Lyman *et al.*, 1990).

$$R = SK_{OL}(C_L - C_G/H) \quad (1)$$

$$R = SK_{OG}(C_L H - C_G) \quad (2)$$

where R is the emission rate (μg/h), S is the source area (m^2), K_{OL} is the overall liquid phase mass transfer coefficient (m/h), K_{OG} is the overall gas phase mass transfer coefficient (m/h), C_L is the pollutant concentration in the liquid (μg/m^3), C_G is the pollutant concentration in air (μg/m^3) and H is the dimensionless Henry's constant $[(\mu g/m^3)_{air}/(\mu g/m^3)_{liquid}]$. The two overall mass transfer coefficients, K_{OL} and K_{OG}, are defined by equations (3) and (4), respectively.

$$1/K_{OL} = (1/k_L) + (1/k_G H) \quad (3)$$

$$1/K_{OG} = (H/k_L) + (1/k_G) \quad (4)$$

where k_L is the liquid phase mass transfer coefficient (m/h) and k_G is the gas phase mass transfer coefficient (m/h). K_{OL} and K_{OG} are so closely related that one can regard them as the measurement of the same physical property on different scales, a case similar to weighing an object in kilograms and pounds. The conversion factor between K_{OL} and K_{OG} is the Henry's constant (equation 5).

$$K_{OL} = HK_{OG} \quad (5)$$

The difference between the phase mass transfer coefficient (k_L or k_G) and the overall mass transfer coefficient (K_{OL} or K_{OG}) is that the former considers the transfer velocity in a single phase (either liquid or

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Table 1. Selected properties of the test compounds at 25°C

Compound	Formula	Molecular weight	Vapor pressure[a] (mmHg)	Henry's constant[b]		D_a[c] (m^2/h)	D_L[d] (m^2/h)
				(atm m^3/mol)	(dimensionless)		
Chloroform	$CHCl_3$	119.4	198	3.67×10^{-3}	1.50×10^{-1}	3.28×10^{-2}	3.90×10^{-6}
Butyl acetate	$CH_3COOC_4H_9$	116.2	11.6	2.81×10^{-4}	1.15×10^{-2}	2.61×10^{-2}	$2.79 \times 10_{-6}$
Ethyl acetate	$CH_3COOC_2H_5$	88.10	93.6	1.34×10^{-4}	5.48×10^{-3}	3.14×10^{-2}	3.45×10^{-6}
1-Butanol	C_4H_9OH	74.12	7.07	8.81×10^{-6}	3.60×10^{-4}	3.24×10^{-2}	3.54×10^{-6}
1-Propanol	C_3H_7OH	60.09	20.8	7.41×10^{-6}	3.03×10^{-4}	3.71×10^{-2}	4.08×10^{-6}
Phenol	C_6H_5OH	94.11	0.53	3.33×10^{-7}	1.36×10^{-5}	3.07×10^{-2}	3.55×10^{-6}

[a]From Yaws (1994).
[b]From Howard and Meylan (1997).
[c]D_a is diffusivity in air, calculated with the method of Fuller *et al.* (1966).
[d]D_L is diffusivity in water, calculated with the method of Hayduk and Laudie (1974).

gas) while the latter considers both phases. In other words, the overall mass transfer coefficient represents the combined effects of k_L, k_G and H.

Since Henry's constants are available in the literature for most compounds of interest, estimation of either overall mass transfer coefficient becomes the main issue for predicting pollutant emissions from aqueous solutions. Ways to estimate the phase mass transfer coefficients (k_L and k_G) have been thoroughly studied in the ambient environment, in which the sources of interest include oceans, lakes, rivers and waste water treatment facilities. Excellent summaries on this subject are given by Lyman *et al.* (1990) and Schwarzenbach *et al.* (1993). For example, Southworth (1979) used equations (6) and (7) to calculate k_L and k_G, respectively.

$$k_L = 23.51(V_{curr}^{0.969}/Z^{0.673})\sqrt{32/M} \quad (6)$$

$$k_G = 1137.5(V_{wind} + V_{curr})\sqrt{18/M} \quad (7)$$

where k_G and k_L are in cm/h, V_{curr} is the river current velocity (m/s), V_{wind} is the wind speed (m/s), Z is the depth of water (m) and M is the molecular weight of the chemical of interest (g/mol). The applicability of these ambient models to indoor environments is doubtful, however, because the conditions in the latter environments, occupational or residential, can be drastically different from those found outdoors. For instance, the velocity (or speed) of indoor air is usually much lower, typically 5–10 cm/s, and source areas are much smaller too. If the water is virtually still, equation (6) gives 0 for k_L.

In a comprehensive study on emissions from water use to indoor air (EPA, 2000), lumped overall mass transfer coefficients (SK_{OL}) were reported for washing machine, dishwasher, shower and bathtub. The absolute values of k_G and k_L were not determined, however.

This study concerns pollutant emissions from still aqueous solutions in the indoor environment. Examples of such emission sources include buckets of water-based hard surface cleaners used by janitors, water-based cleaners applied to horizontal surfaces and puddles of water-based insecticides applied to the floor. A more complex case is the emission of organic solvents from latex paint applied to a wall. The objective of this work was two-fold: (i) to experimentally determine the overall mass transfer coefficients for organic compounds with a wide range of Henry's constants under simulated indoor environmental conditions; (ii) to develop an empirical model to estimate the overall mass transfer coefficients for still aqueous solutions. The results of this work can be used to predict pollutant emissions from aqueous solutions in the forms of pools, puddles and films in residential and occupational environments.

METHODS

Six test compounds were selected (Table 1). They cover a range of Henry's constant from 3.33×10^{-7} to 3.67×10^{-3} (atm m^3/mol) or 1.36×10^{-5} to 1.50×10^{-1} (dimensionless). Their dilute solutions, ranging from 3.99×10^{-6} to 5.65×10^{-3} mol/l, were prepared one day before the chamber tests by dissolving a known amount of pure compound in deionized water. Prior to the start of chamber tests, the concentration of the stock solution was analyzed by flash vaporization of the liquid onto Tenax sorbent tubes with subsequent analysis by gas chromatography–mass spectroscopy (GC/MS). The source containers were identical circular pools made from stainless steel. They had an inside diameter of 7.4 cm, an outside diameter (including the edges at the top) of 8.9 cm and a depth of 3.1 cm. The emissions tests were conducted in two identical 53 l stainless steel environmental chambers (Tichenor *et al.*, 1990) with a ventilation rate of 1 air change/h, a temperature of 23.5°C and a relative humidity of inlet air of 20%. Temperature was measured by thermocouples (model E49008U-00-04; Inotek Technologies) and relative humidity by humidity probes (model HHT-2WC-RP-TTB; HyCal Sensing Products). Controlled by small circulation fans, the air speeds in the chambers were measured with a calibrated hot-wire anemometer (1213 Indoor Climate

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Analyzer; Brüel & Kjær) at five locations, 1 cm over the pool. The two chambers differed only in air speeds: 12.6 ± 4.5 cm/s in chamber 1 and 21.6 ± 7.9 cm/s in chamber 2. Prior to a test, the source container was filled with test solution and then placed at the center of the chamber bottom. The test start time was recorded as the chamber door closed. Air samples were collected onto Tenax TA sorbent tubes (Supelco) with mass flow controllers and analyzed by GC with a mass selective detector (6890/5973; Hewlett Packard) equipped with a 30 m DB624 column (0.25 mm i.d. × 1.4 μm film thickness). Samples collected on the sorbents were introduced into the GC by a multitube thermal desorption unit (ATD 400; Perkin Elmer).

RESULTS

Summary of test parameters

A total of 14 chamber tests were conducted, including one duplicate in each chamber. The test conditions are summarized in Table 2.

Time–concentration profiles

The time–concentration profiles were strongly affected by the Henry's constants. For chloroform, which has the largest Henry's constant among the test compounds, the two chambers had almost identical results, indicating that the emissions were limited by the liquid phase mass transfer. In addition, the emission rates decreased significantly over time due to exhaustion of the source (Fig. 1). For phenol, which has the smallest Henry's constant among the test compounds, the difference between the two chambers was significant, indicating that the emissions were limited by the gas phase mass transfer (Fig. 2). The time–concentration profiles for the remaining compounds were between these two extreme cases.

Estimation of the overall liquid phase mass transfer coefficient (K_{OL})

The overall liquid phase mass transfer coefficient (K_{OL}) was estimated by fitting the following mass balance model (equations 8–10) to the chamber concentration data with K_{OL} being the only unknown parameter.

$$V(dC_G/dt) = SK_{OL}(C_L - C_G/H) - QC_G \quad (8)$$

$$dW_L/dt = -SK_{OL}(C_L - C_G/H) \quad (9)$$

$$C_L = W_L/[V_L - (r_w t/\rho_w)] \quad (10)$$

where V is the chamber volume (m^3), t is the time (h), Q is the air exchange flow rate (m^3/h), W_L is the amount of test compound in the liquid (μg), V_L is the initial volume of liquid (m^3), r_w is the water evaporation rate (g/h) and ρ_w is the density of water (g/m^3). Data fitting software SCIENTIST (MicroMath Scientific Software, Salt Lake City, UT) was used for the non-linear regression, and the initial conditions were $t = 0$, $C_G = 0$ and $W_L = C_{L0} \times V_L$, where C_{L0} is the initial concentration in the liquid. The estimated K_{OL} values and their associated standard errors for the non-linear regression are given in the last column of Table 2.

AN EMPIRICAL MODEL FOR ESTIMATING K_{OL} AND K_{OG}

Approach

In order to use equations (1) and (2) as predictive models, one must know how to estimate the overall mass transfer coefficient for a given compound. The objective here is to develop a parameter estimation method for pollutant emissions from still aqueous solutions under indoor environmental conditions. The proposed model calculates the overall mass transfer coefficient (K_{OL} or K_{OG}) in three steps: (i) calculate the gas phase mass transfer coefficient (k_G) from the Sherwood number; (ii) calculate the liquid phase mass transfer coefficient (k_L) from that for a reference compound; (iii) calculate the overall mass transfer coefficient from equation (3) or (4). Details are discussed below.

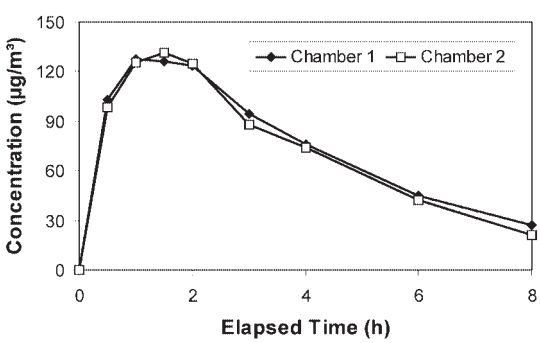


Fig. 1. Time–concentration profile for chloroform.

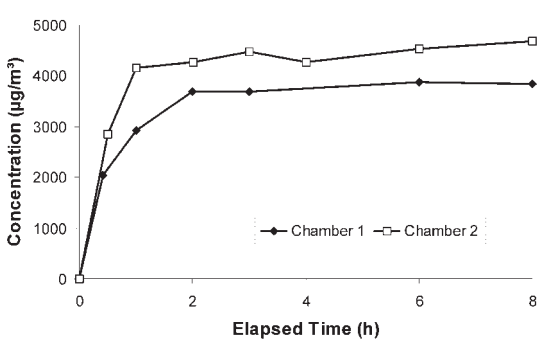


Fig. 2. Time–concentration profile for phenol.

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Table 2. Conditions of 14 chamber tests and estimated overall liquid phase mass transfer coefficients[a]

Test no.	Chemical	Chamber ID[b]	Ach (per h)	C_{L0} (mol/l)	V_L (ml)	T (°C)	RH (%)		r_w (g/h)	Estimated K_{OL} (m/h)
							Inlet	Outlet		
1	Chloroform	1	1.05	3.99×10^{-6}	98.3	23.3 ± 0.03	14.0 ± 0.10	62.0 ± 0.86	0.524	$(5.68 \pm 0.47) \times 10^{-3}$
2	Chloroform	2	1.05	3.99×10^{-6}	98.1	23.5 ± 0.03	14.2 ± 0.12	69.7 ± 0.79	0.625	$(5.60 \pm 0.52) \times 10^{-3}$
3	Butyl acetate	1	1.05	5.23×10^{-5}	96.7	23.4 ± 0.10	13.7 ± 0.13	60.3 ± 1.2	0.510	$(5.17 \pm 0.27) \times 10^{-3}$
4	Butyl acetate	2	1.07	5.23×10^{-5}	97.4	23.5 ± 0.07	13.7 ± 0.09	69.8 ± 1.7	0.649	$(5.00 \pm 0.26) \times 10^{-3}$
5	Butyl acetate	1	1.06	5.61×10^{-5}	95.8	23.3 ± 0.06	12.7 ± 0.13	57.8 ± 2.0	0.540	$(4.02 \pm 0.26) \times 10^{-3}$
6	Butyl acetate	2	1.08	5.61×10^{-5}	99.5	23.5 ± 0.04	12.6 ± 0.15	68.8 ± 1.3	0.644	$(4.41 \pm 0.29) \times 10^{-3}$
7	Ethyl acetate	1	1.05	7.54×10^{-5}	95.7	23.3 ± 0.03	14.0 ± 0.40	61.0 ± 0.89	0.555	$(5.03 \pm 0.22) \times 10^{-3}$
8	Ethyl acetate	2	1.06	7.54×10^{-5}	98.6	23.5 ± 0.03	13.8 ± 0.25	69.4 ± 0.89	0.680	$(5.28 \pm 0.26) \times 10^{-3}$
9	1-Butanol	1	1.05	1.33×10^{-3}	92.6	23.4 ± 0.25	14.5 ± 0.17	58.8 ± 1/86	0.541	$(1.44 \pm 0.06) \times 10^{-3}$
10	1-Butanol	2	1.05	1.33×10^{-3}	96.3	23.6 ± 0.14	14.1 ± 0.15	71.3 ± 1.4	0.669	$(1.52 \pm 0.10) \times 10^{-3}$
11	1-Propanol	1	1.05	9.78×10^{-3}	101	23.3 ± 0.03	13.6 ± 0.15	59.6 ± 1.15	0.555	$(1.33 \pm 0.05) \times 10^{-3}$
12	1-Propanol	2	1.06	$9.78 \times 10–^{3}$	98.0	23.5 ± 0.03	13.5 ± 0.10	69.0 ± 2.5	0.660	$(1.85 \pm 0.09) \times 10^{-3}$
13	Phenol	1	1.05	$5.65 \times 10–^{3}$	93.1	23.6 ± 0.30	14.7 ± 0.16	59.8 ± 1.94	0.565	$(1.80 \pm 0.06) \times 10^{-4}$
14	Phenol	2	1.05	$5.65 \times 10–^{3}$	93.3	23.7 ± 0.15	14.7 ± 0.19	69.4 ± 2.4	0.634	$(2.68 \pm 0.11) \times 10^{-4}$

Ach, air exchange rate; C_{L0}, initial concentration in liquid; V_L, initial volume of liquid; T, temperature; RH, relative humidity; r_w, water evaporation rate.
[a]The test duration was 4 h for tests 3 and 4 and 8 h for the rest.
[b]The air speed was 12.6 ± 4.5 cm/s in chamber 1 and 21.6 ± 7.9 cm/s in chamber 2.

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Estimation of gas phase mass transfer coefficient (k_G)

Several methods have been developed to estimate the gas phase mass transfer coefficient in indoor environments. A brief review of these methods is given by Guo (2002). The method used here is based on the Sherwood number (S_h), which is a dimensionless number related to k_G (equation 11) and can be correlated to Schmidt and Reynolds numbers (S_c and R_e). A series of correlations have been developed between S_h, S_c and R_e (Bennet and Myers, 1982; White, 1988). For example, equation (12) applies to laminar flow conditions and is often used for indoor environments.

$$S_h = (k_G L)/D_a \quad (11)$$

where L is the characteristic length (m), calculated from the square root of the source area, and D_a is the diffusivity in air (m^2/h).

$$S_h = 0.664 S_c^{1/3} R_e^{1/2} \quad (12)$$

where S_c and R_e are defined by equations (13) and (14), respectively.

$$S_c = \mu/(\rho D_a) \quad (13)$$

$$R_e = (Lu\rho)/\mu \quad (14)$$

where u is the air velocity (m/h), ρ is the density of air (g/m^3) and μ is the viscosity of air (g/m/h). The accuracy of this method was evaluated by using the water evaporation data from the 14 chamber tests (column 10 in Table 2). The k_G values for water evaporation were estimated from equation (15).

$$r_w = S k_G (C_{sw} - C_w) \quad (15)$$

where r_w is the experimental water evaporation rate (g/h), C_{sw} is the saturation concentration for water vapor at chamber temperature, converted from vapor pressure (g/m^3), and C_w is the experimental water vapor concentration in the chamber, converted from relative humidity (g/m^3). As shown in Table 3, the calculated gas phase mass transfer coefficients agreed well with the experimental results.

Estimation of liquid phase mass transfer coefficient (k_L)

With the overall liquid phase mass transfer coefficient (K_{OL}) presented in Table 2, the gas phase mass transfer coefficient (k_G) calculated from the Sherwood number and Henry's constant (H) from Table 1, the liquid phase mass transfer coefficients (k_L) can be calculated from equation (3). This direct calculation approach worked well for compounds with dimensionless Henry's constants $>10^{-3}$. With smaller Henry's constants, however, the calculation failed (see column 4 in Table 4) due to error propagation: the calculation involves subtraction between two large numbers to yield a small number.

The authors then used a different method to estimate k_L. It has been reported that k_L is proportional to

Table 3. Experimental and calculated gas phase mass transfer coefficients (k_G) for water evaporation from small pools

Chamber	k_G (m/h)		Relative error (%)
	Experimental	Calculated (equation 11)	
1	14.2 ± 0.92 (n = 7)	16.8	17
2	22.3 ± 0.88 (n = 7)	22.0	–1.3

Table 4. Estimated liquid phase mass transfer coefficient (k_L) from experimental K_{OL}

Test no.	Compound	Chamber	Estimated k_L (m/h)	
			Direct from equation (3)	From equation (18)
1	Chloroform	1	5.71×10^{-3}	5.91×10^{-3}
2	Chloroform	2	5.62×10^{-3}	5.91×10^{-3}
3	Butyl acetate	1	5.52×10^{-3}	5.00×10^{-3}
4	Butyl acetate	2	5.84×10^{-3}	5.00×10^{-3}
5	Butyl acetate	1	4.23×10^{-3}	5.00×10^{-3}
6	Butyl acetate	2	4.60×10^{-3}	5.00×10^{-3}
7	Ethyl acetate	1	5.68×10^{-3}	5.55×10^{-3}
8	Ethyl acetate	2	6.42×10^{-3}	5.55×10^{-3}
9	1-Butanol	1	2.80×10^{-3}	5.63×10^{-3}
10	1-Butanol	2	2.49×10^{-3}	5.63×10^{-3}
11	1-Propanol	1	2.60×10^{-3}	6.04×10^{-3}
12	1-Propanol	2	3.83×10^{-3}	6.04×10^{-3}
13	Phenol	1	-2.71×10^{-4}	5.63×10^{-3}
14	Phenol	2	-3.00×10^{-4}	5.63×10^{-3}

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the square root of the molecular diffusivity in water (Mackay and Yeun, 1983). Since the diffusivity can be readily calculated by existing methods (Hayduk and Laudie, 1974), the problem is reduced to selecting a reference compound and estimating its k_L. The liquid phase mass transfer coefficient for a given compound X can then be calculated from equation (16), in which oxygen was chosen as the reference compound. It should be pointed out that any compound can serve as the reference. The only reason to select oxygen here is for comparison with the literature values.

$$k_L(X) = k_L(O_2)\sqrt{\frac{D_L(X)}{D_L(O_2)}} \quad (16)$$

Substituting equation (16) into equation (3) yields:

$$k_L(O_2) = \frac{k_G H K_{OL}}{k_G H - K_{OL}}\sqrt{\frac{D_L(O_2)}{D_L(X)}} \quad (17)$$

A single value of $k_L(O_2)$ was estimated by applying equation (17) to the 14 experimental K_{OL} values (Table 2). Other input data included H and $D_L(X)$ from Table 1, k_G from the Sherwood number and $D_L(O_2) = 1.07 \times 10^{-5}$ m^2/h at 23.5°C from the Hayduk and Laudie (1974) method. The non-linear regression yielded a $k_L(O_2)$ value of $(9.78 \pm 0.36) \times 10^{-3}$ m/h. This value is fairly close to the literature value of 0.0144 m/h for ambient water bodies suggested by Schwarzenbach *et al.* (1993). This agreement suggests that the area of the source does not affect k_L if the water is still.

Substituting the values for $k_L(O_2)$ and $D_L(O_2)$ into equation (16) gives:

$$k_L(X) = 2.99\sqrt{D_L(X)} \quad (18)$$

where $k_L(X)$ and $D_L(X)$ are in m/h and m^2/h, respectively. Equation (18) can be used to estimate k_L for any chemical emissions from still water. The estimated k_L values for the test compounds are presented in the last column of Table 4.

Calculation of K_{OL}

Using k_G from the Sherwood number and k_L from equation (18), one can calculate K_{OL} from equation (3). Figure 3 compares the calculated K_{OL} with the experimental values. On average, the relative predictive error was 22.1%. In general, compounds with smaller Henry's constants tend to have greater relative errors. A complete example of estimating K_{OL} is provided in the Appendix.

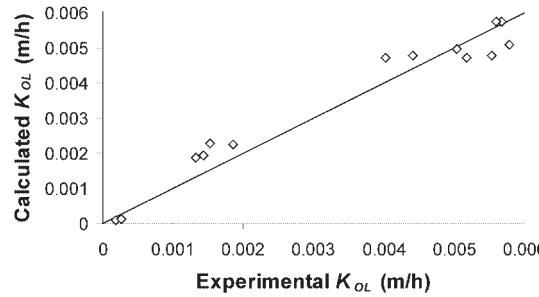


Fig. 3. Comparison between experimental and calculated overall liquid phase mass transfer coefficients. The solid line represents linearity.

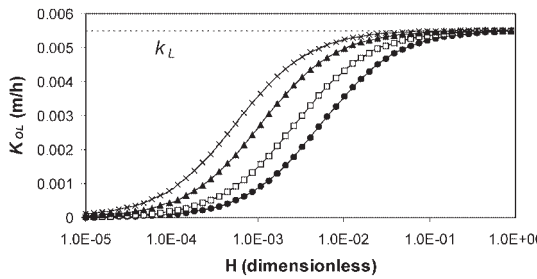


Fig. 4. Overall liquid phase mass transfer coefficient (K_{OL}) as a function of Henry's constant (H) and gas phase mass transfer coefficient (k_G). The curves from left to right are for k_G = 1, 2, 5 and 10 m/h, respectively.

DISCUSSION

Independent estimation of k_G and k_L allows one to study the effect of the Henry's constant on the overall mass transfer coefficient by using equation (3) or (4). Figure 4 shows K_{OL} as a function of H and k_G, assuming that the diffusivity in water is 3.6×10^{-6} m^2/h, which is roughly the average for the test compounds. When the Henry's constant becomes large, all curves converge to a single value of k_L. The curves do not converge to a single value, however, when the Henry's constant becomes very small. Assuming that the gas phase mass transfer coefficient typically varies from 1 to 10 m/h in indoor environments, the k_G/k_L ratio for still aqueous solutions would be in the range 180–1800. These values are significantly higher than the reported values (54–78) for a bathtub with a simulated person present (EPA, 2000).

As a practical matter, researchers often want to know under what conditions K_{OL} can be approximated by either k_L or k_G. There have been many discussions on this matter for the ambient environment (e.g. Munz and Roberts, 1989). In general, it depends on whether the gas or liquid phase mass transfer resistance is dominant in the overall mass transfer resistance ($1/K_{OL}$ or $1/K_{OL}$). Using the results of this work, Fig. 5 illustrates the contribution of the gas phase mass transfer resistance $1/(Hk_G)$ to $1/K_{OL}$

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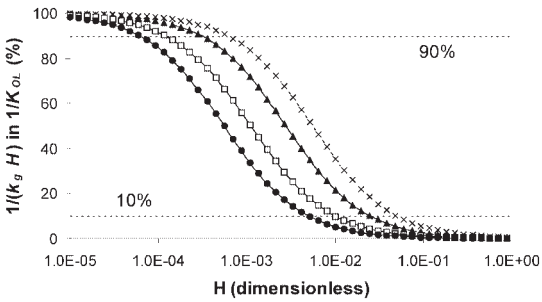


Fig. 5. Contribution of the gas phase mass transfer resistance $[1/(k_G H)]$ to the overall mass transfer resistance $(1/K_{OL})$. The curves from left to right are for k_G = 10, 5, 2 and 1 m/h, respectively.

as a function of H and k_G. For still water under indoor environmental conditions, the authors suggest that K_{OL} be approximated by k_L when $H > 10^{-1}$ and by k_G when $H < 10^{-4}$, where H is dimensionless.

Previous studies (for example, Schwarzenbach *et al.*, 1993) indicate that the depth of the water pool affects the liquid phase mass transfer coefficient. Thus, the applicability of equation (18) to liquid puddles and films is yet to be further evaluated. On the other hand, according to Schwarzenbach *et al.* (1993), the values of k_L for still water imply a 'stagnant water film' of no greater than 200 μm. We therefore speculate that equation (18) can be applied to liquid puddles and films with a depth >200 μm.

CONCLUSION

The emissions of six volatile organic compounds from pools of dilute aqueous solutions were tested under simulated indoor environmental conditions. These compounds cover a range of Henry's constant from 3.33×10^{-7} to 3.67×10^{-3} atm m^3/mol. The experimentally determined overall liquid phase mass transfer coefficient (K_{OL}) ranged from 2.68×10^{-4} to 5.68×10^{-3} m/h. Using these values, the liquid phase mass transfer coefficient (k_L) for still water was estimated to be $(9.78 \pm 0.36) \times 10^{-3}$ m/h for the reference compound (O_2). An empirical model was proposed to estimate K_{OL} and K_{OG} based on equations (3) and (4), respectively, with k_L calculated from equation (18) and k_G from the Sherwood number (equation 11). With this empirical model, one can use equations (1) and (2) as genuine predictive models for pollutant emissions from still aqueous solutions in indoor environments.

APPENDIX. AN EXAMPLE OF USING THE PROPOSED EMPIRICAL MODEL

Problem

Estimate the overall liquid phase mass transfer coefficient (K_{OL}) for 1-hexanal emissions from a water pool, given the following parameters: molecular formula, $C_6H_{12}O$; Henry's constant, 0.0105 (dimensionless); pool diameter, 0.20 m; air speed in room, 15 cm/s (540 m/h); air and liquid temperature, 25°C. Additional parameters needed for the calculation are summarized in Table A1. All the values are at 25°C.

Step 1: Calculate Schmidt number using equation (13)

$$S_c = \mu/(\rho D_a) = 66.8/(1180 \times 0.0270) = 2.097$$

Step 2: Calculate Reynolds number using equation (14)

$$R_e = (Lu\rho)/\mu = (0.447 \times 540 \times 1180)/66.8 = 4264$$

Step 3: Calculate Sherwood number using equation (12)

$$S_h = 0.664 S_c^{1/3} R_e^{1/2} = 0.664 \times 2.097^{1/3} \times 4262^{1/2} = 55.5$$

Step 4: Calculate k_G using equation (11)

$$k_G = (S_h D_a)/L = (55.5 \times 0.0270)/0.447 = 3.35 \text{ (m/h)}$$

Step 5: Calculate k_L using equation (16)

$$k_L(Hx) = 2.99\sqrt{D_L(Hx)}$$

$$k_L(Hx) = 2.99\sqrt{2.96 \times 10^{-6}} = 5.14 \times 10^{-3} \text{ m/h}$$

Step 6: Calculate K_{OL}

Rearranging equation (3) yields

Table A1. Additional parameters needed to calculate K_{OL} for 1-hexanal

Parameter	Symbol	Value	Data source or method
Density of air	ρ	1180 g/m^3	Literature
Viscosity of air	μ	66.8 g/h/m	Literature
Characteristic length of the pool	L	0.447 m	Square root of source area
Diffusivity in air for 1-hexanal	$D_a(Hx)$	2.70×10^{-2} m^2/h	FSG method[a]
Diffusivity in water for 1-hexanal	$D_L(Hx)$	2.78×10^{-6} m^2/h	Hayduk & Laudie method[b]

[a]Fuller *et al.* (1966).
[b]Hayduk and Laudie (1974).

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$$K_{OL} = (k_L k_G H)/(k_L + k_G H)$$

$$K_{OL} = \frac{5.14 \times 10^{-3} \times 3.35 \times 0.0105}{5.14 \times 10^{-3} + 3.35 \times 0.0105} = 4.48 \times 10^{-3}\ \text{m/h}$$

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Attachment 4
Laboratory Analytical report for Tank T-103 Sample

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-34856-1
Client Project/Site: Model City Landfill: ATINF LEACH
Sampling Event: ATFINF LEACH, every 4 yrs(next 2013)

For:
CWM Chemical Services Inc
1550 Balmer Road
Model City, New York 14107

Attn: Jonathan Rizzo

Candace L. Fox

Authorized for release by:
4/12/2013 3:38:36 PM

Candace Fox
Project Manager II
candace.fox@testamericainc.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Isotope Dilution Summary 37

Sample Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-34856-1	T103	Water	03/21/13 11:30	03/22/13 09:00
480-34856-2	TB	Water	03/21/13 00:00	03/22/13 09:00

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD exceeds the control limits

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD exceeds the control limits
X	Surrogate is outside control limits

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.
E	Result exceeded calibration range.

GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Dioxin

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-34856-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-34856-1

Comments
No additional comments.

Receipt
The samples were received on 3/22/2013 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.3º C and 4.2º C.

Except:
Client Id is T103 and the bottle lables say T101.

GC/MS VOA
Method(s) 8260B: The following samples were diluted to bring the concentration of target analytes within the calibration range: T103 (480-34856-1). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The continuing calibration verification (CCV) for Cyclohexanone associated with batch 109392 recovered above the upper control limit. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 8260B: The following sample(s) was diluted to bring the concentration of target analytes within the calibration range: T103 (480-34856-1). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The laboratory control sample (LCS) for batch 109805 exceeded control limits for the following analytes: methacrylonitrile. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No other analytical or quality issues were noted.

GC/MS Semi VOA
Method(s) 8270C: The following sample was diluted due to abundance of target analytes: T103 (480-34856-1). As such, surrogate recoveries were reduced to a level in which they do not provide useful information. Elevated reporting limits (RLs) are provided.

Method(s) 8270C: The laboratory control sample (LCS) for batch 108882 exceeded control limits for the multiple analytes. These analytes have been identified as a poor performing analyte when analyzed using this method or the analyts were high in the LCS and not detected in the sample; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method(s) 8270C: The following sample was diluted due to abundance of target analytes: T103 (480-34856-1). As such, surrogate recoveries were reduced to a level in which they do not provied useful information. Elevated reporting limits (RLs) are provided.

Method(s) 8270C: Internal standard responses for the following CCVs exceeded the upper control limit: (CCV 480-110650/6), (CCV 480-110650/7). The assocated sample does not contain any analytes reported from these CCVs, therefore the data has been qualified and reported.

No other analytical or quality issues were noted.

GC VOA
Method(s) 8015B: The following sample was diluted due to the abundance of target analytes: T103 (480-34856-1). As such, surrogate recoveries are not reported or not representative, and elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

GC Semi VOA
Method(s) 608: The following samples were diluted due to the nature of the sample matrix: T103 (480-34856-1). As such, surrogate

Job ID: 480-34856-1 (Continued)

Laboratory: TestAmerica Buffalo (Continued)

recoveries are not representative, and elevated reporting limits (RLs) are provided.

Method(s) 608: The following sample was diluted due to the nature of the sample matrix : T103 (480-34856-1). As such, surrogate recoveries are not reported, and elevated reporting limits (RLs) are provided.

Method(s) 8151A: Due to the level of dilution required for the following sample, surrogate recoveries are not reported: T103 (480-34856-1).

No other analytical or quality issues were noted.

Metals

Method(s) 200.8: Sample T103 (480-34856-1) for ICP/MS metals analyzed by EPA Method 6020 required a dilution due to high concentrations of dissolved solids known to cause failure of routine method quality control (QC), such as internal standards outside of control limits. Samples that contain high levels of dissolved solids can cause significant signal suppression or enhancement. The analytical method recommends applying a dilution to correct for physical interferences of samples that contain greater than 2000 mg/L of total solids, as determined by performing a screening procedure.

Method(s) 200.8: Sample T103 (480-34856-1) had a negative instrument reading with an absolute value that was greater than the reporting limit for the analyte total selenium. Matrix interference is suspected. The sample was analyzed at a 500-fold dilution, to reduce the interference.

No other analytical or quality issues were noted.

General Chemistry

Method(s) SM 4500 S2 F: Due to the matrix, the initial volume(s) used for the following sample(s) deviated from the standard procedure: T103 (480-34856-1). The reporting limits (RLs) have been adjusted proportionately.

No other analytical or quality issues were noted.

Organic Prep

Method(s) 3510C: Due to the matrix, the following samples could not be concentrated to the final method required volume: T103 (480-34856-1). The reporting limits (RLs) are elevated proportionately.

Method(s) 3510C: During pH adjustment, the following sample required 20 mL of base to reach the desired pH: T103 (480-34856-1). Most samples take less than 10 mL to reach the desired range.

Method(s) 3510C: After hex-exchanging the sample, it would not concentrate down to the required volume. The sample concentrated to about 1.5mL's then was brought up to 10mL's with hexane.

Method(s) 3510C: The following samples required a Florisil clean-up, via EPA Method3620C, to reduce matrix interferences: T103 (480-34856-1).

Method(s) 8151A: During pH adjustment, the following sample required 20mL of base and 15 mL of acid to reach the desired pH: T103 (480-34856-1).

Method(s) 8151A: The following sample formed emulsions during the extraction procedure: T103 (480-34856-1). The emulsions were broken up using the centrifuge.

No other analytical or quality issues were noted.

Dioxin Prep

480-34856-A-1 had emulsions issues, removed by mechanical means.

No other analytical or quality issues were noted.

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		100	35	ug/L			03/29/13 00:02	100
1,1,1-Trichloroethane	**3900**		100	82	ug/L			03/29/13 00:02	100
1,1,2-Trichloro-1,2,2-trichfluoroethane	**39**	**J**	100	31	ug/L			03/29/13 00:02	100
1,1,2-Trichloroethane	**4800**		100	23	ug/L			03/29/13 00:02	100
1,1-Dichloroethane	**2700**		100	38	ug/L			03/29/13 00:02	100
1,1-Dichloroethene	**410**		100	29	ug/L			03/29/13 00:02	100
1,2,3-Trichloropropane	ND		100	89	ug/L			03/29/13 00:02	100
1,2-Dibromo-3-Chloropropane	ND		100	39	ug/L			03/29/13 00:02	100
1,2-Dibromoethane (EDB)	**560**		100	73	ug/L			03/29/13 00:02	100
1,2-Dichloroethane	**6900**		100	21	ug/L			03/29/13 00:02	100
1,2-Dichloropropane	ND		100	72	ug/L			03/29/13 00:02	100
1,4-Dioxane	**95000**		4000	930	ug/L			03/29/13 00:02	100
Acetonitrile	**6400**		4000	2600	ug/L			03/29/13 00:02	100
Acrolein	ND		2000	1800	ug/L			03/29/13 00:02	100
Acrylonitrile	**160**	**J**	500	83	ug/L			03/29/13 00:02	100
Allyl chloride	ND		100	44	ug/L			03/29/13 00:02	100
Benzene	**920**		100	41	ug/L			03/29/13 00:02	100
Bromodichloromethane	ND		100	39	ug/L			03/29/13 00:02	100
Bromoform	ND		100	26	ug/L			03/29/13 00:02	100
Bromomethane	ND		100	69	ug/L			03/29/13 00:02	100
Carbon disulfide	**27**	**J**	100	19	ug/L			03/29/13 00:02	100
Carbon tetrachloride	ND		100	27	ug/L			03/29/13 00:02	100
Chlorobenzene	**1000**		100	75	ug/L			03/29/13 00:02	100
Chloroethane	**110**		100	32	ug/L			03/29/13 00:02	100
Chloroform	**7800**		100	34	ug/L			03/29/13 00:02	100
Chloromethane	**84**	**J**	100	35	ug/L			03/29/13 00:02	100
1,3-Butadiene, 2-chloro-	ND		100	49	ug/L			03/29/13 00:02	100
cis-1,3-Dichloropropene	ND		100	36	ug/L			03/29/13 00:02	100
Dibromochloromethane	ND		100	32	ug/L			03/29/13 00:02	100
Dibromomethane	**3500**		100	41	ug/L			03/29/13 00:02	100
Dichlorodifluoromethane	ND		100	68	ug/L			03/29/13 00:02	100
Ethyl acetate	ND		100	66	ug/L			03/29/13 00:02	100
Ethyl ether	**9400**		500	72	ug/L			03/29/13 00:02	100
Ethyl methacrylate	ND		100	59	ug/L			03/29/13 00:02	100
Ethylbenzene	**170**		100	74	ug/L			03/29/13 00:02	100
Iodomethane	ND		100	30	ug/L			03/29/13 00:02	100
Isobutanol	**37000**		4000	2000	ug/L			03/29/13 00:02	100
Methacrylonitrile	ND	*	500	69	ug/L			03/29/13 00:02	100
Methyl methacrylate	ND		100	61	ug/L			03/29/13 00:02	100
Propionitrile	ND		1000	580	ug/L			03/29/13 00:02	100
Tetrachloroethene	**500**		100	36	ug/L			03/29/13 00:02	100
Toluene	**4800**		100	51	ug/L			03/29/13 00:02	100
trans-1,2-Dichloroethene	**300**		100	90	ug/L			03/29/13 00:02	100
trans-1,3-Dichloropropene	ND		100	37	ug/L			03/29/13 00:02	100
Trichlorofluoromethane	ND		100	88	ug/L			03/29/13 00:02	100
Vinyl chloride	ND		100	90	ug/L			03/29/13 00:02	100
Xylenes, Total	**820**		200	66	ug/L			03/29/13 00:02	100
Cyclohexanone	**2100**		1000	520	ug/L			03/29/13 00:02	100

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
2-Pentanol, 4-methyl-	1000	T J N	ug/L		5.86	108-11-2		03/29/13 00:02	100
Acetic acid, butyl ester	1500	T J N	ug/L		6.26	123-86-4		03/29/13 00:02	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		66 - 137		03/29/13 00:02	100
4-Bromofluorobenzene (Surr)	104		73 - 120		03/29/13 00:02	100
Toluene-d8 (Surr)	94		71 - 126		03/29/13 00:02	100

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	**12000**		5000	1100	ug/L			03/27/13 12:49	5000
2-Butanone (MEK)	**550000**		50000	6600	ug/L			03/27/13 12:49	5000
4-Methyl-2-pentanone (MIBK)	**79000**		25000	11000	ug/L			03/27/13 12:49	5000
Acetone	**740000**		50000	15000	ug/L			03/27/13 12:49	5000
Methylene Chloride	**220000**		5000	2200	ug/L			03/27/13 12:49	5000
Trichloroethene	**13000**		5000	2300	ug/L			03/27/13 12:49	5000

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Methylene Chloride	17000	T J N	ug/L		2.80	75-9-2		03/27/13 12:49	5000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		66 - 137		03/27/13 12:49	5000
4-Bromofluorobenzene (Surr)	113		73 - 120		03/27/13 12:49	5000
Toluene-d8 (Surr)	120		71 - 126		03/27/13 12:49	5000

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	**210**	**J**	1300	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,2,4-Trichlorobenzene	ND		2500	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,2-Dichlorobenzene	ND		2500	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,2-Diphenylhydrazine	ND		2500	88	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,3-Dichlorobenzene	ND		2500	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,4-Dichlorobenzene	ND		2500	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
1,4-Dinitrobenzene	ND	*	2500	180	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,2'-Oxybis(1-chloropropane)	ND		1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,3,4,6-Tetrachlorophenol	ND	*	1300	80	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4,5-Trichlorophenol	ND		1300	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4,6-Trichlorophenol	ND	*	1300	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4-Dichlorophenol	**1300**	*****	1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4-Dimethylphenol	**2600**		1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4-Dinitrophenol	ND		2500	560	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,4-Dinitrotoluene	ND		1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,6-Dichlorophenol	ND		2500	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
2,6-Dinitrotoluene	ND	*	1300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
2-Acetylaminofluorene	ND		2500	580	ug/L		03/23/13 07:29	04/02/13 16:35	50
2-Chloronaphthalene	ND		1300	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
2-Chlorophenol	**230**	**J**	1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
2-Methylphenol	**2200**		1300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
2-Naphthylamine	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
3-Methylcholanthrene	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
3-Methylphenol	**17000**		2500	100	ug/L		03/23/13 07:29	04/02/13 16:35	50

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,6-Dinitro-2-methylphenol	ND		2500	550	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Aminobiphenyl	ND		2500	200	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Bromophenyl phenyl ether	ND		1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Chloro-3-methylphenol	ND	*	1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Chloroaniline	**3000**		1300	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Methylphenol	**17000**		2500	90	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Nitroaniline	ND	*	2500	63	ug/L		03/23/13 07:29	04/02/13 16:35	50
4-Nitrophenol	ND		2500	380	ug/L		03/23/13 07:29	04/02/13 16:35	50
5-Nitro-o-toluidine	ND		2500	160	ug/L		03/23/13 07:29	04/02/13 16:35	50
Acenaphthene	ND		1300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
Acenaphthylene	ND		1300	95	ug/L		03/23/13 07:29	04/02/13 16:35	50
Acetophenone	**3400**		1300	140	ug/L		03/23/13 07:29	04/02/13 16:35	50
Aniline	**2200**	**J**	2500	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
Anthracene	ND		1300	70	ug/L		03/23/13 07:29	04/02/13 16:35	50
Aramite	ND		5000	400	ug/L		03/23/13 07:29	04/02/13 16:35	50
Benzo[a]anthracene	ND		1300	90	ug/L		03/23/13 07:29	04/02/13 16:35	50
Benzo[a]pyrene	ND		1300	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
Benzo[b]fluoranthene	ND	*	1300	85	ug/L		03/23/13 07:29	04/02/13 16:35	50
Benzo[g,h,i]perylene	ND		1300	88	ug/L		03/23/13 07:29	04/02/13 16:35	50
Benzo[k]fluoranthene	ND		1300	180	ug/L		03/23/13 07:29	04/02/13 16:35	50
Bis(2-chloroethoxy)methane	ND		1300	88	ug/L		03/23/13 07:29	04/02/13 16:35	50
Bis(2-chloroethyl)ether	ND		1300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
Bis(2-ethylhexyl) phthalate	ND		1300	450	ug/L		03/23/13 07:29	04/02/13 16:35	50
Butyl benzyl phthalate	ND		1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
Chlorobenzilate	ND		5000	170	ug/L		03/23/13 07:29	04/02/13 16:35	50
Chrysene	ND	*	1300	83	ug/L		03/23/13 07:29	04/02/13 16:35	50
Dibenz[a,h]anthracene	ND		1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
Dibenzo[a,e]pyrene	ND		2500	380	ug/L		03/23/13 07:29	04/02/13 16:35	50
Diethyl phthalate	**270**	**J**	1300	55	ug/L		03/23/13 07:29	04/02/13 16:35	50
Dimethyl phthalate	**280**	**J**	1300	90	ug/L		03/23/13 07:29	04/02/13 16:35	50
Di-n-butyl phthalate	ND		1300	78	ug/L		03/23/13 07:29	04/02/13 16:35	50
Di-n-octyl phthalate	ND		1300	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
Dinoseb	ND		2500	740	ug/L		03/23/13 07:29	04/02/13 16:35	50
Diphenylamine	ND		2500	210	ug/L		03/23/13 07:29	04/02/13 16:35	50
Disulfoton	ND		2500	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
Famphur	ND		10000	480	ug/L		03/23/13 07:29	04/02/13 16:35	50
Fluoranthene	ND		1300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
Fluorene	ND		1300	90	ug/L		03/23/13 07:29	04/02/13 16:35	50
Hexachlorobenzene	ND	*	1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
Hexachlorobutadiene	ND		1300	170	ug/L		03/23/13 07:29	04/02/13 16:35	50
Hexachlorocyclopentadiene	ND		1300	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
Hexachloroethane	ND		1300	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
Hexachloropropene	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
Indeno[1,2,3-cd]pyrene	ND		1300	120	ug/L		03/23/13 07:29	04/02/13 16:35	50
Isodrin	ND		2500	45	ug/L		03/23/13 07:29	04/02/13 16:35	50
Isosafrole	ND		2500	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
Kepone	ND		13000	450	ug/L		03/23/13 07:29	04/02/13 16:35	50
Methapyrilene	ND		13000	450	ug/L		03/23/13 07:29	04/02/13 16:35	50
Methyl methanesulfonate	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl parathion	ND		2500	93	ug/L		03/23/13 07:29	04/02/13 16:35	50
Naphthalene	ND		1300	190	ug/L		03/23/13 07:29	04/02/13 16:35	50
Nitrobenzene	ND		1300	73	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosodiethylamine	ND		2500	90	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosodimethylamine	ND		2500	550	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosodi-n-butylamine	ND		2500	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosodi-n-propylamine	ND	*	1300	140	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosodiphenylamine	ND	*	1300	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosomethylethylamine	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosomorpholine	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosopiperidine	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
N-Nitrosopyrrolidine	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
Parathion	ND		2500	160	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pentachlorobenzene	**300**	**J**	2500	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pentachloronitrobenzene	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pentachlorophenol	ND		2500	550	ug/L		03/23/13 07:29	04/02/13 16:35	50
Phenacetin	ND		2500	150	ug/L		03/23/13 07:29	04/02/13 16:35	50
Phenanthrene	ND		1300	110	ug/L		03/23/13 07:29	04/02/13 16:35	50
Phorate	ND		2500	130	ug/L		03/23/13 07:29	04/02/13 16:35	50
Phthalic anhydride	ND		130000	14000	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pronamide	ND		2500	630	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pyrene	ND		1300	85	ug/L		03/23/13 07:29	04/02/13 16:35	50
Pyridine	**4600**	**J**	6300	100	ug/L		03/23/13 07:29	04/02/13 16:35	50
Safrole	ND		2500	120	ug/L		03/23/13 07:29	04/02/13 16:35	50

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane	*23000*		*ug/L*		*2.48*	*123-91-1*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Acetamide, N,N-dimethyl-	*62000*	*T J N*	*ug/L*		*2.98*	*127-19-5*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Ethanol, 2-butoxy-	*97000*	*T J N*	*ug/L*		*3.11*	*111-76-2*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Benzyl alcohol	*13000*		*ug/L*		*3.68*	*100-51-6*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Benzoic Acid	*32000*	*T J N*	*ug/L*		*4.17*	*65-85-0*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Benzoic acid	*290000*	*E*	*ug/L*		*4.25*	*65-85-0*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Phenol, 3-(1-methylethyl)-	*13000*	*T J N*	*ug/L*		*4.41*	*618-45-1*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Triacetin	*9300*	*T J N*	*ug/L*		*4.76*	*102-76-1*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Benzoic acid, 4-chloro-	*8900*	*T J N*	*ug/L*		*4.82*	*74-11-3*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Benzoic acid, 2-chloro-	*13000*	*T J N*	*ug/L*		*4.96*	*118-91-2*	*03/23/13 07:29*	*04/02/13 16:35*	*50*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*2127*	*X*	*52 - 132*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Nitrobenzene-d5	*5849*	*X*	*46 - 120*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
Phenol-d5	*0*	*X*	*16 - 120*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
p-Terphenyl-d14	*0*	*X*	*67 - 150*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
2-Fluorobiphenyl	*89*		*48 - 120*	*03/23/13 07:29*	*04/02/13 16:35*	*50*
2-Fluorophenol	*0*	*X*	*20 - 120*	*03/23/13 07:29*	*04/02/13 16:35*	*50*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	**140000**		13000	980	ug/L		03/23/13 07:29	04/03/13 13:19	500

Client Sample ID: T103

Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1

Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Acetamide, N,N-dimethyl-	58000	T J N	ug/L		2.98	127-19-5	03/23/13 07:29	04/03/13 13:19	500
Ethanol, 2-butoxy-	100000	T J N	ug/L		3.12	111-76-2	03/23/13 07:29	04/03/13 13:19	500

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	0	X	52 - 132	03/23/13 07:29	04/03/13 13:19	500
Nitrobenzene-d5	0	X	46 - 120	03/23/13 07:29	04/03/13 13:19	500
Phenol-d5	0	X	16 - 120	03/23/13 07:29	04/03/13 13:19	500
p-Terphenyl-d14	0	X	67 - 150	03/23/13 07:29	04/03/13 13:19	500
2-Fluorobiphenyl	0	X	48 - 120	03/23/13 07:29	04/03/13 13:19	500
2-Fluorophenol	0	X	20 - 120	03/23/13 07:29	04/03/13 13:19	500

Method: 8015B - Nonhalogenated Organic Compounds - Direct Injection (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methanol	**970000**		100000	41000	ug/L			03/27/13 09:14	100
Butyl alcohol, n-	**290000**		100000	40000	ug/L			03/27/13 09:14	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Hexanone	0	X	63 - 124		03/27/13 09:14	100

Method: 608 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		4.6	0.58	ug/L		03/25/13 19:30	03/26/13 14:24	100
2,4'-DDE	ND		4.6	2.5	ug/L		03/25/13 19:30	03/26/13 14:24	100
2,4'-DDT	ND		4.6	0.84	ug/L		03/25/13 19:30	03/26/13 14:24	100
4,4'-DDD	**2.6**	**J**	4.6	0.85	ug/L		03/25/13 19:30	03/26/13 14:24	100
4,4'-DDE	ND		4.6	1.1	ug/L		03/25/13 19:30	03/26/13 14:24	100
4,4'-DDT	**2.5**	**J**	4.6	1.0	ug/L		03/25/13 19:30	03/26/13 14:24	100
Aldrin	ND		4.6	0.61	ug/L		03/25/13 19:30	03/26/13 14:24	100
alpha-BHC	**6.2**		4.6	0.61	ug/L		03/25/13 19:30	03/26/13 14:24	100
beta-BHC	**13**		4.6	2.3	ug/L		03/25/13 19:30	03/26/13 14:24	100
Chlordane	ND		46	27	ug/L		03/25/13 19:30	03/26/13 14:24	100
delta-BHC	**14**		4.6	0.93	ug/L		03/25/13 19:30	03/26/13 14:24	100
Dieldrin	ND		4.6	0.91	ug/L		03/25/13 19:30	03/26/13 14:24	100
Endosulfan I	ND		4.6	1.0	ug/L		03/25/13 19:30	03/26/13 14:24	100
Endosulfan II	ND		4.6	1.1	ug/L		03/25/13 19:30	03/26/13 14:24	100
Endosulfan sulfate	ND		4.6	1.5	ug/L		03/25/13 19:30	03/26/13 14:24	100
Endrin	**1.4**	**J**	4.6	1.3	ug/L		03/25/13 19:30	03/26/13 14:24	100
Endrin aldehyde	ND		4.6	1.5	ug/L		03/25/13 19:30	03/26/13 14:24	100
gamma-BHC (Lindane)	**14**		4.6	0.56	ug/L		03/25/13 19:30	03/26/13 14:24	100
Heptachlor	ND		4.6	0.79	ug/L		03/25/13 19:30	03/26/13 14:24	100
Heptachlor epoxide	ND		4.6	0.49	ug/L		03/25/13 19:30	03/26/13 14:24	100
Methoxychlor	ND		4.6	1.3	ug/L		03/25/13 19:30	03/26/13 14:24	100
Toxaphene	ND		46	11	ug/L		03/25/13 19:30	03/26/13 14:24	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	0	X	15 - 125	03/25/13 19:30	03/26/13 14:24	100
Tetrachloro-m-xylene	0	X	36 - 121	03/25/13 19:30	03/26/13 14:24	100

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		28	18	ug/L		03/23/13 07:40	03/26/13 03:14	500

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1221	ND		28	18	ug/L		03/23/13 07:40	03/26/13 03:14	500
Aroclor 1232	ND		28	18	ug/L		03/23/13 07:40	03/26/13 03:14	500
Aroclor 1242	ND		28	18	ug/L		03/23/13 07:40	03/26/13 03:14	500
Aroclor 1248	ND		28	18	ug/L		03/23/13 07:40	03/26/13 03:14	500
Aroclor 1254	ND		28	14	ug/L		03/23/13 07:40	03/26/13 03:14	500
Aroclor 1260	ND		28	14	ug/L		03/23/13 07:40	03/26/13 03:14	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*0*	*X*	*10 - 158*	*03/23/13 07:40*	*03/26/13 03:14*	*500*
Tetrachloro-m-xylene	*0*	*X*	*18 - 146*	*03/23/13 07:40*	*03/26/13 03:14*	*500*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		93	28	ug/L		03/25/13 14:24	03/28/13 17:02	200
Silvex (2,4,5-TP)	ND		93	67	ug/L		03/25/13 14:24	03/28/13 17:02	200
2,4-D	**1300**		93	74	ug/L		03/25/13 14:24	03/28/13 17:02	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X*	*32 - 132*	*03/25/13 14:24*	*03/28/13 17:02*	*200*

Method: 8280A - Dioxins and Furans (HRGC/LRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	**2.4**	**J**	24	0.14	ng/L		04/04/13 11:18	04/05/13 21:52	1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ND		24	0.12	ng/L		04/04/13 11:18	04/05/13 21:52	1
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ND		24	0.14	ng/L		04/04/13 11:18	04/05/13 21:52	1
2,3,7,8-TCDD	ND		9.5	0.19	ng/L		04/04/13 11:18	04/05/13 21:52	1
2,3,7,8-TCDF	ND		9.5	0.12	ng/L		04/04/13 11:18	04/05/13 21:52	1
OCDD	**1.5**	**J**	47	0.19	ng/L		04/04/13 11:18	04/05/13 21:52	1
OCDF	**1.3**	**J**	47	0.17	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total HxCDD	ND		24	0.0095	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total HxCDF	ND		24	0.0095	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total PeCDD	ND		24	0.0095	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total PeCDF	ND		24	0.0095	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total TCDD	ND		9.5	0.19	ng/L		04/04/13 11:18	04/05/13 21:52	1
Total TCDF	ND		9.5	0.12	ng/L		04/04/13 11:18	04/05/13 21:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,6,7,8-HxCDD	*58*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*58*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*
13C-2,3,7,8-TCDF	*60*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*
13C-OCDD	*56*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*92*		*25 - 150*	*04/04/13 11:18*	*04/05/13 21:52*	*1*

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.13**	**J**	0.30	0.0068	mg/L		03/23/13 10:15	03/25/13 16:03	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: T103
Date Collected: 03/21/13 11:30
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-1
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.36		0.010	0.0056	mg/L		03/23/13 10:15	03/25/13 16:03	1
Barium	0.14	J	0.20	0.00070	mg/L		03/23/13 10:15	03/25/13 16:03	1
Beryllium	ND		0.0050	0.00030	mg/L		03/23/13 10:15	03/25/13 16:03	1
Cadmium	0.021		0.0050	0.00050	mg/L		03/23/13 10:15	03/25/13 16:03	1
Chromium	0.099		0.010	0.0010	mg/L		03/23/13 10:15	03/25/13 16:03	1
Lead	0.047		0.0050	0.0030	mg/L		03/23/13 10:15	03/25/13 16:03	1
Nickel	4.1		0.040	0.0013	mg/L		03/23/13 10:15	03/25/13 16:03	1
Selenium	1.0		0.015	0.0087	mg/L		03/23/13 10:15	03/25/13 16:03	1
Silver	0.023	J	0.025	0.0017	mg/L		03/23/13 10:15	03/25/13 16:03	1
Vanadium	0.0096	J	0.050	0.0015	mg/L		03/23/13 10:15	03/25/13 16:03	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		2.5	0.22	mg/L		03/23/13 11:40	04/03/13 04:00	500
Thallium	ND		0.010	0.000080	mg/L		03/23/13 11:40	03/31/13 03:09	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Volatile Residue	10100		10.0	4.0	mg/L			03/22/13 23:29	1
Total Cyanide	0.090		0.020	0.0050	mg/L		03/26/13 12:50	03/27/13 00:24	1
Cyanide, Weak Acid Dissociable	0.096		0.010	0.0060	mg/L		03/26/13 12:50	03/27/13 00:23	1
Fluoride	6.4		0.50	0.085	mg/L			03/28/13 04:37	5
Sulfide	5.6		2.0	1.3	mg/L			03/23/13 12:33	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: TB
Date Collected: 03/21/13 00:00
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/27/13 13:11	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/27/13 13:11	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/27/13 13:11	1
1,1,2-Trichloro-1,2,2-trichfluoroethane	ND		1.0	0.31	ug/L			03/27/13 13:11	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/27/13 13:11	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/27/13 13:11	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/27/13 13:11	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/27/13 13:11	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/27/13 13:11	1
1,2-Dibromoethane (EDB)	ND		1.0	0.73	ug/L			03/27/13 13:11	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/27/13 13:11	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/27/13 13:11	1
1,4-Dioxane	ND		40	9.3	ug/L			03/27/13 13:11	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/27/13 13:11	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/27/13 13:11	1
Acetone	ND		10	3.0	ug/L			03/27/13 13:11	1
Acetonitrile	ND		40	26	ug/L			03/27/13 13:11	1
Acrolein	ND		20	18	ug/L			03/27/13 13:11	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/27/13 13:11	1
Allyl chloride	ND		1.0	0.44	ug/L			03/27/13 13:11	1
Benzene	ND		1.0	0.41	ug/L			03/27/13 13:11	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/27/13 13:11	1
Bromoform	ND		1.0	0.26	ug/L			03/27/13 13:11	1
Bromomethane	ND		1.0	0.69	ug/L			03/27/13 13:11	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/27/13 13:11	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/27/13 13:11	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/27/13 13:11	1
Chloroethane	ND		1.0	0.32	ug/L			03/27/13 13:11	1
Chloroform	ND		1.0	0.34	ug/L			03/27/13 13:11	1
Chloromethane	ND		1.0	0.35	ug/L			03/27/13 13:11	1
1,3-Butadiene, 2-chloro-	ND		1.0	0.49	ug/L			03/27/13 13:11	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/27/13 13:11	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/27/13 13:11	1
Dibromomethane	ND		1.0	0.41	ug/L			03/27/13 13:11	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			03/27/13 13:11	1
Ethyl acetate	ND		1.0	0.66	ug/L			03/27/13 13:11	1
Ethyl ether	ND		5.0	0.72	ug/L			03/27/13 13:11	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			03/27/13 13:11	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/27/13 13:11	1
Iodomethane	ND		1.0	0.30	ug/L			03/27/13 13:11	1
Isobutanol	ND		40	20	ug/L			03/27/13 13:11	1
Methacrylonitrile	ND		5.0	0.69	ug/L			03/27/13 13:11	1
Methyl methacrylate	ND		1.0	0.61	ug/L			03/27/13 13:11	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/27/13 13:11	1
Propionitrile	ND		10	5.8	ug/L			03/27/13 13:11	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/27/13 13:11	1
Toluene	ND		1.0	0.51	ug/L			03/27/13 13:11	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/27/13 13:11	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/27/13 13:11	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: TB
Date Collected: 03/21/13 00:00
Date Received: 03/22/13 09:00

Lab Sample ID: 480-34856-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0	0.46	ug/L			03/27/13 13:11	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/27/13 13:11	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/27/13 13:11	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/27/13 13:11	1
Cyclohexanone	ND		10	5.2	ug/L			03/27/13 13:11	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*					*03/27/13 13:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 137*		*03/27/13 13:11*	*1*
4-Bromofluorobenzene (Surr)	*111*		*73 - 120*		*03/27/13 13:11*	*1*
Toluene-d8 (Surr)	*118*		*71 - 126*		*03/27/13 13:11*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-109392/5
Matrix: Water
Analysis Batch: 109392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/27/13 11:19	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/27/13 11:19	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/27/13 11:19	1
1,1,2-Trichloro-1,2,2-trichfluoroethane	ND		1.0	0.31	ug/L			03/27/13 11:19	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/27/13 11:19	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/27/13 11:19	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/27/13 11:19	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/27/13 11:19	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/27/13 11:19	1
1,2-Dibromoethane (EDB)	ND		1.0	0.73	ug/L			03/27/13 11:19	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/27/13 11:19	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/27/13 11:19	1
1,4-Dioxane	ND		40	9.3	ug/L			03/27/13 11:19	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/27/13 11:19	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/27/13 11:19	1
Acetone	ND		10	3.0	ug/L			03/27/13 11:19	1
Acetonitrile	ND		40	26	ug/L			03/27/13 11:19	1
Acrolein	ND		20	18	ug/L			03/27/13 11:19	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/27/13 11:19	1
Allyl chloride	ND		1.0	0.44	ug/L			03/27/13 11:19	1
Benzene	ND		1.0	0.41	ug/L			03/27/13 11:19	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/27/13 11:19	1
Bromoform	ND		1.0	0.26	ug/L			03/27/13 11:19	1
Bromomethane	ND		1.0	0.69	ug/L			03/27/13 11:19	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/27/13 11:19	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/27/13 11:19	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/27/13 11:19	1
Chloroethane	ND		1.0	0.32	ug/L			03/27/13 11:19	1
Chloroform	ND		1.0	0.34	ug/L			03/27/13 11:19	1
Chloromethane	ND		1.0	0.35	ug/L			03/27/13 11:19	1
1,3-Butadiene, 2-chloro-	ND		1.0	0.49	ug/L			03/27/13 11:19	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/27/13 11:19	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/27/13 11:19	1
Dibromomethane	ND		1.0	0.41	ug/L			03/27/13 11:19	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			03/27/13 11:19	1
Ethyl acetate	ND		1.0	0.66	ug/L			03/27/13 11:19	1
Ethyl ether	ND		5.0	0.72	ug/L			03/27/13 11:19	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			03/27/13 11:19	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/27/13 11:19	1
Iodomethane	ND		1.0	0.30	ug/L			03/27/13 11:19	1
Isobutanol	ND		40	20	ug/L			03/27/13 11:19	1
Methacrylonitrile	ND		5.0	0.69	ug/L			03/27/13 11:19	1
Methyl methacrylate	ND		1.0	0.61	ug/L			03/27/13 11:19	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/27/13 11:19	1
Propionitrile	ND		10	5.8	ug/L			03/27/13 11:19	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/27/13 11:19	1
Toluene	ND		1.0	0.51	ug/L			03/27/13 11:19	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/27/13 11:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-109392/5
Matrix: Water
Analysis Batch: 109392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/27/13 11:19	1
Trichloroethene	ND		1.0	0.46	ug/L			03/27/13 11:19	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/27/13 11:19	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/27/13 11:19	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/27/13 11:19	1
Cyclohexanone	ND		10	5.2	ug/L			03/27/13 11:19	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*					*03/27/13 11:19*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 137*		*03/27/13 11:19*	*1*
4-Bromofluorobenzene (Surr)	*110*		*73 - 120*		*03/27/13 11:19*	*1*
Toluene-d8 (Surr)	*116*		*71 - 126*		*03/27/13 11:19*	*1*

Lab Sample ID: LCS 480-109392/4
Matrix: Water
Analysis Batch: 109392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	25.0	22.3		ug/L		89	71 - 129
1,1-Dichloroethene	25.0	19.8		ug/L		79	58 - 121
1,2-Dichloroethane	25.0	22.4		ug/L		89	75 - 127
Benzene	25.0	23.7		ug/L		95	71 - 124
Chlorobenzene	25.0	26.3		ug/L		105	72 - 120
Ethylbenzene	25.0	25.3		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	74 - 122
Toluene	25.0	25.3		ug/L		101	80 - 122
trans-1,2-Dichloroethene	25.0	18.6		ug/L		75	73 - 127
Trichloroethene	25.0	23.4		ug/L		94	74 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 137*
4-Bromofluorobenzene (Surr)	*113*		*73 - 120*
Toluene-d8 (Surr)	*120*		*71 - 126*

Lab Sample ID: MB 480-109805/7
Matrix: Water
Analysis Batch: 109805

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/28/13 23:17	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/28/13 23:17	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/28/13 23:17	1
1,1,2-Trichloro-1,2,2-trichfluoroethane	ND		1.0	0.31	ug/L			03/28/13 23:17	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/28/13 23:17	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/28/13 23:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-109805/7
Matrix: Water
Analysis Batch: 109805

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/28/13 23:17	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/28/13 23:17	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/28/13 23:17	1
1,2-Dibromoethane (EDB)	ND		1.0	0.73	ug/L			03/28/13 23:17	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/28/13 23:17	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/28/13 23:17	1
1,4-Dioxane	ND		40	9.3	ug/L			03/28/13 23:17	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/28/13 23:17	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/28/13 23:17	1
Acetone	ND		10	3.0	ug/L			03/28/13 23:17	1
Acetonitrile	ND		40	26	ug/L			03/28/13 23:17	1
Acrolein	ND		20	18	ug/L			03/28/13 23:17	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/28/13 23:17	1
Allyl chloride	ND		1.0	0.44	ug/L			03/28/13 23:17	1
Benzene	ND		1.0	0.41	ug/L			03/28/13 23:17	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/28/13 23:17	1
Bromoform	ND		1.0	0.26	ug/L			03/28/13 23:17	1
Bromomethane	ND		1.0	0.69	ug/L			03/28/13 23:17	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/28/13 23:17	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/28/13 23:17	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/28/13 23:17	1
Chloroethane	ND		1.0	0.32	ug/L			03/28/13 23:17	1
Chloroform	ND		1.0	0.34	ug/L			03/28/13 23:17	1
Chloromethane	ND		1.0	0.35	ug/L			03/28/13 23:17	1
1,3-Butadiene, 2-chloro-	ND		1.0	0.49	ug/L			03/28/13 23:17	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/28/13 23:17	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/28/13 23:17	1
Dibromomethane	ND		1.0	0.41	ug/L			03/28/13 23:17	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			03/28/13 23:17	1
Ethyl acetate	ND		1.0	0.66	ug/L			03/28/13 23:17	1
Ethyl ether	ND		5.0	0.72	ug/L			03/28/13 23:17	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			03/28/13 23:17	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/28/13 23:17	1
Iodomethane	ND		1.0	0.30	ug/L			03/28/13 23:17	1
Isobutanol	ND		40	20	ug/L			03/28/13 23:17	1
Methacrylonitrile	ND		5.0	0.69	ug/L			03/28/13 23:17	1
Methyl methacrylate	ND		1.0	0.61	ug/L			03/28/13 23:17	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/28/13 23:17	1
Propionitrile	ND		10	5.8	ug/L			03/28/13 23:17	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/28/13 23:17	1
Toluene	ND		1.0	0.51	ug/L			03/28/13 23:17	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/28/13 23:17	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/28/13 23:17	1
Trichloroethene	ND		1.0	0.46	ug/L			03/28/13 23:17	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/28/13 23:17	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/28/13 23:17	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/28/13 23:17	1
Cyclohexanone	ND		10	5.2	ug/L			03/28/13 23:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-109805/7
Matrix: Water
Analysis Batch: 109805

Client Sample ID: Method Blank
Prep Type: Total/NA

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					03/28/13 23:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		66 - 137		03/28/13 23:17	1
4-Bromofluorobenzene (Surr)	101		73 - 120		03/28/13 23:17	1
Toluene-d8 (Surr)	95		71 - 126		03/28/13 23:17	1

Lab Sample ID: LCS 480-109805/4
Matrix: Water
Analysis Batch: 109805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	25.0	23.2		ug/L		93	71 - 129
1,1-Dichloroethene	25.0	23.2		ug/L		93	58 - 121
1,2-Dichloroethane	25.0	21.4		ug/L		86	75 - 127
Benzene	25.0	23.4		ug/L		93	71 - 124
Chlorobenzene	25.0	24.0		ug/L		96	72 - 120
Ethylbenzene	25.0	23.1		ug/L		92	77 - 123
Tetrachloroethene	25.0	26.7		ug/L		107	74 - 122
Toluene	25.0	23.2		ug/L		93	80 - 122
trans-1,2-Dichloroethene	25.0	24.1		ug/L		96	73 - 127
Trichloroethene	25.0	24.0		ug/L		96	74 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		66 - 137
4-Bromofluorobenzene (Surr)	102		73 - 120
Toluene-d8 (Surr)	96		71 - 126

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-108882/1-A
Matrix: Water
Analysis Batch: 110446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108882

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	ND		5.0	0.58	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,2,4-Trichlorobenzene	ND		10	0.44	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,2-Dichlorobenzene	ND		10	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,2-Diphenylhydrazine	ND		10	0.35	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,3-Dichlorobenzene	ND		10	0.48	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,4-Dichlorobenzene	ND		10	0.46	ug/L		03/23/13 06:29	04/02/13 15:39	1
1,4-Dinitrobenzene	ND		10	0.71	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,2'-Oxybis(1-chloropropane)	ND		5.0	0.52	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,3,4,6-Tetrachlorophenol	ND		5.0	0.32	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,4,5-Trichlorophenol	ND		5.0	0.48	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,4,6-Trichlorophenol	ND		5.0	0.61	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,4-Dichlorophenol	ND		5.0	0.51	ug/L		03/23/13 06:29	04/02/13 15:39	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-108882/1-A
Matrix: Water
Analysis Batch: 110446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108882

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dimethylphenol	ND		5.0	0.50	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,4-Dinitrophenol	ND		10	2.2	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,4-Dinitrotoluene	ND		5.0	0.45	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,6-Dichlorophenol	ND		10	0.46	ug/L		03/23/13 06:29	04/02/13 15:39	1
2,6-Dinitrotoluene	ND		5.0	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
2-Acetylaminofluorene	ND		10	2.3	ug/L		03/23/13 06:29	04/02/13 15:39	1
2-Chloronaphthalene	ND		5.0	0.46	ug/L		03/23/13 06:29	04/02/13 15:39	1
2-Chlorophenol	ND		5.0	0.53	ug/L		03/23/13 06:29	04/02/13 15:39	1
2-Methylphenol	ND		5.0	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
2-Naphthylamine	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
3-Methylcholanthrene	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
3-Methylphenol	ND		10	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
4,6-Dinitro-2-methylphenol	ND		10	2.2	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Aminobiphenyl	ND		10	0.81	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Bromophenyl phenyl ether	ND		5.0	0.45	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Chloro-3-methylphenol	ND		5.0	0.45	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Chloroaniline	ND		5.0	0.59	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Methylphenol	ND		10	0.36	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Nitroaniline	ND		10	0.25	ug/L		03/23/13 06:29	04/02/13 15:39	1
4-Nitrophenol	ND		10	1.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
5-Nitro-o-toluidine	ND		10	0.66	ug/L		03/23/13 06:29	04/02/13 15:39	1
Acenaphthene	ND		5.0	0.41	ug/L		03/23/13 06:29	04/02/13 15:39	1
Acenaphthylene	ND		5.0	0.38	ug/L		03/23/13 06:29	04/02/13 15:39	1
Acetophenone	ND		5.0	0.54	ug/L		03/23/13 06:29	04/02/13 15:39	1
Aniline	ND		10	0.61	ug/L		03/23/13 06:29	04/02/13 15:39	1
Anthracene	ND		5.0	0.28	ug/L		03/23/13 06:29	04/02/13 15:39	1
Aramite	ND		20	1.6	ug/L		03/23/13 06:29	04/02/13 15:39	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		03/23/13 06:29	04/02/13 15:39	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		03/23/13 06:29	04/02/13 15:39	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		03/23/13 06:29	04/02/13 15:39	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		03/23/13 06:29	04/02/13 15:39	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		03/23/13 06:29	04/02/13 15:39	1
Bis(2-chloroethoxy)methane	ND		5.0	0.35	ug/L		03/23/13 06:29	04/02/13 15:39	1
Bis(2-chloroethyl)ether	ND		5.0	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
Bis(2-ethylhexyl) phthalate	ND		5.0	1.8	ug/L		03/23/13 06:29	04/02/13 15:39	1
Butyl benzyl phthalate	ND		5.0	0.42	ug/L		03/23/13 06:29	04/02/13 15:39	1
Chlorobenzilate	ND		20	0.67	ug/L		03/23/13 06:29	04/02/13 15:39	1
Chrysene	ND		5.0	0.33	ug/L		03/23/13 06:29	04/02/13 15:39	1
Dibenz[a,h]anthracene	ND		5.0	0.42	ug/L		03/23/13 06:29	04/02/13 15:39	1
Dibenzo[a,e]pyrene	ND		10	1.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Diethyl phthalate	ND		5.0	0.22	ug/L		03/23/13 06:29	04/02/13 15:39	1
Dimethyl phthalate	ND		5.0	0.36	ug/L		03/23/13 06:29	04/02/13 15:39	1
Di-n-butyl phthalate	ND		5.0	0.31	ug/L		03/23/13 06:29	04/02/13 15:39	1
Di-n-octyl phthalate	ND		5.0	0.47	ug/L		03/23/13 06:29	04/02/13 15:39	1
Dinoseb	ND		10	2.9	ug/L		03/23/13 06:29	04/02/13 15:39	1
Diphenylamine	ND		10	0.82	ug/L		03/23/13 06:29	04/02/13 15:39	1
Disulfoton	ND		10	0.42	ug/L		03/23/13 06:29	04/02/13 15:39	1
Famphur	ND		40	1.9	ug/L		03/23/13 06:29	04/02/13 15:39	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-108882/1-A
Matrix: Water
Analysis Batch: 110446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108882

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	ND		5.0	0.40	ug/L		03/23/13 06:29	04/02/13 15:39	1
Fluorene	ND		5.0	0.36	ug/L		03/23/13 06:29	04/02/13 15:39	1
Hexachlorobenzene	ND		5.0	0.51	ug/L		03/23/13 06:29	04/02/13 15:39	1
Hexachlorobutadiene	ND		5.0	0.68	ug/L		03/23/13 06:29	04/02/13 15:39	1
Hexachlorocyclopentadiene	ND		5.0	0.59	ug/L		03/23/13 06:29	04/02/13 15:39	1
Hexachloroethane	ND		5.0	0.59	ug/L		03/23/13 06:29	04/02/13 15:39	1
Hexachloropropene	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		03/23/13 06:29	04/02/13 15:39	1
Isodrin	ND		10	0.18	ug/L		03/23/13 06:29	04/02/13 15:39	1
Isosafrole	ND		10	0.58	ug/L		03/23/13 06:29	04/02/13 15:39	1
Kepone	ND		50	1.8	ug/L		03/23/13 06:29	04/02/13 15:39	1
Methapyrilene	ND		50	1.8	ug/L		03/23/13 06:29	04/02/13 15:39	1
Methyl methanesulfonate	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Methyl parathion	ND		10	0.37	ug/L		03/23/13 06:29	04/02/13 15:39	1
Naphthalene	ND		5.0	0.76	ug/L		03/23/13 06:29	04/02/13 15:39	1
Nitrobenzene	ND		5.0	0.29	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosodiethylamine	ND		10	0.36	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosodimethylamine	ND		10	2.2	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosodi-n-butylamine	ND		10	0.60	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosodi-n-propylamine	ND		5.0	0.54	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosodiphenylamine	ND		5.0	0.51	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosomethylethylamine	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosomorpholine	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosopiperidine	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
N-Nitrosopyrrolidine	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Parathion	ND		10	0.64	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pentachlorobenzene	ND		10	0.53	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pentachloronitrobenzene	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pentachlorophenol	ND		10	2.2	ug/L		03/23/13 06:29	04/02/13 15:39	1
Phenacetin	ND		10	0.61	ug/L		03/23/13 06:29	04/02/13 15:39	1
Phenanthrene	ND		5.0	0.44	ug/L		03/23/13 06:29	04/02/13 15:39	1
Phenol	ND		5.0	0.39	ug/L		03/23/13 06:29	04/02/13 15:39	1
Phorate	ND		10	0.50	ug/L		03/23/13 06:29	04/02/13 15:39	1
Phthalic anhydride	ND		500	56	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pronamide	ND		10	2.5	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pyrene	ND		5.0	0.34	ug/L		03/23/13 06:29	04/02/13 15:39	1
Pyridine	ND		25	0.41	ug/L		03/23/13 06:29	04/02/13 15:39	1
Safrole	ND		10	0.46	ug/L		03/23/13 06:29	04/02/13 15:39	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Ethanol, 2,2'-oxybis-	*10.4*	*T J N*	*ug/L*		*3.32*	*111-46-6*	*03/23/13 06:29*	*04/02/13 15:39*	*1*
2-Propanol, 1-[1-methyl-2-(2-propenyloxy	*10.8*	*T J N*	*ug/L*		*7.66*	*55956-25-7*	*03/23/13 06:29*	*04/02/13 15:39*	*1*
2-Propanol, 1-[1-methyl-2-(2-propenyloxy	*7.58*	*T J N*	*ug/L*		*8.49*	*55956-25-7*	*03/23/13 06:29*	*04/02/13 15:39*	*1*
Ethane, 1,2-diethoxy-	*7.56*	*T J N*	*ug/L*		*9.11*	*629-14-1*	*03/23/13 06:29*	*04/02/13 15:39*	*1*
1-Propanol, 2-(2-methoxy-1-methylethoxy)	*9.49*	*T J N*	*ug/L*		*10.30*	*55956-21-3*	*03/23/13 06:29*	*04/02/13 15:39*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-108882/1-A
Matrix: Water
Analysis Batch: 110446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108882

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Butanoic acid, 3-methoxy-	7.36	T J N	ug/L		12.36	10024-70-1	03/23/13 06:29	04/02/13 15:39	1
Hexaethylene glycol dimethyl ether	7.55	T J N	ug/L		14.00	1072-40-8	03/23/13 06:29	04/02/13 15:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	88		52 - 132	03/23/13 06:29	04/02/13 15:39	1
Nitrobenzene-d5	80		46 - 120	03/23/13 06:29	04/02/13 15:39	1
Phenol-d5	32		16 - 120	03/23/13 06:29	04/02/13 15:39	1
p-Terphenyl-d14	108		67 - 150	03/23/13 06:29	04/02/13 15:39	1
2-Fluorobiphenyl	86		48 - 120	03/23/13 06:29	04/02/13 15:39	1
2-Fluorophenol	42		20 - 120	03/23/13 06:29	04/02/13 15:39	1

Lab Sample ID: LCS 480-108882/2-A
Matrix: Water
Analysis Batch: 110446

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108882

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trichlorobenzene	91.0	78.9		ug/L		87	40 - 120
1,4-Dichlorobenzene	92.0	79.6		ug/L		86	32 - 120
2,4-Dinitrotoluene	88.0	135		ug/L		154	65 - 154
2-Chlorophenol	92.0	97.8		ug/L		106	48 - 120
4-Chloro-3-methylphenol	90.0	116	*	ug/L		128	64 - 120
4-Nitrophenol	89.0	60.6		ug/L		68	16 - 120
Acenaphthene	94.0	103		ug/L		109	60 - 120
Bis(2-ethylhexyl) phthalate	84.0	123		ug/L		146	53 - 158
Fluorene	93.0	110		ug/L		118	55 - 143
Hexachloroethane	92.0	67.9		ug/L		74	14 - 101
N-Nitrosodi-n-propylamine	93.0	116	*	ug/L		125	56 - 120
Pentachlorophenol	97.0	105		ug/L		109	39 - 136
Phenol	91.0	47.2		ug/L		52	17 - 120
Pyrene	92.0	114		ug/L		124	58 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	110		52 - 132
Nitrobenzene-d5	93		46 - 120
Phenol-d5	42		16 - 120
p-Terphenyl-d14	106		67 - 150
2-Fluorobiphenyl	96		48 - 120
2-Fluorophenol	56		20 - 120

Method: 8015B - Nonhalogenated Organic Compounds - Direct Injection (GC)

Lab Sample ID: MB 480-109374/3
Matrix: Water
Analysis Batch: 109374

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methanol	ND		1000	410	ug/L			03/27/13 08:12	1

Method: 8015B - Nonhalogenated Organic Compounds - Direct Injection (GC) (Continued)

Lab Sample ID: MB 480-109374/3
Matrix: Water
Analysis Batch: 109374

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butyl alcohol, n-	ND		1000	400	ug/L			03/27/13 08:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Hexanone	*92*		*63 - 124*		*03/27/13 08:12*	*1*

Lab Sample ID: LCS 480-109374/4
Matrix: Water
Analysis Batch: 109374

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methanol			20000	18400		ug/L		92	76 - 122		
Butyl alcohol, n-			20000	16400		ug/L		82	75 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Hexanone	*93*		*63 - 124*

Lab Sample ID: LCSD 480-109374/5
Matrix: Water
Analysis Batch: 109374

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methanol			20000	19200		ug/L		96	76 - 122	4	30
Butyl alcohol, n-			20000	17200		ug/L		86	75 - 120	5	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Hexanone	*100*		*63 - 124*

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 480-109118/1-A
Matrix: Water
Analysis Batch: 109186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 109118

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		0.050	0.0063	ug/L		03/25/13 19:30	03/26/13 08:51	1
2,4'-DDE	ND		0.050	0.027	ug/L		03/25/13 19:30	03/26/13 08:51	1
2,4'-DDT	ND		0.050	0.0091	ug/L		03/25/13 19:30	03/26/13 08:51	1
4,4'-DDD	ND		0.050	0.0092	ug/L		03/25/13 19:30	03/26/13 08:51	1
4,4'-DDE	ND		0.050	0.012	ug/L		03/25/13 19:30	03/26/13 08:51	1
4,4'-DDT	ND		0.050	0.011	ug/L		03/25/13 19:30	03/26/13 08:51	1
Aldrin	ND		0.050	0.0066	ug/L		03/25/13 19:30	03/26/13 08:51	1
alpha-BHC	ND		0.050	0.0066	ug/L		03/25/13 19:30	03/26/13 08:51	1
beta-BHC	ND		0.050	0.025	ug/L		03/25/13 19:30	03/26/13 08:51	1
Chlordane	ND		0.50	0.29	ug/L		03/25/13 19:30	03/26/13 08:51	1
delta-BHC	ND		0.050	0.010	ug/L		03/25/13 19:30	03/26/13 08:51	1
Dieldrin	ND		0.050	0.0098	ug/L		03/25/13 19:30	03/26/13 08:51	1
Endosulfan I	ND		0.050	0.011	ug/L		03/25/13 19:30	03/26/13 08:51	1

Method: 608 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: MB 480-109118/1-A
Matrix: Water
Analysis Batch: 109186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 109118

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan II	ND		0.050	0.012	ug/L		03/25/13 19:30	03/26/13 08:51	1
Endosulfan sulfate	ND		0.050	0.016	ug/L		03/25/13 19:30	03/26/13 08:51	1
Endrin	ND		0.050	0.014	ug/L		03/25/13 19:30	03/26/13 08:51	1
Endrin aldehyde	ND		0.050	0.016	ug/L		03/25/13 19:30	03/26/13 08:51	1
gamma-BHC (Lindane)	ND		0.050	0.0060	ug/L		03/25/13 19:30	03/26/13 08:51	1
Heptachlor	ND		0.050	0.0085	ug/L		03/25/13 19:30	03/26/13 08:51	1
Heptachlor epoxide	ND		0.050	0.0053	ug/L		03/25/13 19:30	03/26/13 08:51	1
Methoxychlor	ND		0.050	0.014	ug/L		03/25/13 19:30	03/26/13 08:51	1
Toxaphene	ND		0.50	0.12	ug/L		03/25/13 19:30	03/26/13 08:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*66*		*15 - 125*	*03/25/13 19:30*	*03/26/13 08:51*	*1*
Tetrachloro-m-xylene	*62*		*36 - 121*	*03/25/13 19:30*	*03/26/13 08:51*	*1*

Lab Sample ID: LCS 480-109118/2-A
Matrix: Water
Analysis Batch: 109186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 109118

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.500	0.452		ug/L		90	54 - 142
4,4'-DDE	0.500	0.427		ug/L		85	48 - 128
4,4'-DDT	0.500	0.401		ug/L		80	53 - 136
Aldrin	0.500	0.358		ug/L		72	35 - 120
alpha-BHC	0.500	0.395		ug/L		79	39 - 121
beta-BHC	0.500	0.431		ug/L		86	39 - 138
delta-BHC	0.500	0.424		ug/L		85	40 - 121
Dieldrin	0.500	0.476		ug/L		95	52 - 132
Endosulfan I	0.500	0.461		ug/L		92	47 - 126
Endosulfan II	0.500	0.467		ug/L		93	48 - 134
Endosulfan sulfate	0.500	0.461		ug/L		92	57 - 140
Endrin	0.500	0.495		ug/L		99	54 - 135
Endrin aldehyde	0.500	0.445		ug/L		89	55 - 132
gamma-BHC (Lindane)	0.500	0.406		ug/L		81	54 - 134
Heptachlor	0.500	0.430		ug/L		86	42 - 126
Heptachlor epoxide	0.500	0.466		ug/L		93	53 - 134
Methoxychlor	0.500	0.429		ug/L		86	47 - 166

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*69*		*15 - 125*
Tetrachloro-m-xylene	*65*		*36 - 121*

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 480-108884/1-A
Matrix: Water
Analysis Batch: 108979

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.060	0.038	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1221	ND		0.060	0.038	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1232	ND		0.060	0.038	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1242	ND		0.060	0.038	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1248	ND		0.060	0.038	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1254	ND		0.060	0.031	ug/L		03/23/13 06:40	03/25/13 11:29	1
Aroclor 1260	ND		0.060	0.031	ug/L		03/23/13 06:40	03/25/13 11:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*62*		*10 - 158*	*03/23/13 06:40*	*03/25/13 11:29*	*1*
Tetrachloro-m-xylene	*77*		*18 - 146*	*03/23/13 06:40*	*03/25/13 11:29*	*1*

Lab Sample ID: LCS 480-108884/2-A
Matrix: Water
Analysis Batch: 108979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	1.00	0.971		ug/L		97	44 - 154
Aroclor 1260	1.00	0.803		ug/L		80	34 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*54*		*10 - 158*
Tetrachloro-m-xylene	*78*		*18 - 146*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 480-109072/1-A
Matrix: Water
Analysis Batch: 109480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 109072

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.50	0.15	ug/L		03/25/13 14:24	03/27/13 16:59	1
Silvex (2,4,5-TP)	ND		0.50	0.36	ug/L		03/25/13 14:24	03/27/13 16:59	1
2,4-D	ND		0.50	0.40	ug/L		03/25/13 14:24	03/27/13 16:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*112*		*32 - 132*	*03/25/13 14:24*	*03/27/13 16:59*	*1*

Lab Sample ID: LCS 480-109072/2-A
Matrix: Water
Analysis Batch: 109480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 109072

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	2.00	1.97		ug/L		99	46 - 143
Silvex (2,4,5-TP)	2.00	1.87		ug/L		94	44 - 147
2,4-D	2.00	1.97		ug/L		99	45 - 149

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 480-109072/2-A
Matrix: Water
Analysis Batch: 109480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 109072

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	121		32 - 132

Lab Sample ID: LCSD 480-109072/3-A
Matrix: Water
Analysis Batch: 109480

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 109072

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,5-T			2.00	1.93		ug/L		97	46 - 143	NaN	50
Silvex (2,4,5-TP)			2.00	1.83		ug/L		92	44 - 147	NaN	50
2,4-D			2.00	1.85		ug/L		93	45 - 149	NaN	50

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4-Dichlorophenylacetic acid	117		32 - 132

Method: 8280A - Dioxins and Furans (HRGC/LRMS)

Lab Sample ID: MB 320-13628/1-A
Matrix: Water
Analysis Batch: 13783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13628

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	ND		13	0.053	ng/L		04/04/13 11:18	04/05/13 17:53	1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ND		13	0.056	ng/L		04/04/13 11:18	04/05/13 17:53	1
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ND		13	0.062	ng/L		04/04/13 11:18	04/05/13 17:53	1
2,3,7,8-TCDD	ND		5.0	0.060	ng/L		04/04/13 11:18	04/05/13 17:53	1
2,3,7,8-TCDF	ND		5.0	0.032	ng/L		04/04/13 11:18	04/05/13 17:53	1
OCDD	ND		25	0.093	ng/L		04/04/13 11:18	04/05/13 17:53	1
OCDF	ND		25	0.068	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total HxCDD	ND		13	0.053	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total HxCDF	ND		13	0.053	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total PeCDD	ND		13	0.069	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total PeCDF	ND		13	0.043	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total TCDD	ND		5.0	0.060	ng/L		04/04/13 11:18	04/05/13 17:53	1
Total TCDF	ND		5.0	0.032	ng/L		04/04/13 11:18	04/05/13 17:53	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	59		25 - 150	04/04/13 11:18	04/05/13 17:53	1
13C-2,3,7,8-TCDD	66		25 - 150	04/04/13 11:18	04/05/13 17:53	1
13C-1,2,3,4,6,7,8-HpCDF	54		25 - 150	04/04/13 11:18	04/05/13 17:53	1
13C-2,3,7,8-TCDF	65		25 - 150	04/04/13 11:18	04/05/13 17:53	1
13C-OCDD	48		25 - 150	04/04/13 11:18	04/05/13 17:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		25 - 150	04/04/13 11:18	04/05/13 17:53	1

Method: 8280A - Dioxins and Furans (HRGC/LRMS) (Continued)

Lab Sample ID: LCS 320-13628/2-A
Matrix: Water
Analysis Batch: 13783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13628

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	62.5	61.0		ng/L		98	63 - 124
1,2,3,4,6,7,8-Heptachlorodibenzofuran	62.5	64.9		ng/L		104	65 - 127
1,2,3,4,7,8,9-Heptachlorodibenzofuran	62.5	65.5		ng/L		105	51 - 148
2,3,7,8-TCDD	25.0	25.7		ng/L		103	66 - 126
2,3,7,8-TCDF	25.0	26.7		ng/L		107	65 - 125
OCDD	125	129		ng/L		103	64 - 124
OCDF	125	135		ng/L		108	64 - 124

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,6,7,8-HxCDD	*61*		*25 - 150*
13C-2,3,7,8-TCDD	*61*		*25 - 150*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*25 - 150*
13C-2,3,7,8-TCDF	*58*		*25 - 150*
13C-OCDD	*51*		*25 - 150*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*90*		*25 - 150*

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-108837/1-A
Matrix: Water
Analysis Batch: 109198

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108837

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.30	0.0068	mg/L		03/23/13 10:15	03/25/13 15:26	1
Arsenic	ND		0.010	0.0056	mg/L		03/23/13 10:15	03/25/13 15:26	1
Barium	ND		0.20	0.00070	mg/L		03/23/13 10:15	03/25/13 15:26	1
Beryllium	ND		0.0050	0.00030	mg/L		03/23/13 10:15	03/25/13 15:26	1
Cadmium	ND		0.0050	0.00050	mg/L		03/23/13 10:15	03/25/13 15:26	1
Chromium	ND		0.010	0.0010	mg/L		03/23/13 10:15	03/25/13 15:26	1
Lead	ND		0.0050	0.0030	mg/L		03/23/13 10:15	03/25/13 15:26	1
Nickel	ND		0.040	0.0013	mg/L		03/23/13 10:15	03/25/13 15:26	1
Selenium	ND		0.015	0.0087	mg/L		03/23/13 10:15	03/25/13 15:26	1
Silver	ND		0.025	0.0017	mg/L		03/23/13 10:15	03/25/13 15:26	1
Vanadium	ND		0.050	0.0015	mg/L		03/23/13 10:15	03/25/13 15:26	1

Lab Sample ID: LCS 480-108837/2-A
Matrix: Water
Analysis Batch: 109198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108837

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.200	0.198	J	mg/L		99	85 - 115
Arsenic	0.200	0.199		mg/L		100	85 - 115
Barium	0.200	0.213		mg/L		106	85 - 115

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-108837/2-A
Matrix: Water
Analysis Batch: 109198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108837

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	0.200	0.207		mg/L		103	85 - 115
Cadmium	0.200	0.204		mg/L		102	85 - 115
Chromium	0.200	0.204		mg/L		102	85 - 115
Lead	0.200	0.197		mg/L		99	85 - 115
Nickel	0.200	0.198		mg/L		99	85 - 115
Selenium	0.200	0.200		mg/L		100	85 - 115
Silver	0.0500	0.0526		mg/L		105	85 - 115
Vanadium	0.200	0.211		mg/L		106	85 - 115

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 480-108840/1-A
Matrix: Water
Analysis Batch: 110259

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108840

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.0050	0.00044	mg/L		03/23/13 11:40	03/31/13 00:33	1
Thallium	ND		0.0010	0.0000080	mg/L		03/23/13 11:40	03/31/13 00:33	1

Lab Sample ID: LCS 480-108840/2-A
Matrix: Water
Analysis Batch: 110259

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108840

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	0.0200	0.0188		mg/L		94	85 - 115
Thallium	0.0200	0.0207		mg/L		104	85 - 115

Lab Sample ID: LCSD 480-108840/3-A
Matrix: Water
Analysis Batch: 110259

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 108840

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Selenium	0.0200	0.0198		mg/L		99	85 - 115	5	20
Thallium	0.0200	0.0202		mg/L		101	85 - 115	3	20

Method: 160.4 - Solids, Total Volatile (TVS)

Lab Sample ID: MB 480-108871/1
Matrix: Water
Analysis Batch: 108871

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Volatile Residue	ND		10.0	4.0	mg/L			03/22/13 23:27	1

Method: 160.4 - Solids, Total Volatile (TVS) (Continued)

Lab Sample ID: 480-34856-1 DU — **Client Sample ID: T103**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108871

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Volatile Residue	10100		9924		mg/L		2	20

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 480-109302/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 109346 — **Prep Batch: 109302**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.010	0.0060	mg/L		03/26/13 12:50	03/27/13 00:05	1

Lab Sample ID: LCS 480-109302/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 109346 — **Prep Batch: 109302**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.400	0.421		mg/L		105	90 - 110

Method: SM 4500 F C - Fluoride

Lab Sample ID: MB 480-109589/27 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 109589

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.017	mg/L			03/28/13 03:05	1

Lab Sample ID: LCS 480-109589/28 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 109589

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	1.00	1.01		mg/L		101	90 - 110

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 480-108922/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0	0.67	mg/L			03/23/13 12:23	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Method: SM 4500 S2 F - Sulfide, Total (Continued)

Lab Sample ID: LCS 480-108922/4
Matrix: Water
Analysis Batch: 108922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	10.0	9.60		mg/L		96	90 - 110

Lab Chronicle

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Client Sample ID: T103

Lab Sample ID: 480-34856-1

Date Collected: 03/21/13 11:30

Matrix: Water

Date Received: 03/22/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	DL	5000	109392	03/27/13 12:49	RL	TAL BUF
Total/NA	Analysis	8260B		100	109805	03/29/13 00:02	LH	TAL BUF
Total/NA	Prep	3510C			108882	03/23/13 07:29	DE	TAL BUF
Total/NA	Analysis	8270C		50	110446	04/02/13 16:35	RMM	TAL BUF
Total/NA	Prep	3510C	DL		108882	03/23/13 07:29	DE	TAL BUF
Total/NA	Analysis	8270C	DL	500	110650	04/03/13 13:19	RMM	TAL BUF
Total/NA	Analysis	8015B		100	109374	03/27/13 09:14	CD	TAL BUF
Total/NA	Prep	3510C			108884	03/23/13 07:40	DE	TAL BUF
Total/NA	Analysis	608		500	108979	03/26/13 03:14	JM	TAL BUF
Total/NA	Prep	3510C			109118	03/25/13 19:30	TG	TAL BUF
Total/NA	Analysis	608		100	109186	03/26/13 14:24	LW	TAL BUF
Total/NA	Prep	3510C			109118	03/25/13 19:30	TG	TAL BUF
Total/NA	Analysis	608		100	109186	03/26/13 14:24	LW	TAL BUF
Total/NA	Prep	8151A			109072	03/25/13 14:24	TG	TAL BUF
Total/NA	Analysis	8151A		200	109715	03/28/13 17:02	JAD	TAL BUF
Total/NA	Prep	8280A			13628	04/04/13 11:18	NM	TAL SAC
Total/NA	Analysis	8280A		1	13783	04/05/13 21:52	MO	TAL SAC
Total/NA	Prep	200.7			108837	03/23/13 10:15	SS	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	109198	03/25/13 16:03	LH	TAL BUF
Total/NA	Prep	200.8			108840	03/23/13 11:40	SS	TAL BUF
Total/NA	Analysis	200.8		10	110259	03/31/13 03:09	MM	TAL BUF
Total/NA	Prep	200.8			108840	03/23/13 11:40	SS	TAL BUF
Total/NA	Analysis	200.8		500	110691	04/03/13 04:00	MM	TAL BUF
Total/NA	Analysis	160.4		1	108871	03/22/13 23:29	KS	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	108922	03/23/13 12:33	KS	TAL BUF
Total/NA	Prep	SM 4500 CN I			109302	03/26/13 12:50	EGN	TAL BUF
Total/NA	Analysis	SM 4500 CN I		1	109346	03/27/13 00:23	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			109302	03/26/13 12:50	EGN	TAL BUF
Total/NA	Analysis	335.4		1	109346	03/27/13 00:24	PJQ	TAL BUF
Total/NA	Analysis	SM 4500 F C		5	109589	03/28/13 04:37	LK	TAL BUF

Client Sample ID: TB

Lab Sample ID: 480-34856-2

Date Collected: 03/21/13 00:00

Matrix: Water

Date Received: 03/22/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	109392	03/27/13 13:11	RL	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Laboratory: TestAmerica Buffalo

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0686	07-06-13
California	NELAP	9	1169CA	09-30-13
Connecticut	State Program	1	PH-0568	09-30-14
Florida	NELAP	4	E87672	06-30-13
Georgia	State Program	4	N/A	03-31-14
Georgia	State Program	4	956	06-30-13
Georgia	State Program	4	956	06-30-13
Illinois	NELAP	5	200003	09-30-13
Iowa	State Program	7	374	03-01-13 *
Kansas	NELAP	7	E-10187	01-31-14
Kentucky	State Program	4	90029	12-31-13
Kentucky (UST)	State Program	4	30	04-01-14
Louisiana	NELAP	6	02031	06-30-13
Maine	State Program	1	NY00044	12-04-13
Maryland	State Program	3	294	03-31-13 *
Massachusetts	State Program	1	M-NY044	06-30-13
Michigan	State Program	5	9937	04-01-13 *
Minnesota	NELAP	5	036-999-337	12-31-13
New Hampshire	NELAP	1	2973	09-11-13
New Hampshire	NELAP	1	2337	11-17-13
New Jersey	NELAP	2	NY455	06-30-13
New York	NELAP	2	10026	04-01-14
North Dakota	State Program	8	R-176	03-31-13 *
Oklahoma	State Program	6	9421	08-31-13
Oregon	NELAP	10	NY200003	06-09-13
Pennsylvania	NELAP	3	68-00281	07-31-13
Rhode Island	State Program	1	LAO00328	12-31-13
Tennessee	State Program	4	TN02970	04-01-14
Texas	NELAP	6	T104704412-11-2	07-31-13
USDA	Federal		P330-11-00386	11-22-14
Virginia	NELAP	3	460185	09-14-13
Washington	State Program	10	C784	02-10-14
West Virginia DEP	State Program	3	252	09-30-13
Wisconsin	State Program	5	998310390	08-31-13

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-14
Alaska (UST)	State Program	10	UST-055	12-18-13
Arizona	State Program	9	AZ0708	08-11-13 *
Arkansas DEQ	State Program	6	88-0691	06-17-13
California	NELAP	9	1119CA	01-31-14
Colorado	State Program	8	N/A	08-31-13
Connecticut	State Program	1	PH-0691	06-30-13
Florida	NELAP	4	E87570	06-30-13
Guam	State Program	9	N/A	08-31-13
Hawaii	State Program	9	N/A	01-31-14
Illinois	NELAP	5	200060	03-17-14

* Expired certification is currently pending renewal and is considered valid.

Certification Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Laboratory: TestAmerica Sacramento (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10375	10-31-13
Louisiana	NELAP	6	30612	06-30-13
Michigan	State Program	5	9947	01-31-14
Nevada	State Program	9	CA44	07-31-13
New Jersey	NELAP	2	CA005	06-30-13
New York	NELAP	2	11666	04-01-14
Northern Mariana Islands	State Program	9	MP0007	02-01-14
Oregon	NELAP	10	CA200005	03-28-14
Pennsylvania	NELAP	3	68-01272	03-31-14
South Carolina	State Program	4	87014	06-30-13
Texas	NELAP	6	T104704399-08-TX	05-31-13
US Fish & Wildlife	Federal		LE148388-0	12-31-13
USDA	Federal		P330-11-00436	12-30-14
USEPA UCMR	Federal	1	CA00044	11-06-14
Utah	NELAP	8	QUAN1	01-31-14
Washington	State Program	10	C581	05-05-13
West Virginia	State Program	3	9930C	12-31-13
West Virginia DEP	State Program	3	334	07-31-13
Wyoming	State Program	8	8TMS-Q	01-31-14

Method Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL BUF
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8015B	Nonhalogenated Organic Compounds - Direct Injection (GC)	SW846	TAL BUF
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL BUF
608	Organochlorine Pesticides in Water	40CFR136A	TAL BUF
8151A	Herbicides (GC)	SW846	TAL BUF
8280A	Dioxins and Furans (HRGC/LRMS)	SW846	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
160.4	Solids, Total Volatile (TVS)	MCAWW	TAL BUF
335.4	Cyanide, Total	MCAWW	TAL BUF
SM 4500 CN I	Cyanide, Weak Acid Dissociable	SM	TAL BUF
SM 4500 F C	Fluoride	SM	TAL BUF
SM 4500 S2 F	Sulfide, Total	SM	TAL BUF

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

WASTE MANAGEMENT CHAIN OF CUSTODY

480-34856 Chain of Custody

Sampler Name (Print)	Signature:
J. Hardy	Jessica Hardy
Site Name:	**Spec Request:**
AWM	AC
Site Location:	**Event Name:**
Model City, NY	ATF/NF Leachate

Sample Identification	Sample Date	Sample Time	MATRIX	COMP / GRAB	8260VOA	T-METALS	~~D-METALS~~ 6010B-DAI	CHLORIDE/SULFATE/NITRATE PH, TSS, TDS	ALK / CARB / BICARB	~~SM4500-SO4 E~~ HARDNESS F-Sulfide	~~4500 F,C~~ NH3/COD Fluoride	~~T-OC 335.4~~ TOC 4500-CN-I Cyanide	8270C	PCB	Pest	herbicide	SVOC 8270C	Volatile residue 1604	Additional Analysis/Remarks
			INDICATE MATRIX (WW, W, S, SL, MS, OL, A, O)		INDICATE CONTAINER TYPE USING KEY BELOW														
	T103 TB	3/21/13 ↓	1130 —	WW ↓	G ↓	2/1 ↓	1/3	2/6			1/5	1/6	1/4	4/6	4/6	4/6	4/6	4/6	1/6	ID on bottles says T101 → Should be T103

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Jessica Hardy	AWM	3/21/13	1205	Chuck Kahr	TA	3/22/13	0900
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

Matrix Key	Container Key	Preservation Key
WW = Wastewater	1. Plastic	1. HCl, Cool to 4°
~~W = Water/Groundwater~~	2. VOA Vial	2 H_2SO_4, Cool to 4°
S = Solid	3 Stenle Plastic	3 HNO_3, Cool to 4°
Sl = Sludge	4. Amber Glass	4. NaOH, Cool to 4°
MS = Miscellaneous Solids	5. Widemouth Glass	5 NaOH/Zn Acetate, Cool to 4°
Ol = Oil	6 Other	6. Cool to 4°
A = Air		7 None
O = _____		

COMMENTS

Temp 1.3 4.2 Ice #2

Courier:

Bill of Lading:

TAL-8219 (1108)

Isotope Dilution Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: ATINF LEACH

TestAmerica Job ID: 480-34856-1

Method: 8280A - Dioxins and Furans (HRGC/LRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD2	TCDD	HpCDF1	TCDF	OCDD			
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)			
480-34856-1	T103	58	60	58	60	56			
LCS 320-13628/2-A	Lab Control Sample	61	61	61	58	51			
MB 320-13628/1-A	Method Blank	59	66	54	65	48			

Surrogate Legend

HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
TCDD = 13C-2,3,7,8-TCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD

Attachment 5
1994 Study of SLF 1-6 Leachate

SLF 1-6
LEACHATE DATA

ORGANIC CONSTITUENT	AQUEOUS 3/15/94	AQUEOUS 10/5/94	AQUEOUS AVERAGE	LIGHT OIL 3/15/94	LIGHT OIL 12/28/94	LIGHT OIL AVERAGE	HEAVY OIL 3/23/94	HEAVY OIL 10/5/94	HEAVY OIL AVERAGE	OVERALL AVERAGE
Acenaphthene			ND			ND			ND	ND
Acenaphthylene			ND			ND			ND	ND
Acetone	1300000	790000	1045000		340000	340000		390000	390000	969665.28
Anthracene			ND		38000	38000		25000	25000	2878.43
Benzene			ND		86000	86000	590000	460000	525000	60250.49
Benzo (A) Anthracene			ND			ND	41000	5700	23350	2678.66
Benzo (B) Fluoranthene			ND			ND			ND	ND
Benzo (K) Fluoranthene			ND			ND			ND	ND
Benzo (A) Pyrene			ND			ND			ND	ND
Benzoic acid	260000	28000	144000			ND	4800000		4800000	678085.36
Benzyl alcohol	8000	830	4415			ND		76000	76000	12625.84
BHC, Gamma			ND			ND			ND	ND
Bis(2-Chloroethyl)ether			ND			ND			ND	ND
Bis(2-Ethylhexyl)phthalate			ND		730000	730000	2800000	3400000	3100000	355826.15
Bromodichloromethane			ND			ND			ND	ND
Bromoform			ND			ND			ND	ND
2-Butanone (MEK)	760000	720000	740000		980000	980000	1800000	1400000	1600000	838723.41
Butyl Benzyl Phthalate			ND		35000	35000	62000	56000	59000	6778.00
Carbon Disulfide			ND			ND		220000	220000	25237.87
Carbon Tetrachloride			ND		250000	250000	690000	560000	625000	71767.54
4-Chloroaniline			ND			ND			ND	ND
Chlorobenzene	6000		6000		2200000	2200000	5400000	4200000	4800000	556562.07
Chloroform	15000	12000	13500		570000	570000	2300000	1400000	1850000	224332.55
Chloromethane			ND			ND			ND	ND
2-Chlorophenol			ND			ND			ND	ND
4-Chloro-3-Methylphenol			ND			ND			ND	ND
Chrysene			ND			ND			ND	ND
DDT, 2,4-			ND			ND			ND	ND
3,3'-Dichlorobenzidine			ND			ND			ND	ND
Dibenzofuran			ND			ND			ND	ND
1,1-Dichloroethane			ND		88000	88000	360000	240000	300000	34439.58
1,2-Dichloroethane			ND		200000	200000	450000	240000	345000	39632.80
1,1-Dichloroethene			ND			ND		67000	67000	7686.08
1,2-Dichloroethene (Total)			ND			ND	130000	180000	155000	17781.23
1,2-Dichlorobenzene			ND			ND	4600000	3100000	3850000	441662.75
1,3-Dichlorobenzene			ND			ND	150000	96000	123000	14110.26
1,4-Dichlorobenzene			ND			ND	1400000	830000	1115000	127910.12
trans-1,2-Dichloroethene			ND			ND			ND	ND
trans-1,3-Dichloropropene			ND			ND			ND	ND
Diethyl Ether			ND			ND			ND	ND
Diethylphthalate	190		190		90000	90000	45000	110000	77500	9083.62
Dimethylphthalate			ND			ND	46000		46000	5277.01
2,4-Dimethylphenol			ND			ND		150000	150000	17207.64
Di-n-Butylphthalate			ND		340000	340000	300000	380000	340000	39097.88
Di-n-Octyl phthalate			ND			ND			ND	ND
Endosulfan I			ND			ND			ND	ND
Ethylbenzene			ND		1600000	1600000	3700000	3900000	3800000	436368.74
2-Ethylnaphthalene (a)			ND			ND			ND	ND
Fluoranthene			ND			ND		8300	8300	952.16
Fluorene			ND			ND			ND	ND
Hexachlorobenzene			ND			ND	750000	850000	800000	91774.08
Hexachlorobutadiene			ND			ND	680000	260000	470000	53917.27
Hexachloroethane			ND			ND	130000		130000	14913.29
2-Hexanone			ND			ND	260000		260000	29826.58
Isophorone	2400		2400			ND			ND	2124.01
Methanol			ND			ND			ND	ND
Methylene Chloride	380000	400000	390000		5400000	5400000	15000000	13000000	14000000	1952690.09
2-Methylnaphthalene			ND			ND	360000	190000	275000	31547.34
2-Methylphenol		2000	2000			ND		27000	27000	4867.39
4-Methyl-2-pentanone	120000	73000	96500		1700000	1700000	3200000	1700000	2450000	366930.70
4-Methylphenol	13000	3700	8350			ND		160000	160000	25744.62
Naphthalene			ND		1100000	1100000	320000	210000	265000	30703.95
n-Nitrosodiphenylamine			ND			ND			ND	ND
PCB 1016			ND			ND			ND	ND
PCB-1242	220	1600	910		4100000	4100000	61000000	16000000	38500000	4418565.12
PCB-1248			ND			ND			ND	ND
PCB-1254			ND		1400000	1400000			ND	386.64
PCB-1260		140	140			ND		1700000	1700000	195143.82
Pentachlorophenol			ND			ND		29000	29000	3326.81
Phenol	430000	240000	335000		490000	490000	3600000	1400000	2500000	583406.40
Phenanthrene			ND		98000	98000	46000	96000	71000	8172.01
Pyrene			ND			ND		10000	10000	1147.18
1,1,2,2-Tetrachloroethane	30000	22000	26000		6800000	6800000	11000000	11000000	11000000	1286781.67
Tetrachloroethene	3600	3400	3500		4100000	4100000	14000000	15000000	14500000	1667634.96
Toluene	20000	17000	18500		6500000	6500000	20000000	21000000	20500000	2369878.44
1,2,4-Trichlorobenzene	480		480		4800000	4800000	16000000	5900000	10950000	1257908.09
1,1,1-Trichloroethane	28000	20000	24000		6300000	6300000	19000000	25000000	22000000	2546767.13
1,1,2-Trichloroethane	3800		3800		290000	290000	1000000	510000	755000	90054.90
Trichloroethene	51000	47000	49000		12000000	12000000	37000000	41000000	39000000	4520665.59
2,4,5-Trichlorophenol			ND			ND		140000	140000	16060.46
2,4,6-Trichlorophenol			ND			ND		70000	70000	8030.23
Vinyl Chloride			ND			ND		17000	17000	1950.20
Xylenes (Total)	3300	3400	3350		8900000	8900000	20000000	17000000	18500000	2127698.20

All concentrations expressed in ug/l

FLOW BASIS — 1994 Leachate Flow Data

	Gallons	% of Flow
AQUEOUS	205094	0.89
LIGHT OILS	64	0.00
HEAVY OILS	26585	0.11
TOTAL	231743	1.00

Attachment 6
Maximum Detected Values for Select Tanks

Attachment 6

History

		1304019-01	304019-01RE1	update			SLF7	SLF10	SLF11	SLF12
		04/03/13	04/03/13	4/24/15						
		TK 103	TK 103	T-8009	T-8001	T-8001	T-107	T-109/ T-110	T-108	T-150
				3/5/13	4/7/13	4/19				
Analyte	Units	4/4/2013 6:4	4/4/2013 6:40:00 AM		4/9/15		(max)	(max)	(max)	(max)
Chloromethane	ug/L	<100000	<50000	<1000	<2500		<5000	<5000	<1000	<20
Vinyl chloride	ug/L	<100000	<50000							
Bromomethane	ug/L	<100000	<50000							
Chloroethane	ug/L	<100000	<50000							
Trichlorofluoromethane	ug/L	<100000	<50000							
Diethyl ether	ug/L	<100000	<50000		5460					
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100000	<50000	1050	3830					
Acetone	ug/L	763000	916000	<1000			✓180000	✓236000	✓32000	362
1,1-Dichloroethene	ug/L	<100000	<50000			<1000 —				
Methylene chloride	ug/L	219000	252000	3680 3760	3470	3450	✓167000	✓24900	~~<1000~~ <14100	2280
Carbon disulfide	ug/L	<100000	<50000							
trans-1,2-Dichloroethene	ug/L	<100000	<50000							
1,1-Dichloroethane	ug/L	<100000	<50000							
Vinyl acetate	ug/L	<100000	<50000					120,000		
2-Butanone	ug/L	449000	563000				✓179000	✓50300	✓14100	<20
Ethyl acetate	ug/L	<100000	<50000							
Chloroform	ug/L	<100000	<50000	2170 3950	4820					
1,1,1-Trichloroethane	ug/L	<100000	<50000		2890 8670					
Carbon tetrachloride	ug/L	<100000	<50000	7500	3870					
1,2-Dichloroethane-d4	[surr]	109%	110%							
1,2-Dichloroethane	ug/L	<100000	<50000		4740					
Benzene	ug/L	<100000	<50000			1400 —				
Trichloroethene	ug/L	<100000	<50000	6580	16400 9670	6770				
1,2-Dichloropropane	ug/L	<100000	<50000							
Bromodichloromethane	ug/L	<100000	<50000							
2-Chloroethylvinyl ether	ug/L	<100000	<50000							
4-Methyl-2-pentanone	ug/L	<100000	69100				<5000	✓11900	✓2580	<20
cis-1,3-Dichloropropene	ug/L	<100000	<50000							
Toluene-d8	[surr]	102%	102%							
Toluene	ug/L	<100000	<50000	1130	3900		✓5990			
trans-1,3-Dichloropropene	ug/L	<100000	<50000							
1,1,2-Trichloroethane	ug/L	<100000	<50000	1040 1120	2390					

Table 32 — T-8001 tank calcs. — first week — after first week just these two — Tables 5,22 — Tables 6,23 — Tables 7,24 — Tables 8,25

all NDs

already updated

History

				T-8009	T-8001	T-8001	SF-7		
4-Bromofluorobenzene	[surr]	102%	101%						
2-Hexanone	ug/L	<100000	<50000						
Tetrachloroethene	ug/L	<100000	<50000		2010				
Dibromochloromethane	ug/L	<100000	<50000						
Chlorobenzene	ug/L	<100000	<50000	2090	2960				
Ethylbenzene	ug/L	<100000	<50000						
Xylenes, total	ug/L	<300000	<150000				✓17600		
Styrene	ug/L	<100000	<50000						
Bromoform	ug/L	<100000	<50000						
1,1,2,2-Tetrachloroethane	ug/L	<100000	<50000		1290				
1,3-Dichlorobenzene	ug/L	<100000	<50000						
1,4-Dichlorobenzene	ug/L	<100000	<50000						
1,2-Dichlorobenzene	ug/L	<100000	<50000	3030	2990				

CWM Chemical Services, LLC. **Reported: 04/14/15 06:48**

Client:	Aqueous Treatment	Project:	T-8000's	Sampled:	04/09/15 00:15
Work Order:	1504040	Project #:	CWM	Received:	04/09/15 06:50
Lab Sample ID:	1504040-01	Client Sample ID:	T-8001		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
pH by Meter *Prep Method: NONE*							
pH	**6.85**			pH Units	04/09/15 11:02	CJN	SM 4500 H+B**
Volatiles - Aqueous *Prep Method: EPA 5030C*							
Chloromethane	ND		1000	ug/L	04/09/15 14:14	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	**5660**		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND	REC+, RPD	1000	"	"	LAD	"
Methylene chloride	**3470**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	**4820**		1000	"	"	LAD	"
1,1,1-Trichloroethane	**8670**		1000	"	"	LAD	"
Carbon tetrachloride	**3870**		1000	"	"	LAD	"
1,2-Dichloroethane	**4740**		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**29000**	E	1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	**3900**		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	**2390**		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	**2010**		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**2960**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	**1290**		1000	"	"	LAD	"

:WM Chemical Services, LLC. **Reported: 04/14/15 06:48**

Client:	Aqueous Treatment	Project:	T-8000's	Sampled:	04/09/15 00:15
Work Order:	1504040	Project #:	CWM	Received:	04/09/15 06:50
Lab Sample ID:	1504040-01	Client Sample ID:	T-8001		Aqueous

,nalyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
,3-Dichlorobenzene	ND		1000	ug/L	04/09/15 14:14	LAD	EPA 8260C
,4-Dichlorobenzene	ND		1000	"	"	LAD	"
,2-Dichlorobenzene	**2990**		1000	"	"	LAD	"
urrogate: 1,2-Dichloroethane-d4	*92.2 %*		*85-115*		"	LAD	"
urrogate: Toluene-d8	*101 %*		*85-115*		"	LAD	"
urrogate: 4-Bromofluorobenzene	*96.6 %*		*85-115*		"	LAD	"
Metals Soluble 200.7 *Prep Method: EPA 200.7*							
ilver	ND		0.0200	ug/mL	04/10/15 12:49	AAC	EPA 200.7 Rev 4.4
,rsenic	ND		0.100	"	"	AAC	"
arium	ND		0.100	"	"	AAC	"
eryllium	ND		0.0400	"	"	AAC	"
admium	ND		0.0200	"	"	AAC	"
obalt	ND		0.100	"	"	AAC	"
hromium	ND		0.100	"	"	AAC	"
opper	ND		0.100	"	"	AAC	"
ron	**9.07**		0.100	"	"	AAC	"
Manganese	**2.21**		0.100	"	"	AAC	"
Molybdenum	ND		0.100	"	"	AAC	"
lickel	**0.197**		0.100	"	"	AAC	"
,ead	ND		0.100	"	"	AAC	"
,ntimony	ND		0.100	"	"	AAC	"
elenium	ND		0.100	"	"	AAC	"
in	ND		0.0400	"	"	AAC	"
itanium	ND		0.0400	"	"	AAC	"
hallium	ND		0.100	"	"	AAC	"
anadium	ND		0.100	"	"	AAC	"
inc	ND		0.100	"	"	AAC	"

CWM Chemical Services, LLC. **Reported: 04/17/15 09:21**

Client:	Aqueous Treatment	Project:	T-8000's	Sampled:	04/15/15 08:00
Work Order:	1504073	Project #:	CWM	Received:	04/15/15 09:00
Lab Sample ID:	1504073-01	Client Sample ID:	T-8001		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
pH by Meter *Prep Method: NONE*							
pH	**6.93**			pH Units	04/15/15 09:52	CJN	SM 4500 H+B**
Volatiles - Aqueous *Prep Method: EPA 5030C*							
Chloromethane	ND		1000	ug/L	04/15/15 12:39	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	**2650**		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**1900**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	**3540**		1000	"	"	LAD	"
1,1,1-Trichloroethane	**5050**		1000	"	"	LAD	"
Carbon tetrachloride	**2200**		1000	"	"	LAD	"
1,2-Dichloroethane	**3700**		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**16400**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	**1780**		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	**1200**		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**1540**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/17/15 09:21**

Client:	Aqueous Treatment	Project:	T-8000's	Sampled:	04/15/15 08:00
Work Order:	1504073	Project #:	CWM	Received:	04/15/15 09:00
Lab Sample ID:	1504073-01	Client Sample ID:	T-8001		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,3-Dichlorobenzene	ND		1000	ug/L	04/15/15 12:39	LAD	EPA 8260C
1,4-Dichlorobenzene	ND		1000	"	"	LAD	"
1,2-Dichlorobenzene	**1240**		1000	"	"	LAD	"
Surrogate: 1,2-Dichloroethane-d4	*94.9 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*103 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*98.1 %*		*85-115*		"	LAD	"
Metals Soluble 200.7							
Prep Method: EPA 200.7							
Silver	ND		0.0200	ug/mL	04/16/15 11:17	AAC	EPA 200.7 Rev 4.4
Arsenic	ND		0.100	"	"	AAC	"
Barium	ND		0.100	"	"	AAC	"
Beryllium	ND		0.0400	"	"	AAC	"
Cadmium	ND		0.0200	"	"	AAC	"
Cobalt	ND		0.100	"	"	AAC	"
Chromium	ND		0.100	"	"	AAC	"
Copper	ND		0.100	"	"	AAC	"
Iron	**0.345**		0.100	"	"	AAC	"
Manganese	**6.10**		0.100	"	"	AAC	"
Molybdenum	ND		0.100	"	"	AAC	"
Nickel	**0.169**		0.100	"	"	AAC	"
Lead	ND		0.100	"	"	AAC	"
Antimony	ND		0.100	"	"	AAC	"
Selenium	ND		0.100	"	"	AAC	"
Tin	ND		0.0400	"	"	AAC	"
Titanium	ND		0.0400	"	"	AAC	"
Thallium	ND		0.100	"	"	AAC	"
Vanadium	ND		0.100	"	"	AAC	"
Zinc	ND		0.100	"	"	AAC	"

Parameter	Units	Analytical Method	SLF-7 T-107 10/18/2011	SLF-7 T-107 2/1/2012	SLF-7 T-107 7/23/2012
Volatile Organic Compounds - Purgeables (10)					
Chloromethane	µg/L	8260C	<10000	<5000	<50000
Vinyl Chloride	µg/L	8260C	<10000	<5000	<50000
Bromomethane	µg/L	8260C	<10000	<5000	<50000
Chloroethane	µg/L	8260C	<10000	<5000	<50000
Trichlorofluoromethane	µg/L	8260C	<10000	<5000	<50000
Diethyl ether	µg/L	8260C	<10000	<5000	<50000
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	8260C	<10000	<5000	<50000
Acetone	µg/L	8260C	180000	56600	177000
1,1-Dichloroethene	µg/L	8260C	<10000	<5000	<50000
Methylene chloride	µg/L	8260C	48000	64000	167000
Carbon disulfide	µg/L	8260C	<10000	<5000	<50000
trans-1,2-Dichlorethene	µg/L	8260C	<10000	<5000	<50000
1,1-Dichloroethane	µg/L	8260C	<10000	<5000	<50000
Vinyl acetate	µg/L	8260C	<10000	<5000	<50000
2-Butanone	µg/L	8260C	99000	49500	179000
Ethyl acetate	µg/L	8260C	<10000	<5000	<50000
Chloroform	µg/L	8260C	<10000	<5000	<50000
1,1,1-Trichloroethane	µg/L	8260C	<10000	<5000	<50000
Carbon tetrachloride	µg/L	8260C	<10000	<5000	<50000
1,2-Dichloroethane	µg/L	8260C	<10000	<5000	<50000
Benzene	µg/L	8260C	<10000	<5000	<50000
Trichloroethene	µg/L	8260C	<10000	<5000	<50000
1,2-Dichlropropane	µg/L	8260C	<10000	<5000	<50000
Bromodichloromethane	µg/L	8260C	<10000	<5000	<50000
2-Chloroethylvinyl ether	µg/L	8260C	<10000	<5000	<50000
4-Methyl-2-pentanone	µg/L	8260C	<10000	<5000	<50000
cis-1,3-Dichloropropene	µg/L	8260C	<10000	<5000	<50000
Toluene	µg/L	8260C	<10000	5990	<50000
trans-1,3-Dichloropropene	µg/L	8260C	<10000	<5000	<50000
1,1,2-Trichloroethane	µg/L	8260C	<10000	<5000	<50000
2-Hexanone	µg/L	8260C	<10000	<5000	<50000
Tetrachloroethene	µg/L	8260C	<10000	<5000	<50000
Dibromochloromethane	µg/L	8260C	<10000	<5000	<50000
Chlorobenzene	µg/L	8260C	<10000	<5000	<50000

Ethylbenezene	µg/L	8260C	<10000	<5000	<50000
Xylenes, total	µg/L	8260C	<30000	17600	<150000
Styrene	µg/L	8260C	<10000	<5000	<50000
Bromoform	µg/L	8260C	<10000	<5000	<50000
1,1,2,2-Tetrachloroethane	µg/L	8260C	<10000	<5000	<50000
1,3-Dichlorobenzene	µg/L	8260C	<10000	<5000	<50000
1,4-Dichlorobenzene	µg/L	8260C	<10000	<5000	<50000
1,2-Dichlorobenzene	µg/L	8260C	<10000	<5000	<50000
Semi-Volatile Organic Compounds - Base Acid/Neutrals					
1,2,4-Trichlorobenzene	µg/L	625	<5000		<5000
1,2-Dichlorobenzene	µg/L	625	<5000		<5000
1,3-Dichlorobenzene	µg/L	625	<5000		<5000
1,4-Dichlorobenzene	µg/L	625	<5000		<5000
2,4,5-Trichlorophenol	µg/L	625	<5000		<5000
2,4,6-Trichlorophenol	µg/L	625	<5000		<5000
2,4-Dichlorophenol	µg/L	625	<5000		<5000
2,4-Dimethylphenol	µg/L	625	<5000		<5000
2,4-Dinitrophenol	µg/L	625	<25000		<25000
2,4-Dinitrotoluene	µg/L	625	<5000		<5000
2,6-Dinitrotoluene	µg/L	625	<5000		<5000
2-Chloronaphthalene	µg/L	625	<5000		<5000
2-Chlorophenol	µg/L	625	<5000		<5000
2-Methylnaphthalene	µg/L	625			
2-Methylphenol	µg/L	625			
2-Nitrophenol	µg/L	625	<5000		<5000
3,3´-Dichlorobenzidine	µg/L	625	<10000		<10000
4,6-Dinitro-2-methylphenol	µg/L	625	<25000		<25000
4-Bromophenyl phenyl ether	µg/L	625	<5000		<5000
4-Chloro-3-methylphenol	µg/L	625	<5000		<5000
4-Chlorophenyl phenyl ether	µg/L	625	<5000		<5000
4-Methylphenol	µg/L	625			
4-Nitrophenol	µg/L	625	<25000		<25000
Acenaphthene	µg/L	625	<5000		<5000
Acenaphthylene	µg/L	625	<5000		<5000
Anthracene	µg/L	625	<5000		<5000
Azobenzene	µg/L	625	<5000		<5000
Benz(a)anthracene	µg/L	625	<5000		<5000
Benzidine	µg/L	625	<25000		<25000

Benzo(a)pyrene	µg/L	625	<5000		<5000
Benzo(b)fluoranthene	µg/L	625	<5000		<5000
Benzo(g,h,i)perylene	µg/L	625	<5000		<5000
Benzo(k)fluoranthene	µg/L	625	<5000		<5000
Benzothiazole	µg/L	625			
Bis(2-chloroethoxy)methane	µg/L	625	<5000		<5000
Bis(2-chloroethyl)ether	µg/L	625	<5000		<5000
Bis(2-chloroisopropyl)ether	µg/L	625	<5000		<5000
Bis(2-ethylhexyl)phthalate	µg/L	625	<5000		<5000
Butyl benzyl phthalate	µg/L	625	<5000		<5000
Carbazole	µg/L	625	<5000		<5000
Chrysene	µg/L	625	<5000		<5000
Dibenz(a,h)anthracene	µg/L	625	<5000		<5000
Dibenzofuran	µg/L	625	<5000		<5000
Diethyl phthalate	µg/L	625	<5000		<5000
Dimethyl phthalate	µg/L	625	<5000		<5000
Di-n-butyl phthalate	µg/L	625	<5000		<5000
Di-n-octyl phthalate	µg/L	625	<5000		<5000
Fluoranthene	µg/L	625	<5000		<5000
Fluorene	µg/L	625	<5000		<5000
Hexachlorobenzene	µg/L	625	<5000		<5000
Hexachlorobutadiene	µg/L	625	<5000		<5000
Hexachlorocyclopentadiene	µg/L	625	<5000		<5000
Hexachloroethane	µg/L	625	<5000		<5000
Hexamethylbenzene	µg/L	625			
Indeno(1,2,3-cd)pyrene	µg/L	625	<5000		<5000
Isophorone	µg/L	625	<5000		<5000
Naphthalene	µg/L	625	<5000		<5000
n-decane	µg/L	625			
Nitrobenzene	µg/L	625	<5000		<5000
N-Nitrosodimethylamine	µg/L	625	<5000		<5000
N-Nitrosodi-n-propylamine	µg/L	625	<5000		<5000
N-Nitrosodiphenylamine	µg/L	625	<5000		<5000
n-Octadecane	µg/L	625			
Pentachlorophenol	µg/L	625	<25000		<25000
Phenanthrene	µg/L	625	<5000		<5000
Phenol	µg/L	625	73000		52000
Pyrene	µg/L	625	<5000		<5000

Pyridine	µg/L	625			
PCB Aroclor					
Aroclor 1016	µg/L	608	<26.0		<26
Aroclor 1221	µg/L	608	<26.0		<26
Aroclor 1232	µg/L	608	<26.0		<26
Aroclor 1242	µg/L	608	152		480
Aroclor 1248	µg/L	608	<26.0		<26
Aroclor 1254	µg/L	608	<26.0		<26
Aroclor 1260	µg/L	608	<26.0		<26

Parameter	Units	Analytical Method	T109 2/2/2012	SLF-10 T-110 10/18/2011	SLF-10 T-110 10/19/2011	SLF-10 T-110 07/23/2012
Volatile Organic Compounds - Purgeables (10)						
Chloromethane	µg/L	8260C	<5000		<10000	<20000
Vinyl Chloride	µg/L	8260C	<5000		<10000	<20000
Bromomethane	µg/L	8260C	<5000		<10000	<20000
Chloroethane	µg/L	8260C	<5000		<10000	<20000
Trichlorofluoromethane	µg/L	8260C	<5000		<10000	<20000
Diethyl ether	µg/L	8260C	<5000		<10000	<20000
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	8260C	<5000		<10000	<20000
Acetone	µg/L	8260C	34700		102000	236000
1,1-Dichloroethene	µg/L	8260C	<5000		<10000	<20000
Methylene chloride	µg/L	8260C	24900		21700	<20000
Carbon disulfide	µg/L	8260C	<5000		<10000	<20000
trans-1,2-Dichlorethene	µg/L	8260C	<5000		<10000	<20000
1,1-Dichloroethane	µg/L	8260C	<5000		<10000	<20000
Vinyl acetate	µg/L	8260C	<5000		<10000	<20000
2-Butanone	µg/L	8260C	21400		50300	120000
Ethyl acetate	µg/L	8260C	<5000		<10000	<20000
Chloroform	µg/L	8260C	<5000		<10000	<20000
1,1,1-Trichloroethane	µg/L	8260C	<5000		<10000	<20000
Carbon tetrachloride	µg/L	8260C	<5000		<10000	<20000
1,2-Dichloroethane	µg/L	8260C	<5000		<10000	<20000
Benzene	µg/L	8260C	<5000		<10000	<20000
Trichloroethene	µg/L	8260C	<5000		<10000	<20000
1,2-Dichlropropane	µg/L	8260C	<5000		<10000	<20000
Bromodichloromethane	µg/L	8260C	<5000		<10000	<20000
2-Chloroethylvinyl ether	µg/L	8260C	<5000		<10000	<20000
4-Methyl-2-pentanone	µg/L	8260C	7170		11900	<20000
cis-1,3-Dichloropropene	µg/L	8260C	<5000		<10000	<20000
Toluene	µg/L	8260C	<5000		<10000	<20000
trans-1,3-Dichloropropene	µg/L	8260C	<5000		<10000	<20000
1,1,2-Trichloroethane	µg/L	8260C	<5000		<10000	<20000
2-Hexanone	µg/L	8260C	<5000		<10000	<20000
Tetrachloroethene	µg/L	8260C	<5000		<10000	<20000
Dibromochloromethane	µg/L	8260C	<5000		<10000	<20000
Chlorobenzene	µg/L	8260C	<5000		<10000	<20000
Ethylbenezene	µg/L	8260C	<5000		<10000	<20000
Xylenes, total	µg/L	8260C	<15000		<30000	<60000
Styrene	µg/L	8260C	<5000		<10000	<20000
Bromoform	µg/L	8260C	<5000		<10000	<20000
1,1,2,2-Tetrachloroethane	µg/L	8260C	<5000		<10000	<20000
1,3-Dichlorobenzene	µg/L	8260C	<5000		<10000	<20000
1,4-Dichlorobenzene	µg/L	8260C	<5000		<10000	<20000

1,2-Dichlorobenzene	µg/L	8260C	<5000		<10000	<20000
Semi-Volatile Organic Compounds - Base Acid/Neutrals						
1,2,4-Trichlorobenzene	µg/L	625	<2500	<1000		<2500
1,2-Dichlorobenzene	µg/L	625	<2500	<1000		<2500
1,3-Dichlorobenzene	µg/L	625	<2500	<1000		<2500
1,4-Dichlorobenzene	µg/L	625	<2500	<1000		<2500
2,4,5-Trichlorophenol	µg/L	625	<2500	<1000		<2500
2,4,6-Trichlorophenol	µg/L	625	<2500	<1000		<2500
2,4-Dichlorophenol	µg/L	625	<2500	<1000		<2500
2,4-Dimethylphenol	µg/L	625	<2500	1200		<2500
2,4-Dinitrophenol	µg/L	625	<12000	<5000		<12000
2,4-Dinitrotoluene	µg/L	625	<2500	<1000		<2500
2,6-Dinitrotoluene	µg/L	625	<2500	<1000		<2500
2-Chloronaphthalene	µg/L	625	<2500	<1000		<2500
2-Chlorophenol	µg/L	625	<2500	<1000		<2500
2-Methylnaphthalene	µg/L	625				
2-Methylphenol	µg/L	625				
2-Nitrophenol	µg/L	625	<2500	<1000		<2500
3,3'-Dichlorobenzidine	µg/L	625	<5000	<2000		<5000
4,6-Dinitro-2-methylphenol	µg/L	625	<12000	<5000		<12000
4-Bromophenyl phenyl ether	µg/L	625	<2500	<1000		<2500
4-Chloro-3-methylphenol	µg/L	625	<2500	<1000		<2500
4-Chlorophenyl phenyl ether	µg/L	625	<2500	<1000		<2500
4-Methylphenol	µg/L	625				
4-Nitrophenol	µg/L	625	<12000	<5000		<12000
Acenaphthene	µg/L	625	<2500	<1000		<2500
Acenaphthylene	µg/L	625	<2500	<1000		<2500
Anthracene	µg/L	625	<2500	<1000		<2500
Azobenzene	µg/L	625	<2500	<1000		<2500
Benz(a)anthracene	µg/L	625	<2500	<1000		<2500
Benzidine	µg/L	625	<12000	<5000		<12000
Benzo(a)pyrene	µg/L	625	<2500	<1000		<2500
Benzo(b)fluoranthene	µg/L	625	<2500	<1000		<2500
Benzo(g,h,i)perylene	µg/L	625	<2500	<1000		<2500
Benzo(k)fluoranthene	µg/L	625	<2500	<1000		<2500
Benzothiazole	µg/L	625				
Bis(2-chloroethoxy)methane	µg/L	625	<2500	<1000		<2500
Bis(2-chloroethyl)ether	µg/L	625	<2500	<1000		<2500
Bis(2-chloroisopropyl)ether	µg/L	625	<2500	<1000		<2500
Bis(2-ethylhexyl)phthalate	µg/L	625	<2500	<1000		<2500
Butyl benzyl phthalate	µg/L	625	<2500	<1000		<2500
Carbazole	µg/L	625	<2500	<1000		<2500
Chrysene	µg/L	625	<2500	<1000		<2500
Dibenz(a,h)anthracene	µg/L	625	<2500	<1000		<2500
Dibenzofuran	µg/L	625	<2500	<1000		<2500

Diethyl phthalate	µg/L	625	<2500	<1000		<2500
Dimethyl phthalate	µg/L	625	<2500	<1000		<2500
Di-n-butyl phthalate	µg/L	625	<2500	<1000		<2500
Di-n-octyl phthalate	µg/L	625	<2500	<1000		<2500
Fluoranthene	µg/L	625	<2500	<1000		<2500
Fluorene	µg/L	625	<2500	<1000		<2500
Hexachlorobenzene	µg/L	625	<2500	<1000		<2500
Hexachlorobutadiene	µg/L	625	<2500	<1000		<2500
Hexachlorocyclopentadiene	µg/L	625	<2500	<1000		<2500
Hexachloroethane	µg/L	625	<2500	<1000		<2500
Hexamethylbenzene	µg/L	625				
Indeno(1,2,3-cd)pyrene	µg/L	625	<2500	<1000		<2500
Isophorone	µg/L	625	<2500	<1000		<2500
Naphthalene	µg/L	625	<2500	<1000		<2500
n-decane	µg/L	625				
Nitrobenzene	µg/L	625	<2500	<1000		<2500
N-Nitrosodimethylamine	µg/L	625	<2500	<1000		<2500
N-Nitrosodi-n-propylamine	µg/L	625	<2500	<1000		<2500
N-Nitrosodiphenylamine	µg/L	625	<2500	<1000		<2500
n-Octadecane	µg/L	625				
Pentachlorophenol	µg/L	625	<12000	<5000		<12000
Phenanthrene	µg/L	625	<2500	<1000		<2500
Phenol	µg/L	625	22000	14000		28000
Pyrene	µg/L	625	<2500	<1000		<2500
Pyridine	µg/L	625				
PCB Aroclor						
Aroclor 1016	µg/L	608	<1.3	<1.30		<1.3
Aroclor 1221	µg/L	608	<1.3	<1.30		<1.3
Aroclor 1232	µg/L	608	<1.3	<1.30		<1.3
Aroclor 1242	µg/L	608	12.6	15.3		3.04
Aroclor 1248	µg/L	608	<1.3	<1.30		<1.3
Aroclor 1254	µg/L	608	<1.3	<1.30		2.95
Aroclor 1260	µg/L	608	5.25	<1.30		<1.3

Parameter	Units	Analytical Method	T-108 10/18/2011	T-108 2/7/2012	T-108 07/23/2012	T-108 08/06/2012
Volatile Organic Compounds - Purgeables (10)						
Chloromethane	µg/L	8260C	<2000		<1000	<1000
Vinyl Chloride	µg/L	8260C	<2000		<1000	<1000
Bromomethane	µg/L	8260C	<2000		<1000	<1000
Chloroethane	µg/L	8260C	<2000		<1000	<1000
Trichlorofluoromethane	µg/L	8260C	<2000		<1000	<1000
Diethyl ether	µg/L	8260C	<2000		<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	8260C	<2000		<1000	<1000
Acetone	µg/L	8260C	32000		8880	5810
1,1-Dichloroethene	µg/L	8260C	<2000		<1000	<1000
Methylene chloride	µg/L	8260C	<2000		<1000	<1000
Carbon disulfide	µg/L	8260C	<2000		<1000	<1000
trans-1,2-Dichlorethene	µg/L	8260C	<2000		<1000	<1000
1,1-Dichloroethane	µg/L	8260C	<2000		<1000	<1000
Vinyl acetate	µg/L	8260C	<2000		<1000	<1000
2-Butanone	µg/L	8260C	14100		3650	3210
Ethyl acetate	µg/L	8260C	<2000		<1000	<1000
Chloroform	µg/L	8260C	<2000		<1000	<1000
1,1,1-Trichloroethane	µg/L	8260C	<2000		<1000	<1000
Carbon tetrachloride	µg/L	8260C	<2000		<1000	<1000
1,2-Dichloroethane	µg/L	8260C	<2000		<1000	<1000
Benzene	µg/L	8260C	<2000		<1000	<1000
Trichloroethene	µg/L	8260C	<2000		<1000	<1000
1,2-Dichlropropane	µg/L	8260C	<2000		<1000	<1000
Bromodichloromethane	µg/L	8260C	<2000		<1000	<1000
2-Chloroethylvinyl ether	µg/L	8260C	<2000		<1000	<1000
4-Methyl-2-pentanone	µg/L	8260C	2580		1230	<1000
cis-1,3-Dichloropropene	µg/L	8260C	<2000		<1000	<1000
Toluene	µg/L	8260C	<2000		<1000	<1000
trans-1,3-Dichloropropene	µg/L	8260C	<2000		<1000	<1000
1,1,2-Trichloroethane	µg/L	8260C	<2000		<1000	<1000
2-Hexanone	µg/L	8260C	<2000		<1000	<1000
Tetrachloroethene	µg/L	8260C	<2000		<1000	<1000
Dibromochloromethane	µg/L	8260C	<2000		<1000	<1000
Chlorobenzene	µg/L	8260C	<2000		<1000	<1000
Ethylbenezene	µg/L	8260C	<2000		<1000	<1000
Xylenes, total	µg/L	8260C	<6000		<3000	<3000
Styrene	µg/L	8260C	<2000		<1000	<1000
Bromoform	µg/L	8260C	<2000		<1000	<1000

1,1,2,2-Tetrachloroethane	µg/L	8260C	<2000		<1000	<1000
1,3-Dichlorobenzene	µg/L	8260C	<2000		<1000	<1000
1,4-Dichlorobenzene	µg/L	8260C	<2000		<1000	<1000
1,2-Dichlorobenzene	µg/L	8260C	<2000		<1000	<1000
Semi-Volatile Organic Compounds - Base Acid/Neutrals						
1,2,4-Trichlorobenzene	µg/L	625	<250	<25000	<150	<1000
1,2-Dichlorobenzene	µg/L	625	<250	<25000	<150	<1000
1,3-Dichlorobenzene	µg/L	625	<250	<25000	<150	<1000
1,4-Dichlorobenzene	µg/L	625	<250	<25000	<150	<1000
2,4,5-Trichlorophenol	µg/L	625	<250	<25000	<150	<1000
2,4,6-Trichlorophenol	µg/L	625	<250	<25000	<150	<1000
2,4-Dichlorophenol	µg/L	625	<250	<25000	<150	<1000
2,4-Dimethylphenol	µg/L	625	280	<25000	390	<1000
2,4-Dinitrophenol	µg/L	625	<1200	<120000	<750	<5000
2,4-Dinitrotoluene	µg/L	625	<250	<25000	<150	<1000
2,6-Dinitrotoluene	µg/L	625	<250	<25000	<150	<1000
2-Chloronaphthalene	µg/L	625	<250	<25000	<150	<1000
2-Chlorophenol	µg/L	625	<250	<25000	<150	<1000
2-Methylnaphthalene	µg/L	625				
2-Methylphenol	µg/L	625				
2-Nitrophenol	µg/L	625	<250	<25000	<150	<1000
3,3´-Dichlorobenzidine	µg/L	625	<500	<50000	<300	<2000
4,6-Dinitro-2-methylphenol	µg/L	625	<1200	<120000	<750	<5000
4-Bromophenyl phenyl ether	µg/L	625	<250	<25000	<150	<1000
4-Chloro-3-methylphenol	µg/L	625	<250	<25000	<150	<1000
4-Chlorophenyl phenyl ether	µg/L	625	<250	<25000	<150	<1000
4-Methylphenol	µg/L	625				
4-Nitrophenol	µg/L	625	<1200	<120000	<750	<5000
Acenaphthene	µg/L	625	<250	<25000	<150	<1000
Acenaphthylene	µg/L	625	<250	<25000	<150	<1000
Anthracene	µg/L	625	<250	<25000	<150	<1000
Azobenzene	µg/L	625	<250	<25000	<150	<1000
Benz(a)anthracene	µg/L	625	<250	<25000	<150	<1000
Benzidine	µg/L	625	<1200	<120000	<750	<5000
Benzo(a)pyrene	µg/L	625	<250	<25000	<150	<1000
Benzo(b)fluoranthene	µg/L	625	<250	<25000	<150	<1000
Benzo(g,h,i)perylene	µg/L	625	<250	<25000	<150	<1000
Benzo(k)fluoranthene	µg/L	625	<250	<25000	<150	<1000
Benzothiazole	µg/L	625				
Bis(2-chloroethoxy)methane	µg/L	625	<250	<25000	<150	<1000
Bis(2-chloroethyl)ether	µg/L	625	<250	<25000	<150	<1000
Bis(2-chloroisopropyl)ether	µg/L	625	<250	<25000	<150	<1000

Bis(2-ethylhexyl)phthalate	µg/L	625	1000	200000	940	27000
Butyl benzyl phthalate	µg/L	625	<250	<25000	<150	<1000
Carbazole	µg/L	625	<250	<25000	<150	<1000
Chrysene	µg/L	625	<250	<25000	<150	<1000
Dibenz(a,h)anthracene	µg/L	625	<250	<25000	<150	<1000
Dibenzofuran	µg/L	625	<250	<25000	<150	<1000
Diethyl phthalate	µg/L	625	<250	<25000	<150	<1000
Dimethyl phthalate	µg/L	625	<250	<25000	<150	<1000
Di-n-butyl phthalate	µg/L	625	270	<25000	<150	1500
Di-n-octyl phthalate	µg/L	625	<250	<25000	<150	<1000
Fluoranthene	µg/L	625	<250	<25000	<150	<1000
Fluorene	µg/L	625	<250	<25000	<150	<1000
Hexachlorobenzene	µg/L	625	<250	<25000	<150	<1000
Hexachlorobutadiene	µg/L	625	<250	<25000	<150	<1000
Hexachlorocyclopentadiene	µg/L	625	<250	<25000	<150	<1000
Hexachloroethane	µg/L	625	<250	<25000	<150	<1000
Hexamethylbenzene	µg/L	625				
Indeno(1,2,3-cd)pyrene	µg/L	625	<250	<25000	<150	<1000
Isophorone	µg/L	625	<250	<25000	<150	<1000
Naphthalene	µg/L	625	<250	<25000	<150	<1000
n-decane	µg/L	625				
Nitrobenzene	µg/L	625	<250	<25000	<150	<1000
N-Nitrosodimethylamine	µg/L	625	<250	<25000	<150	<1000
N-Nitrosodi-n-propylamine	µg/L	625	<250	<25000	<150	<1000
N-Nitrosodiphenylamine	µg/L	625	<250	<25000	<150	<1000
n-Octadecane	µg/L	625				
Pentachlorophenol	µg/L	625	<1200	<120000	<750	<5000
Phenanthrene	µg/L	625	<250	<25000	<150	<1000
Phenol	µg/L	625	1700	<25000	990	<1000
Pyrene	µg/L	625	<250	<25000	<150	<1000
Pyridine	µg/L	625				
PCB Aroclor						
Aroclor 1016	µg/L	608	<26.0	<1300	<13	<52
Aroclor 1221	µg/L	608	<26.0	<1300	<13	<52
Aroclor 1232	µg/L	608	<26.0	<1300	<13	<52
Aroclor 1242	µg/L	608	<26.0	<1300	51	457
Aroclor 1248	µg/L	608	<26.0	<1300	<13	<52
Aroclor 1254	µg/L	608	188	21500	171	1590
Aroclor 1260	µg/L	608	133	10800	78.1	892

Parameter	Units	Analytical Method	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012
Volatile Organic Compounds - Purgeables (10)						
Chloromethane	µg/L	8260C	<50.0	<20.0	<50.0	
Vinyl Chloride	µg/L	8260C	<50.0	<20.0	<50.0	
Bromomethane	µg/L	8260C	<50.0	<20.0	<50.0	
Chloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
Trichlorofluoromethane	µg/L	8260C	<50.0	<20.0	<50.0	
Diethyl ether	µg/L	8260C	<50.0	<20.0	<50.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	8260C	<50.0	<20.0	<50.0	
Acetone	µg/L	8260C	<50.0	60.1	362	
1,1-Dichloroethene	µg/L	8260C	<50.0	<20.0	<50.0	
Methylene chloride	µg/L	8260C	<50.0	<20.0	2280	
Carbon disulfide	µg/L	8260C	<50.0	<20.0	<50.0	
trans-1,2-Dichlorethene	µg/L	8260C	<50.0	<20.0	<50.0	
1,1-Dichloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
Vinyl acetate	µg/L	8260C	<50.0	<20.0	<50.0	
2-Butanone	µg/L	8260C	<50.0	<20.0	<50.0	
Ethyl acetate	µg/L	8260C	<50.0	<20.0	<50.0	
Chloroform	µg/L	8260C	<50.0	<20.0	<50.0	
1,1,1-Trichloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
Carbon tetrachloride	µg/L	8260C	<50.0	<20.0	<50.0	
1,2-Dichloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
Benzene	µg/L	8260C	<50.0	<20.0	<50.0	
Trichloroethene	µg/L	8260C	<50.0	<20.0	<50.0	
1,2-Dichlropropane	µg/L	8260C	<50.0	<20.0	<50.0	
Bromodichloromethane	µg/L	8260C	<50.0	<20.0	<50.0	
2-Chloroethylvinyl ether	µg/L	8260C	<50.0	<20.0	<50.0	
4-Methyl-2-pentanone	µg/L	8260C	<50.0	<20.0	<50.0	
cis-1,3-Dichloropropene	µg/L	8260C	<50.0	<20.0	<50.0	
Toluene	µg/L	8260C	<50.0	<20.0	<50.0	
trans-1,3-Dichloropropene	µg/L	8260C	<50.0	<20.0	<50.0	
1,1,2-Trichloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
2-Hexanone	µg/L	8260C	<50.0	<20.0	<50.0	
Tetrachloroethene	µg/L	8260C	<50.0	<20.0	<50.0	
Dibromochloromethane	µg/L	8260C	<50.0	<20.0	<50.0	
Chlorobenzene	µg/L	8260C	<50.0	<20.0	<50.0	
Ethylbenezene	µg/L	8260C	<50.0	<20.0	<50.0	
Xylenes, total	µg/L	8260C	<150	<60.0	<150	

Styrene	µg/L	8260C	<50.0	<20.0	<50.0	
Bromoform	µg/L	8260C	<50.0	<20.0	<50.0	
1,1,2,2-Tetrachloroethane	µg/L	8260C	<50.0	<20.0	<50.0	
1,3-Dichlorobenzene	µg/L	8260C	<50.0	<20.0	<50.0	
1,4-Dichlorobenzene	µg/L	8260C	<50.0	<20.0	<50.0	
1,2-Dichlorobenzene	µg/L	8260C	<50.0	<20.0	<50.0	
Semi-Volatile Organic Compounds - Base Acid/Neutrals						
1,2,4-Trichlorobenzene	µg/L	625	<50	<50		<5
1,2-Dichlorobenzene	µg/L	625	<50	<50		<5
1,3-Dichlorobenzene	µg/L	625	<50	<50		<5
1,4-Dichlorobenzene	µg/L	625	<50	<50		<5
2,4,5-Trichlorophenol	µg/L	625	<50	<50		<5
2,4,6-Trichlorophenol	µg/L	625	<50	<50		<5
2,4-Dichlorophenol	µg/L	625	<50	<50		<5
2,4-Dimethylphenol	µg/L	625	<50	<50		<5
2,4-Dinitrophenol	µg/L	625	<250	<250		<25
2,4-Dinitrotoluene	µg/L	625	<50	<50		<5
2,6-Dinitrotoluene	µg/L	625	<50	<50		<5
2-Chloronaphthalene	µg/L	625	<50	<50		<5
2-Chlorophenol	µg/L	625	<50	<50		<5
2-Methylnaphthalene	µg/L	625				
2-Methylphenol	µg/L	625				
2-Nitrophenol	µg/L	625	<50	<50		<5
3,3´-Dichlorobenzidine	µg/L	625	<100	<100		<10
4,6-Dinitro-2-methylphenol	µg/L	625	<250	<250		<25
4-Bromophenyl phenyl ether	µg/L	625	<50	<50		<5
4-Chloro-3-methylphenol	µg/L	625	<50	<50		<5
4-Chlorophenyl phenyl ether	µg/L	625	<50	<50		<5
4-Methylphenol	µg/L	625				
4-Nitrophenol	µg/L	625	<250	<250		<25
Acenaphthene	µg/L	625	<50	<50		<5
Acenaphthylene	µg/L	625	<50	<50		<5
Anthracene	µg/L	625	<50	<50		<5
Azobenzene	µg/L	625	<50	<50		<5
Benz(a)anthracene	µg/L	625	<50	<50		<5
Benzidine	µg/L	625	<250	<250		<25
Benzo(a)pyrene	µg/L	625	<50	<50		<5
Benzo(b)fluoranthene	µg/L	625	<50	<50		<5
Benzo(g,h,i)perylene	µg/L	625	<50	<50		<5
Benzo(k)fluoranthene	µg/L	625	<50	<50		<5

Benzothiazole	µg/L	625				
Bis(2-chloroethoxy)methane	µg/L	625	<50	<50		<5
Bis(2-chloroethyl)ether	µg/L	625	<50	<50		<5
Bis(2-chloroisopropyl)ether	µg/L	625	<50	<50		<5
Bis(2-ethylhexyl)phthalate	µg/L	625	<50	330		<5
Butyl benzyl phthalate	µg/L	625	<50	<50		<5
Carbazole	µg/L	625	<50	<50		<5
Chrysene	µg/L	625	<50	<50		<5
Dibenz(a,h)anthracene	µg/L	625	<50	<50		<5
Dibenzofuran	µg/L	625	<50	<50		<5
Diethyl phthalate	µg/L	625	<50	<50		<5
Dimethyl phthalate	µg/L	625	<50	<50		<5
Di-n-butyl phthalate	µg/L	625	<50	<50		<5
Di-n-octyl phthalate	µg/L	625	<50	<50		<5
Fluoranthene	µg/L	625	<50	<50		<5
Fluorene	µg/L	625	<50	<50		<5
Hexachlorobenzene	µg/L	625	<50	<50		<5
Hexachlorobutadiene	µg/L	625	<50	<50		<5
Hexachlorocyclopentadiene	µg/L	625	<50	<50		<5
Hexachloroethane	µg/L	625	<50	<50		<5
Hexamethylbenzene	µg/L	625				
Indeno(1,2,3-cd)pyrene	µg/L	625	<50	<50		<5
Isophorone	µg/L	625	<50	<50		<5
Naphthalene	µg/L	625	<50	<50		<5
n-decane	µg/L	625				
Nitrobenzene	µg/L	625	<50	<50		<5
N-Nitrosodimethylamine	µg/L	625	<50	<50		<5
N-Nitrosodi-n-propylamine	µg/L	625	<50	<50		<5
N-Nitrosodiphenylamine	µg/L	625	<50	<50		<5
n-Octadecane	µg/L	625				
Pentachlorophenol	µg/L	625	<250	<250		<25
Phenanthrene	µg/L	625	<50	<50		<5
Phenol	µg/L	625	<50	<50		<5
Pyrene	µg/L	625	<50	<50		<5
Pyridine	µg/L	625				
PCB Aroclor						
Aroclor 1016	µg/L	608	<0.357	<13.1		<16.8
Aroclor 1221	µg/L	608	<0.357	<13.1		<16.8
Aroclor 1232	µg/L	608	<0.357	<13.1		<16.8
Aroclor 1242	µg/L	608	<0.357	34.6		226

Aroclor 1248	µg/L	608	<0.357	<13.1		<16.8
Aroclor 1254	µg/L	608	<0.357	289		92.5
Aroclor 1260	µg/L	608	<0.357	227		69.7

Attachment 7
Historical Sampling Results for RMU-1 Leachate

		1208078-01	1202062-01	1107076-01	1102051-01	1007059-01	1002080-01	0907120-01	0902088-01	0807173-01	0802071-01	0707061-01	0702073-01	0607077-01
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L55	L55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	90.1%	102%	101%	100%	92.0%	103%	101%	90.6%	106%	100%	99.6%	107%	113%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	90.6%	94.9%	98.8%	93.8%	90.0%	91.8%	96.6%	92.1%	104%	102%	91.5%	99.9%	102%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	101%	101%	102%	96.2%	93.1%	97.0%	100%	95.3%	107%	101%	96.5%	109%	104%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-02	1202062-02	1107076-02	1102051-02	1007059-02	1002080-02	0907120-02	0902088-02	902088-02RE	0807173-02	0802071-02	0707061-02	0702073-02	0607077-02
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L56	L56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56
1,1,1-Trichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	93.1%	102%	104%	102%	91.5%	106%	99.6%	90.7%	98.6%	104%	99.7%	97.4%	109%	111%
1,2-Dichloropropane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	53.3	<100	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	95.5%	93.5%	100%	96.1%	91.9%	96.2%	97.0%	90.9%	99.2%	104%	99.8%	91.8%	102%	100%
4-Methyl-2-pentanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	849	<50.0	877	<50.0	<50.0	<50.0	<50.0	1170	1070	<50.0	<50.0	<50.0	86.7	126
Benzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	106%	98.3%	104%	98.9%	93.8%	101%	98.7%	96.4%	103%	103%	99.3%	94.4%	109%	102%
trans-1,2-Dichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<300	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-03	1202062-03	1107076-03	1102051-03	1007059-03	1002080-03	0907120-03	0902088-03	0807173-03	0802071-03	0707061-03	0702073-03	0607077-03
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L57	L57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	91.7%	101%	96.2%	99.8%	90.7%	105%	97.6%	93.1%	103%	99.8%	95.7%	105%	113%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	91.8%	95.2%	93.9%	94.4%	90.0%	94.6%	94.0%	94.8%	102%	102%	91.0%	101%	103%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	103%	97.7%	96.4%	97.0%	91.6%	99.8%	96.4%	99.0%	102%	102%	94.2%	107%	106%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-04	1202062-04	1107076-04	1102051-04	1007059-04	1002080-04	0907120-04	0905095-01	0902088-04	0807173-04	0802071-04	0707061-04	0702073-04	0607077-04
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	05/18/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L58	L58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	87.6%	103%	101%	102%	93.1%	106%	96.8%	99.2%	92.3%	106%	100%	95.8%	109%	112%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	88.5%	96.0%	98.6%	97.6%	91.5%	95.5%	92.0%	96.7%	96.2%	105%	100%	89.2%	99.3%	102%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	98.8%	102%	101%	100%	94.0%	101%	96.6%	99.1%	101%	105%	99.1%	93.9%	110%	103%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-05	1202062-05	1107076-05	1102051-05	1007059-05	1002080-05	0907120-05	0902088-05	0807173-05	0802071-05	0707061-05	0702073-05	0607077-05
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L59	L59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	90.8%	106%	103%	103%	92.8%	107%	100%	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100 [1]	<200 [1]	<50.0 [1]	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
4-Bromofluorobenzene	[surr]	91.0%	96.2%	97.7%	97.1%	91.2%	95.7%	97.6%	<100	<100	<100	<200	<50.0	<50.0
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	95.4%	103%	97.3%	95.3%	108%	112%
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100 [1]	<200	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	102%	102%	97.0%	92.8%	109%	102%
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Toluene-d8	[surr]	101%	103%	104%	100%	94.7%	100%	98.2%	<100	<100	<100	<200	<50.0	<50.0
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	97.9%	102%	98.0%	89.5%	100%	100%
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100 [1]	<200	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0

		1302105-01	1211120-01	1208112-01	1205142-01	1202076-01	1112105-01	1111006-01	1102051-06	1012072-01	1007059-06	1005079-01	1002080-06	0912112-01	0907120-06	0905095-02	0902088-06
		02/25/13	11/30/12	08/30/12	05/25/12	02/16/12	12/22/11	11/01/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/21/09	07/21/09	05/18/09	02/17/09
Analyte	Units	L60	L60	L60	L60	L60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichloroethane-d4	[surr]	104%	107%	98.2%	92.7%	103%	104%	99.6%	102%	110%	92.0%	89.9%	104%	95.8%	97.6%	99.1%	93.1%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
2-Butanone	ug/L	<200	<200	270	<200	349	242	122	137	152	201	189	212	140	271	385	<100
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
4-Bromofluorobenzene	[surr]	101%	100%	93.6%	89.3%	97.0%	93.6%	96.1%	95.0%	102%	92.3%	94.8%	93.2%	98.1%	96.1%	97.0%	94.3%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	105	<100	<100	<100	<100	130	<100	105	<100	<200	175	<100
Acetone	ug/L	<200	318	640	516	924	764	448	593	558	645	619	805	646	1050	1340	338
Benzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Styrene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Toluene-d8	[surr]	107%	105%	98.7%	94.0%	99.1%	99.6%	101%	98.5%	103%	92.6%	96.4%	100%	99.9%	96.8%	98.1%	98.1%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
Xylenes, total	ug/L	<600	<600	<600	<600	<300	<300	<300	<300	<100	<100	<100	<100	<100	<200	<50.0	<100

		0812030-01	0807173-06	0805043-01	0802071-06	0712071-01	0707061-06	0705127-01	0702073-06	702073-06RE	0612057-01	0607077-06	0605021-01
		12/05/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	07/14/06	05/02/06
Analyte	Units	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichloroethane-d4	[surr]	93.6%	106%	102%	99.1%	106%	98.4%	115%	113%	78.3%	117%	110%	106%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
2-Butanone	ug/L	<200	205	255	222	<100	<200	<200	482	295	239	124	240
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200 [1]	<100 [1]	<200 [1]	<200 [1]	<50.0 [1]	<200 [1]	<100	<50.0	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
4-Bromofluorobenzene	[surr]	96.2%	104%	104%	102%	104%	91.6%	99.1%	104%	93.6%	107%	101%	96.7%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<100	<200	<200	247	<200	<100	60.7	118
Acetone	ug/L	543	954	1270	955	153	728	716	2480 [2]	1320	1190	385	1110
Benzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Styrene	ug/L	<200	<200	<200	<200 [1]	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Toluene-d8	[surr]	101%	107%	106%	99.9%	104%	97.0%	95.4%	114%	100%	108%	101%	103%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Vinyl chloride	ug/L	<200	<200	<200	<200 [1]	<100	<200	<200	75.1	<200	<100	<50.0	<100
Xylenes, total	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100

		1302105-02	1211120-02	1208078-06	1205142-02	1202062-06	1112105-02	1107076-06	1105128-01	1102051-07	1012072-02	1007059-07	1005079-02	1002080-07	0912057-01	0907120-07	0905095-03	0902088-07	0812030-02
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09	12/05/08
Analyte	Units	L61	L61	L61	L61	L61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61
1,1,1-Trichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2-Trichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1-Dichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1-Dichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichloroethane-d4	[surr]	101%	111%	90.1%	96.1%	104%	104%	102%	102%	98.8%	106%	90.9%	92.4%	101%	99.5%	99.7%	100%	97.7%	92.1%
1,2-Dichloropropane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,3-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,4-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
2-Butanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
2-Chloroethylvinyl ether	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
2-Hexanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
4-Bromofluorobenzene	[surr]	96.1%	103%	91.1%	89.1%	97.0%	97.1%	99.5%	96.4%	97.5%	99.9%	91.8%	97.2%	92.8%	99.3%	96.0%	97.7%	101%	96.9%
4-Methyl-2-pentanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Acetone	ug/L	<200	<200	<500	435	<100	265	<100	<100	234	107	128	613	<100	<100	<100	<100	<100	360
Benzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromodichloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromoform	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromomethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Carbon disulfide	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Carbon tetrachloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloroform	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
cis-1,3-Dichloropropene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Dibromochloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Diethyl ether	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Ethyl acetate	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Ethylbenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Methylene chloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Styrene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
Tetrachloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Toluene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Toluene-d8	[surr]	102%	107%	102%	95.4%	101%	99.9%	101%	99.3%	97.0%	101%	92.5%	97.6%	97.4%	102%	98.2%	99.9%	102%	101%
trans-1,2-Dichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
trans-1,3-Dichloropropene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Trichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Trichlorofluoromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Vinyl acetate	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Vinyl chloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
Xylenes, total	ug/L	<600	<600	<1500	<600	<300	<300	<300	<300	<300	<100	<100	<100	<100	<100	<100	<100	<100	<200

		0807173-07	0802071-07	0707061-07	0705127-02	0702073-07	702073-07RE	0612057-02	612057-02RE	0607077-07	607077-07RE	0605021-02	605021-02RE	605021-02RE2
		07/29/08	02/13/08	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	12/07/06	07/14/06	07/14/06	05/02/06	05/02/06	05/02/06
Analyte	Units	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61
1,1,1-Trichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2-Trichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1-Dichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1-Dichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichloroethane-d4	[surr]	100%	98.4%	94.9%	116%	111%	79.3%	112%	112%	109%	103%	98.9%	52.0%	96.3%
1,2-Dichloropropane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,3-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,4-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
2-Butanone	ug/L	<500	<500	<1000	<1000	1080 [2]	<1000	213	<200	905	<1000	865	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<500	<500 [1]	<1000 [1]	<1000 [1]	<50.0 [1]	<1000 [1]	<100	<200 [3]	<50.0	<1000	<100	<1000	<1000
2-Hexanone	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
4-Bromofluorobenzene	[surr]	98.5%	98.2%	89.6%	102%	104%	93.2%	103%	102%	97.0%	95.6%	93.4%	48.1%	92.1%
4-Methyl-2-pentanone	ug/L	<500	<500	<1000	<1000	470	<1000	<100	<200	258	<1000	330	<1000	<1000
Acetone	ug/L	7480	909	7100	6150	9050 [2]	6470	2610 [2]	2250	12000 [2]	8280	10400 [2]	8580	8990 [4]
Benzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromodichloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromoform	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromomethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Carbon disulfide	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	50.7	<1000	<100	<1000	<1000
Carbon tetrachloride	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloroform	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Dibromochloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Diethyl ether	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Ethyl acetate	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Ethylbenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Methylene chloride	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Styrene	ug/L	<500	<500 [1]	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Tetrachloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Toluene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Toluene-d8	[surr]	98.7%	99.5%	92.8%	97.2%	112%	99.8%	103%	105%	100%	95.5%	100%	51.7%	98.5%
trans-1,2-Dichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Trichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Trichlorofluoromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Vinyl acetate	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Vinyl chloride	ug/L	<500	<500 [1]	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Xylenes, total	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000

		1302105-03	1211120-03	1208078-07	1205142-03	1202062-07	1112105-03	1107076-07	1105128-02	1102051-08	1012072-03	1007059-08	1005079-03	1002080-08	0912057-02	0907120-08	0905095-04	0902088-08
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09
Analyte	Units	L62	L62	L62	L62	L62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichloroethane-d4	[surr]	99.8%	113%	92.1%	107%	104%	103%	104%	101%	107%	114%	90.4%	90.2%	107%	100%	94.9%	99.1%	95.1%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
2-Butanone	ug/L	<200	<200	<200	<200	<100	<100	125	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
4-Bromofluorobenzene	[surr]	96.9%	106%	94.7%	102%	96.8%	94.4%	99.0%	97.7%	100%	102%	91.6%	90.1%	95.2%	98.3%	91.7%	97.0%	97.9%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Acetone	ug/L	400	<200	650	<200	171	263	1490	<100	349	<50.0	103	<100	117	571	616	299	306
Benzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Styrene	ug/L	<600	<600	<600	<600	<300	<300	<300	<300	<150	<50.0	<100	<100	<100	<100	<100	<100	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Toluene-d8	[surr]	103%	111%	105%	107%	103%	99.9%	103%	99.6%	100%	102%	94.0%	94.4%	101%	102%	94.7%	98.2%	100%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
Xylenes, total	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100

		0812030-03	0807173-08	807173-08RE	0805043-02	0802071-08	0712071-02	0707061-08	0705127-03	0702073-08	0612057-03	0607077-08	0605021-03
		12/05/08	07/29/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	12/07/06	07/14/06	05/02/06
Analyte	Units	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62
1,1,1-Trichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2-Trichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1-Dichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1-Dichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichloroethane-d4	[surr]	94.4%	106%	109%	98.8%	105%	108%	91.6%	118%	109%	115%	112%	99.2%
1,2-Dichloropropane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,3-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,4-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
2-Butanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
2-Chloroethylvinyl ether	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200 [1]	<200 [1]	<50.0 [1]	<50.0 [1]	<100	<50.0	<100
2-Hexanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
4-Bromofluorobenzene	[surr]	97.8%	106%	107%	103%	103%	106%	85.4%	99.1%	101%	105%	106%	92.7%
4-Methyl-2-pentanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Acetone	ug/L	1990	2230	2690	686	229	340	1980	194	<50.0	<100	120	<100
Benzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromodichloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromoform	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromomethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Carbon disulfide	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Carbon tetrachloride	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloroform	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Dibromochloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Diethyl ether	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Ethyl acetate	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Ethylbenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Methylene chloride	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Styrene	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200	<200	<50.0	<50.0	<100	<50.0	<100
Tetrachloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Toluene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Toluene-d8	[surr]	102%	106%	106%	103%	106%	106%	89.3%	95.8%	111%	105%	103%	99.1%
trans-1,2-Dichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Trichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Trichlorofluoromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Vinyl acetate	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Vinyl chloride	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200	<200	<50.0	<50.0	<100	<50.0	<100
Xylenes, total	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100

		1302105-04	1211120-04	1208078-08	1205142-04	1202062-08	1112105-04	1107076-08	1105128-03	1102051-09	1012072-04	1007059-09	1005079-04	1002080-09	0912057-03	0907120-09	0905095-05
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09
Analyte	Units	L63	L63	L63	L63	L63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichloroethane-d4	[surr]	104%	108%	91.1%	97.2%	96.2%	99.3%	99.8%	103%	102%	113%	87.9%	89.6%	104%	100%	99.4%	99.0%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
2-Butanone	ug/L	305	302	239	<200	<200	331	293	<100	266	216	399	472	699	420	673	877
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
4-Bromofluorobenzene	[surr]	99.6%	102%	92.4%	94.0%	90.2%	93.3%	97.7%	97.7%	96.9%	104%	87.5%	93.9%	94.5%	98.1%	97.9%	95.5%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<200	180	<200	<100	<200	<200	255	296	328	<200	<500	446
Acetone	ug/L	860	1260	1040	735	511	1300	889	164	985	846	1180	1330	2520	1210	2090	2880
Benzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromoform	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromomethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloroform	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Styrene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Toluene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Toluene-d8	[surr]	106%	105%	104%	98.7%	96.9%	98.4%	100%	101%	98.0%	106%	89.3%	96.1%	99.7%	103%	98.8%	97.9%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
Xylenes, total	ug/L	<600	<600	<600	<600	<600	<300	<600	<300	<600	<200	<200	<200	<200	<200	<500	<100

		0902088-09	0812030-04	0807173-09	0805043-03	0802071-09	0712071-03	0707061-09	0705127-04	0702073-09	0612057-04	0610203-01	0607077-09	0605021-04
		02/17/09	12/05/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	12/07/06	10/20/06	07/14/06	05/02/06
Analyte	Units	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63
1,1,1-Trichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2-Trichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1-Dichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	11.8	<50.0	<100
1,1-Dichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichloroethane-d4	[surr]	94.4%	93.8%	103%	103%	99.1%	104%	91.9%	117%	111%	116%	207%	109%	98.5%
1,2-Dichloropropane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,3-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,4-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
2-Butanone	ug/L	<100	127	<100	111	<100	<100	<100	121	146	<100	502	55.0	<100
2-Chloroethylvinyl ether	ug/L	<100	<100	<100	<100	<100 [1]	<100 [1]	<100 [1]	<50.0	<50.0 [1]	<100	<10.0	<50.0	<100
2-Hexanone	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
4-Bromofluorobenzene	[surr]	95.5%	97.3%	103%	104%	102%	101%	86.8%	100%	103%	105%	194%	98.5%	92.6%
4-Methyl-2-pentanone	ug/L	<100	<100	<100	<100	<100	<100	<100	60.7	92.4	<100	232	<50.0	<100
Acetone	ug/L	945	852	312	507	350	280	256	637	903	634	2240	287	<100
Benzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromodichloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromoform	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromomethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Carbon disulfide	ug/L	<100	<100	<100	<100	281	223	<100	121	495	<100	1090	76.4	<100
Carbon tetrachloride	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloroform	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Dibromochloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Diethyl ether	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Ethyl acetate	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Ethylbenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Methylene chloride	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Styrene	ug/L	<100	<100	<100	<100	<100 [1]	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Tetrachloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Toluene	ug/L	629	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	22.9	<50.0	<100
Toluene-d8	[surr]	99.0%	102%	102%	105%	101%	101%	88.8%	95.5%	112%	106%	204%	100%	101%
trans-1,2-Dichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Trichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Trichlorofluoromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Vinyl acetate	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Vinyl chloride	ug/L	<100	<100	<100	<100	<100 [1]	<100	<100	55.8	<50.0	<100	142	<50.0	<100
Xylenes, total	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100

		1302105-05	1211120-05	1208078-09	1205142-05	1202076-02	1112081-01	1107076-09	1105128-04	1102051-10	1012072-05	1007059-10	1005079-05	1002080-10	0912057-04	0907120-10	0905095-06	0902088-10	0807173-10
		02/25/13	11/30/12	08/22/12	05/25/12	02/16/12	12/19/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09	07/29/08
Analyte	Units	L64	L64	L64	L64	L64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64
1,1,1-Trichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2,2-Tetrachloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2-Trichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1-Dichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1-Dichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichloroethane-d4	[surr]	103%	108%	92.7%	93.7%	105%	96.5%	98.6%	102%	102%	113%	89.8%	90.7%	105%	95.8%	100%	102%	95.2%	102%
1,2-Dichloropropane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,3-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,4-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
2-Butanone	ug/L	<10000	<10000	<10000	<5000	4880	<1000	<2500	<1000	<1000	<2500	<1000	<1000	668	<500	<1000	822	<200	<500
2-Chloroethylvinyl ether	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
2-Hexanone	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
4-Bromofluorobenzene	[surr]	99.7%	105%	94.4%	89.8%	98.5%	94.2%	98.2%	97.3%	95.8%	103%	91.0%	93.5%	94.4%	94.5%	97.6%	98.8%	96.5%	100%
4-Methyl-2-pentanone	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	344	<200	<500
Acetone	ug/L	27700	98600	114000	51600	56800	12700	19900	12100	13800	45800	24300	10100	16400	1570	11800	7500 [4]	560	20200 [2]
Benzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromodichloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromoform	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromomethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Carbon disulfide	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Carbon tetrachloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloroform	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
cis-1,3-Dichloropropene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Dibromochloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Diethyl ether	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Ethyl acetate	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Ethylbenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Methylene chloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Styrene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
Tetrachloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Toluene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	1120	<2500	<1000	<1000	<500	<500	<1000	216	<200	638
Toluene-d8	[surr]	103%	107%	105%	94.4%	101%	100%	99.8%	99.9%	96.8%	105%	92.3%	94.5%	100%	97.6%	99.1%	99.9%	101%	101%
trans-1,2-Dichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
trans-1,3-Dichloropropene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Trichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Trichlorofluoromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Vinyl acetate	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Vinyl chloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
Xylenes, total	ug/L	<30000	<30000	<30000	<15000	<7500	<3000	<7500	<3000	<3000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500

		807173-10RE	0805043-04	805043-04RE	0802071-10	0712071-04	0707061-10	0705127-05	0702073-10	702073-10RE	0612057-05	0607077-10	607077-10RE	0605021-05	605021-05RE	605021-05RE2
		07/29/08	05/08/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	07/14/06	07/14/06	05/02/06	05/02/06	05/02/06
Analyte	Units	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64
1,1,1-Trichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2-Trichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1-Dichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1-Dichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichloroethane-d4	[surr]	104%	101%	98.7%	97.3%	103%	96.1%	117%	107%	73.7%	115%	106%	104%	100%	52.3%	94.6%
1,2-Dichloropropane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,3-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,4-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
2-Butanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	58.0	<1000	<100	452	<2500	342	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<2500	<500	<2500	<1000 [1]	<2500 [1]	<2500 [1]	<1000 [1]	<50.0 [1]	<1000 [1]	<100	<50.0	<2500	<100	<1000	<1000
2-Hexanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
4-Bromofluorobenzene	[surr]	104%	104%	103%	96.4%	103%	87.9%	100%	99.7%	89.2%	104%	95.8%	94.5%	95.0%	48.1%	92.6%
4-Methyl-2-pentanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	102	<2500	109	<1000	<1000
Acetone	ug/L	6630 [4]	17000 [2]	8670 [4]	1000	8780	34300	2480	14500 [2]	10300	1520	20900 [2]	13300	16500 [2]	12700	12600 [3]
Benzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromodichloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromoform	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromomethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Carbon disulfide	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Carbon tetrachloride	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloroform	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Dibromochloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Diethyl ether	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Ethyl acetate	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Ethylbenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Methylene chloride	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Styrene	ug/L	<2500	<500	<2500	<1000 [1]	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Tetrachloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Toluene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	2050 [2]	1790	1130	543	<2500	871	<1000	<1000
Toluene-d8	[surr]	104%	104%	102%	98.0%	101%	91.1%	95.3%	109%	93.6%	104%	97.5%	94.8%	102%	51.1%	99.2%
trans-1,2-Dichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Trichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Trichlorofluoromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Vinyl acetate	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Vinyl chloride	ug/L	<2500	<500	<2500	<1000 [1]	<2500	<2500	<1000	84.5	<1000	<100	<50.0	<2500	<100	<1000	<1000
Xylenes, total	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000

		1304080-06	1304062-06	1304052-06	1304045-06	1304041-06	1304036-06	1304035-03	1304014-06	1304011-06	1304010-03	1303119-06	1303105-06	1303098-06	1303097-03	1303061-06	1303055-06	1303052-06	1303051-01	1303019-06	1303011-06	1303010-06	1303009-06	1302122-06	1302114-06
		04/17/13	04/13/13	04/12/13	04/11/13	04/10/13	04/09/13	04/08/13	04/03/13	04/02/13	04/01/13	03/26/13	03/22/13	03/21/13	03/20/13	03/14/13	03/13/13	03/12/13	03/11/13	03/05/13	03/04/13	03/03/13	03/02/13	02/28/13	02/27/13
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	4/17/2013 7:0	4/15/2013 6:2	4/12/2013 6:4	4/11/2013 7:0	4/10/2013 6:3	4/9/2013 6:55	4/9/2013 6:55	4/3/2013 6:45	4/2/2013 6:44	4/2/2013 6:48	3/26/2013 6:1	3/22/2013 6:3	3/21/2013 7:0	3/21/2013 7:0	3/14/2013 6:3	3/13/2013 6:1	3/12/2013 6:4	3/12/2013 6:4	3/5/2013 6:3	3/4/2013 6:40	3/4/2013 6:40	3/4/2013 6:40	2/28/2013 6:3	2/27/2013 6:3
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	2570	2510	2850	4720	6000	5810	6200	<2500	36500	37400	4590	4910	5480	5480	3300	3490	3390	3980	3140	3150	2870	3140	16100	11300
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1140	<1000	<1000	<1000	<1000	6420	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	107%	109%	106%	107%	106%	105%	107%	109%	109%	106%	104%	103%	104%	105%	104%	102%	103%	104%	109%	107%	111%	111%	102%	110%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1290	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	104%	108%	106%	104%	105%	105%	107%	102%	103%	101%	103%	103%	104%	105%	105%	102%	104%	104%	106%	106%	104%	106%	100%	107%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	96.7%	99.8%	100%	100%	100%	103%	107%	99.4%	102%	98.9%	99.4%	101%	101%	103%	101%	99.6%	100%	100%	99.2%	101%	97.3%	99.7%	99.3%	104%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<7500	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

		1302113-03	1302083-06	1302076-06	1302065-06	1302059-06	1302049-06	1302041-06	1302040-03	1302019-06	1302016-06	1302001-06	1301138-06	1301126-06	1301122-06	1301094-06	1301083-06	1301082-06	1301073-01	1301061-06	1301053-06	1301047-03	1301018-06	1301005-01	1301001-06
		02/26/13	02/20/13	02/19/13	02/15/13	02/14/13	02/13/13	02/12/13	02/11/13	02/06/13	02/05/13	02/01/13	01/31/13	01/30/13	01/29/13	01/23/13	01/21/13	01/20/13	01/18/13	01/16/13	01/15/13	01/14/13	01/07/13	01/02/13	01/01/13
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	2/26/2013 1:1	2/20/2013 6:2	2/19/2013 6:2	2/15/2013 6:4	2/14/2013 6:3	2/13/2013 6:3	2/12/2013 6:3	2/12/2013 6:2	2/6/2013 6:39	2/5/2013 6:48	2/1/2013 7:0	1/31/2013 6:3	1/30/2013 6:4	1/29/2013 6:2	1/23/2013 7:0	1/21/2013 6:4	1/21/2013 6:4	1/18/2013 8:3	1/16/2013 6:4	1/15/2013 6:3	1/14/2013 10	1/7/2013 6:36	1/2/2013 9:56	1/2/2013 6:25
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	3380	5190	14800	3930	3420	4090	<2500	<2500	3990	3430	2900	2900	3920	5460	3620	3750	3540	3040	2690	3280	6230	6230	5410	5590
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	1410	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	94.2%	107%	111%	107%	104%	112%	111%	111%	107%	102%	106%	107%	110%	106%	106%	107%	106%	108%	109%	107%	95.2%	103%	102%	105%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	99.3%	102%	106%	103%	102%	107%	106%	107%	104%	101%	100%	104%	106%	102%	105%	104%	100%	104%	104%	105%	96.0%	103%	99.6%	103%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	96.7%	92.2%	97.2%	94.9%	96.5%	100%	100%	98.4%	96.9%	93.2%	95.3%	97.6%	99.8%	95.9%	95.6%	96.0%	92.9%	95.9%	95.5%	96.2%	92.6%	97.3%	95.2%	98.1%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

		1212128-03	1212109-03	1212107-06	1212106-03	1212097-06	1212085-06	1212079-03	1212073-03	1212046-03	1212040-06	1212033-06	1212015-06	1212012-03	1211117-03	1211084-06	1211039-06	1211038-06	1211037-06	1211033-06	1211015-06	1211014-06	1211009-06	1211004-06	1210148-06
		12/31/12	12/26/12	12/25/12	12/24/12	12/21/12	12/19/12	12/18/12	12/17/12	12/12/12	12/11/12	12/10/12	12/05/12	12/04/12	11/29/12	11/21/12	11/12/12	11/11/12	11/10/12	11/09/12	11/05/12	11/04/12	11/02/12	11/01/12	10/31/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	12/31/2012 1	12/26/2012 1	12/26/2012 8	12/24/2012 1	12/21/2012 6	12/19/2012 6	12/18/2012 1	12/17/2012 1	12/12/2012 1	12/11/2012 6	12/10/2012 6	12/5/2012 6:5	12/4/2012 11	11/30/2012 6	11/21/2012 6	11/12/2012 6	11/12/2012 6	11/12/2012 6	11/9/2012 6:2	11/5/2012 6:3	11/5/2012 6:3	11/2/2012 8:4	11/1/2012 10	10/31/2012 6
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	5620	4270	3900	3710	5040	4810	6160	5680	5660	5270	5770	5460	5830	7480	5440	4350	3610	4220	3290	1890	1760	1080	<1000	<1000
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	105%	109%	109%	108%	113%	105%	107%	91.5%	99.7%	101%	103%	99.3%	102%	114%	109%	105%	107%	105%	100%	106%	106%	100%	92.2%	90.6%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	102%	105%	107%	106%	109%	104%	110%	90.7%	95.5%	95.0%	96.9%	94.5%	96.7%	108%	105%	104%	106%	104%	100%	108%	106%	102%	94.3%	93.9%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	98.9%	101%	105%	101%	105%	102%	105%	83.1% [2]	87.4%	89.5%	91.0%	90.9%	94.4%	105%	101%	99.1%	100%	98.9%	95.4%	102%	99.3%	96.9%	89.8%	88.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<1500	<1500	<1500	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000

		1210142-06	1210132-06	1210131-06	1210130-06	1210126-06	1210120-06	1210113-06	1210109-06	1210094-03	1210079-06	1210074-03	1210067-06	1210062-06	1210059-03	1210015-06	1210005-03	1209126-06	1209123-06	1209124-03	1209094-06	1209087-03	1209081-06	1209077-06	1209071-06
		10/30/12	10/29/12	10/28/12	10/27/12	10/26/12	10/25/12	10/24/12	10/23/12	10/19/12	10/16/12	10/15/12	10/12/12	10/11/12	10/10/12	10/02/12	10/01/12	09/28/12	09/27/12	09/26/12	09/20/12	09/18/12	09/16/12	09/15/12	09/14/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	10/30/2012 6	10/29/2012 6	10/29/2012 6	10/29/2012 6	10/26/2012 6	10/25/2012 6	10/24/2012 6	10/23/2012 6	10/19/2012 1	10/16/2012 6	10/15/2012 1	10/12/2012 8	10/11/2012 6	10/10/2012 1	10/2/2012 7:(	10/1/2012 11	9/28/2012 7:(	9/27/2012 10	9/27/2012 11	9/20/2012 8:3	9/18/2012 1:3	9/17/2012 9:4	9/17/2012 9:3	9/14/2012 7:(
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	<1000	<1000	1740	<1000	3340	3390	4510	6350	8610	6330	11800	4420	1670	<1000	7030	7450	3710	4670	4280	6660	6250	4800	4090	<1000
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1810	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	94.4%	94.5%	96.0%	94.8%	94.3%	89.7%	92.8%	94.7%	109%	115%	120% [1]	114%	108%	108%	101%	113%	105%	104%	108%	100%	102%	96.8%	101%	90.2%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	97.4%	94.2%	97.4%	94.8%	94.4%	91.7%	95.3%	93.7%	104%	99.7%	108%	100%	95.6%	98.0%	93.1%	102%	98.5%	98.3%	101%	97.3%	99.4%	94.7%	102%	95.7%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	92.4%	89.3%	92.6%	91.9%	90.7%	89.5%	94.4%	92.3%	102%	98.4%	105%	98.7%	95.6%	95.2%	91.6%	101%	97.8%	95.1%	99.7%	95.7%	99.1%	93.6%	100%	93.0%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<7500	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000

		1209063-06	1209052-06	1209044-06	1209035-06	1209034-06	1209033-06	1209032-03	1209013-06	1209012-03	1208113-06	1208108-06	1208104-06	1208097-06	1208075-06	1208074-03	1208053-06	1208040-06	1208030-03	1208016-06	1208014-03	1207108-03	1207102-06	1207100-06	1207098-03
		09/13/12	09/12/12	09/11/12	09/10/12	09/09/12	09/08/12	09/07/12	09/05/12	09/04/12	08/31/12	08/30/12	08/29/12	08/28/12	08/22/12	08/21/12	08/15/12	08/10/12	08/09/12	08/07/12	08/06/12	07/30/12	07/27/12	07/26/12	07/25/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	9/13/2012 7:0	9/12/2012 7:0	9/11/2012 8:2	9/10/2012 7:0	9/10/2012 7:0	9/10/2012 7:0	9/10/2012 7:0	9/5/2012 7:0	9/5/2012 7:0	8/31/2012 7:0	8/30/2012 8:2	8/29/2012 7:0	8/28/2012 7:0	8/22/2012 7:0	8/22/2012 7:0	8/15/2012 7:0	8/10/2012 7:0	8/9/2012 11:2	8/7/2012 7:0	8/6/2012 9:1	7/30/2012 10	7/27/2012 8:3	7/26/2012 11	7/26/2012 9:3
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Acetone	ug/L	1350	1640	3080	2680	6280	3960	4660	9000	8200	1920	2350	2060	7150	4130	4530	4860	2110	3470	4250	9780	7210	4640	4930	13400
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichloroethane-d4	[surr]	86.0%	95.7%	93.3%	101%	89.7%	102%	102%	101%	101%	99.1%	96.4%	98.3%	97.8%	91.6%	93.2%	104%	98.2%	104%	103%	109%	89.6%	102%	102%	101%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Toluene-d8	[surr]	94.6%	97.4%	97.8%	97.1%	94.7%	95.9%	96.8%	96.6%	97.4%	96.9%	94.1%	97.3%	95.8%	104%	105%	104%	101%	101%	99.7%	104%	101%	102%	100%	83.2% [1]
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
4-Bromofluorobenzene	[surr]	93.0%	95.2%	95.0%	95.1%	93.8%	94.9%	95.5%	95.0%	95.4%	95.2%	91.9%	94.7%	93.0%	93.7%	95.7%	97.6%	94.7%	97.3%	94.0%	101%	99.0%	97.9%	96.4%	87.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<3000	<3000	<7500	<3000	<3000	<3000	<3000	<7500	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000

		1207071-06	1207067-06	1207063-03	1207045-06	1207035-06	1207034-01	1207009-06	1206099-06	1206098-03	1206077-06	1206076-03	1206061-06	1206056-06	1206055-03	1206017-06	1206013-06	1206009-03	1206005-04	1205167-03	1205160-06	1205117-06	1205097-06	1205084-06	1205074-06
		07/19/12	07/18/12	07/17/12	07/12/12	07/11/12	07/10/12	07/03/12	06/26/12	06/25/12	06/19/12	06/18/12	06/14/12	06/13/12	06/12/12	06/06/12	06/05/12	06/04/12	06/03/12	05/31/12	05/30/12	05/22/12	05/17/12	05/15/12	05/14/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	7/19/2012 7:(	7/18/2012 7:(	7/17/2012 10	7/12/2012 7:(	7/11/2012 7:(	7/11/2012 7:(	7/3/2012 7:44	6/26/2012 7:(	6/25/2012 1:1	6/19/2012 7:(	6/19/2012 7:(	6/14/2012 9:1	6/13/2012 7:(	6/13/2012 7:(	6/6/2012 7:0(	6/5/2012 7:15	6/4/2012 11:1	6/4/2012 7:0(	5/31/2012 1(	5/30/2012 7:(	5/22/2012 7:(	5/17/2012 8:(	5/15/2012 7:(	5/14/2012 7:(
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	11100	8240	9150	5900	5330	9290	8290	11000	13900	7820	7900	4690	5910	6700	3250	5130	5410	7380	7880	7500	7400	4040	2590	2720
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	1780	<1000	<1000	1640	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	1910	<1000	<1000	2370	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	109%	98.5%	96.3%	91.5%	90.3%	92.0%	98.6%	105%	110%	104%	102%	89.9%	95.4%	95.4%	104%	104%	103%	104%	99.6%	100%	98.6%	89.0%	89.5%	86.9%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	98.5%	92.9%	90.5%	92.2%	92.6%	92.5%	96.5%	95.6%	101%	97.7%	97.4%	90.0%	96.0%	95.5%	104%	103%	103%	104%	97.6%	101%	95.9%	97.4%	95.6%	94.1%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	97.8%	91.6%	90.5%	91.3%	92.4%	91.9%	94.4%	96.9%	102%	97.9%	97.6%	88.6%	93.0%	93.6%	102%	100%	100%	102%	94.9%	97.0%	94.1%	94.6%	91.5%	93.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

RMU-1, SLF-12 tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx 120215035 120215034 Old Landfill Old Landfill Leachates_111116033

SLF 12 standpipe SLF 12 lift station

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Conventional/General Water Quality														
Total Organic Carbon	mg/L	SM 5310C		167	263	262	277	290		257	49.5		66.6	315
Total Suspended Solids	mg/L	SM 2540D		86.7	55	96	133	65		72.0	10		44	16.5
Total Dissolved Solids	mg/L	SM 2540C		11900	17700	18600	22000	21300		27200.00	1430		4090	18000
Total Petroleum Hydrocarbon	mg/L	E1664		25.6	40	47.9	64.9	57.9		12.5	13.4		<1	16.8
Liquid Volume Processed	gpd	----	28393	80254	6480	26374								
Sulfide	mg/L		<0.200	<0.200	<1.00	<1.00	<0.200	<0.200		125	<0.200	<0.200		
Metals														
Phenolic, Total	mg/L	420.4, 420.1		2.55	5.1	6.5	6.5			0.800	0.108		0.031	6.79
Volatile Organic Compounds - Purgeables (10)														
Chloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Vinyl Chloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromomethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Trichlorofluoromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Diethyl ether	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2-Trichloro-1,2,2-trifluoroe	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Acetone	µg/L	8260C	4200	4440	7160	7380	8260	9040		<50.0	60.1	362		
1,1-Dichloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Methylene chloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	2280		
Carbon disulfide	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
trans-1,2-Dichlorethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1-Dichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Vinyl acetate	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Butanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Ethyl acetate	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chloroform	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,1-Trichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Carbon tetrachloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Benzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Trichloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichlropropane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromodichloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Chloroethylvinyl ether	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
4-Methyl-2-pentanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
cis-1,3-Dichloropropene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Toluene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
trans-1,3-Dichloropropene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2-Trichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Hexanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Tetrachloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Dibromochloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Ethylbenezene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Xylenes, total	µg/L	8260C	<3000	<3000	<3000	<3000	<3000	<3000		<150	<60.0	<150		
Styrene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromoform	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2,2-Tetrachloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,3-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,4-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Semi-Volatile Organic Compounds - Base Acid/Neutrals														
1,2,4-Trichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,2-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,3-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,4-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4,5-Trichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4,6-Trichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4-Dichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4-Dimethylphenol	µg/L	625		71	140	110	120	110		<50	<50		<5	140
2,4-Dinitrophenol	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
2,4-Dinitrotoluene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,6-Dinitrotoluene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Chloronaphthalene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Chlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Methylnaphthalene	µg/L	625												
2-Methylphenol	µg/L	625												
2-Nitrophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
3,3´-Dichlorobenzidine	µg/L	625		<100	<200	<200	<200	<200		<100	<100		<10	<200
4,6-Dinitro-2-methylphenol	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
4-Bromophenyl phenyl ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Chloro-3-methylphenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Chlorophenyl phenyl ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Methylphenol	µg/L	625												
4-Nitrophenol	µg/L	625		<250	<500	500	<500	<500		<250	<250		<25	<500
Acenaphthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

SLF 12 standpipe

SLF 12 lift station

RMU-1, SLF-12 | tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx | 120215035 120215034 Old Landfill Old Landfill Leachates_ 111116033

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Acenaphthylene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Azobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benz(a)anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzidine	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
Benzo(a)pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(b)fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(g,h,i)perylene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(k)fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzothiazole	µg/L	625												
Bis(2-chloroethoxy)methane	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-chloroethyl)ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-chloroisopropyl)ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-ethylhexyl)phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	330		<5	<100
Butyl benzyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Carbazole	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Chrysene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dibenz(a,h)anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dibenzofuran	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Diethyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dimethyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Di-n-butyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Di-n-octyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Fluorene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorobutadiene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorocyclopentadiene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachloroethane	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexamethylbenzene	µg/L	625												
Indeno(1,2,3-cd)pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Isophorone	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Naphthalene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
n-decane	µg/L	625												
Nitrobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodimethylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodi-n-propylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodiphenylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
n-Octadecane	µg/L	625												
Pentachlorophenol	µg/L	625		<250	<500	<500	<500	<100		<250	<250		<25	<500
Phenanthrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Phenol	µg/L	625		630	1100	990	1200	<100		<50	<50		<5	<100
Pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Pyridine	µg/L	625												
PCB Aroclor														
Aroclor 1016	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1221	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1232	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1242	µg/L	608		3	29.6	<0.26	2.04	<0.349		<0.357	34.6		226	5.32
Aroclor 1248	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1254	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	289		92.5	<3.25
Aroclor 1260	µg/L	608		1.67	112	<0.26	<0.074	<0.349		<0.357	227		69.7	<3.25
Aroclor 1016	µg/L	8082A												
Aroclor 1221	µg/L	8082A												
Aroclor 1232	µg/L	8082A												
Aroclor 1242	µg/L	8082A												
Aroclor 1248	µg/L	8082A												
Aroclor 1254	µg/L	8082A												
Aroclor 1260	µg/L	8082A												
Aroclor 1262	µg/L	8082A												
Aroclor 1268	µg/L	8082A												
Chlorinated Pesticides														
4,4´-DDD	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
4,4´-DDE	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
4,4´-DDT	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Aldrin	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
alpha-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
alpha-Chlordane	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
beta-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Chlordane	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
delta-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Dieldrin	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endosulfan I	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Endosulfan II	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endosulfan sulfate	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endrin	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

SLF 12 standpipe

SLF 12 lift station

RMU-1, SLF-12 tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx 120215035 120215034 Old Landfill Old Landfill Leachates_ 111116033

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Endrin aldehyde	µg/L	608		<8	<0.114	<0.108				<0.110	<20.2		<25.8	<1.11
Endrin Ketone	µg/L	608		<8	<0.108	<0.108				<0.110	<20.2		<25.8	<1.11
gamma-BHC	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
gamma-Chlordane	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Heptachlor	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Heptachlor epoxide	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Methoxychlor	µg/L	608		<40	<0.538	<0.538				<0.549	<101		<129	<5.56
Toxaphene	µg/L	608		<80	<1.08	<1.08				<1.10	<202		<258	<11.1
Other key considerations														

Key:

Attachment 8
Tanks Software Model Output for Leachate Tanks

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-102
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	32.00
Diameter (ft)	44.00
Liquid Height (ft)	29.50
Avg. Liquid Height (ft)	15.00
Volume (gal)	350,000.00
Turnovers	42.8571
Net Throughput (gal/yr)	15,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-102 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0099	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9999	0.9992	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3385	-	-	18.0099	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0099
Acetone						2.2051	-	-	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	114000	0.000114	0.000002	0.000035	0.0134
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13	1090	0.0000011	0.000000	0.000000	0.0002
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	4880	4.88E-06	0.000000	0.000001	0.0002
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	470	0.0000005	0.000000	0.000000	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	1780	1.78E-06	0.000000	0.000000	0.0004
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	1120	1.12E-06	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	0.9999	0.9992	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999876660	0.9998767	0.055549	0.999963	17.9957
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-102 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**		**CALCULATIONS**				
Standing Losses (lb)	244.1874		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	244.2025	lbs			
V_V = Vapor Space Volume (cu ft)	26545.9343			V_V =	26545.9343	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.7615			K_S =	0.7615				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	26545.9343	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	26545.9343	cu ft			
D = Tank Diameter	44.0000	ft							
H_{VO} = Vapor Space Outage	17.4583	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	17.4583	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	32.0000	ft							
H_L = Average Liquid Height	15.0000	ft							
Roof Outage	0.4583	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.4583	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.4583	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	1.3750	ft			
R_S = Shell Radius	22.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0099			M_V =	18.0099	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia	P_{VX} =	0.3414
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.0600	psia	P_{VN} =	0.3414
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3385	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25\ \text{delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25\ \text{delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.7615		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.7615			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Space Outage	17.4583	ft						
Working Losses	1886.7554	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	1886.7551	lbs		
M_V = Vapor Molecular Weight	18.0099			M_V =	18.0099	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	15,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	357,142.86	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	42.8571			N =	42.8571			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.8667		$K_N = (180 + N)/6N$	K_N =	0.8667			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	350000.0000	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	29.5000	ft						
Tank Diameter	44.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	2130.9427	lb		L_T =	2130.9576	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-102 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	1886.76	244.19	2130.94
Carbon disulfide	0.02	0.00	0.03
Methylene chloride	0.04	0.01	0.05
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	1.40	0.18	1.58
Water	1885.27	243.99	2129.26

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1886.75506	244.20252	2130.95758
0.02277	0.00295	0.02571
0.04312	0.00558	0.04871
0.00146	0.00019	0.00165
0.02134	0.00276	0.02410
0.00038	0.00005	0.00043
1.40069	0.18129	1.58199
1885.26530	244.00970	2129.27500

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-103
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	32.00
Diameter (ft)	44.00
Liquid Height (ft)	29.50
Avg. Liquid Height (ft)	15.00
Volume (gal)	350,000.00
Turnovers	1.43
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-103 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820				
																					check:	**1.00000**
										check:	**1.0000**	**1.0000**										

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-103 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	246.7768		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	246.5657	lbs			
V_V = Vapor Space Volume (cu ft)	26545.9343			V_V =	26545.9343	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.7610			K_S =	0.7610				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	26545.9343	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	26545.9343	cu ft			
D = Tank Diameter	44.0000	ft							
H_{VO} = Vapor Space Outage	17.4583	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	17.4583	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	32.0000	ft							
H_L = Average Liquid Height	15.0000	ft							
Roof Outage	0.4583	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.4583	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.4583	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	1.3750	ft			
R_S = Shell Radius	22.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA}$ - 0.25 delta T_V	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA}$ + 0.25 delta T_V	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.7610		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.7610			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	17.4583	ft						
Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	73.3280	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	1.4286			N =	1.4286			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	350000.0000	gal						
Maximum Liquid Height	29.5000	ft						
Tank Diameter	44.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	320.1048	lb		L_T =	319.8937	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-103 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	73.33	246.78	320.10
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.01
Vinylidene chloride	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.31	0.40
Methyl isobutyl ketone	0.00	0.01	0.00
Acetone	0.35	1.18	1.53
Methylene chloride	0.21	0.69	0.90
Trichloroethylene	0.00	0.01	0.01
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.02	0.03
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.01	0.01
Diethyl ether	0.01	0.04	0.05
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.71	0.93
Butanol-(1)	0.00	0.01	0.01
Water	72.43	243.77	316.20

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
73.32801	246.56567	319.89369
0.00103	0.00346	0.00449
0.00017	0.00059	0.00076
0.00128	0.00429	0.00557
0.00056	0.00188	0.00244
0.00007	0.00024	0.00031
0.09268	0.31165	0.40433
0.00245	0.00823	0.01068
0.35037	1.17814	1.52851
0.20539	0.69063	0.89603
0.00164	0.00551	0.00715
0.00000	0.00000	0.00000
0.00000	0.00001	0.00001
0.00102	0.00344	0.00446
0.00640	0.02153	0.02794
0.00114	0.00384	0.00498
0.00004	0.00012	0.00015
0.00017	0.00057	0.00074
0.00002	0.00007	0.00009
0.00031	0.00105	0.00137
0.00304	0.01023	0.01327
0.01116	0.03753	0.04869
0.00000	0.00001	0.00001
0.00046	0.00156	0.00202
0.00002	0.00005	0.00007
0.00024	0.00081	0.00105
0.00021	0.00072	0.00094
0.00000	0.00000	0.00000
0.00002	0.00006	0.00007
0.00000	0.00000	0.00001
0.00000	0.00001	0.00001
0.00000	0.00000	0.00000
0.00014	0.00049	0.00063
0.21232	0.71394	0.92626
0.00211	0.00710	0.00921
72.43351	243.55792	315.99143

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-105
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Lift Station for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	8.00
Diameter (ft)	8.00
Liquid Height (ft)	8.00
Avg. Liquid Height (ft)	4.00
Volume (gal)	3,000.00
Turnovers	166.67
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-105 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182	-	-	18.31	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3390	-	-	18.1374	-	-	18.31	-	-	-	-	-	-	-	-	-	18.1374
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.0007400	0.000013	0.000230	0.0868
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.0000009	0.000000	0.000000	0.0000
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13	27	0.0000000	0.000000	0.000000	0.0000
Carbon tetrachloride						1.0831	-	-	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934 B=1242.43 C=230	6.9340	1242.430	230.00	153.84	75000	0.0000750	0.000000	0.000009	0.0043
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	920	0.0000009	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0003	0.0015	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	290000	0.0002900	0.000002	0.000044	0.0280
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	1000	0.0000010	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	7800	0.0000078	0.000000	0.000001	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	2200	0.0000022	0.000000	0.000000	0.0001
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	17000	0.0000170	0.000000	0.000002	0.0000
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	2100	0.0000021	0.000000	0.000000	0.0000
Methyl ethyl ketone						0.7848			72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	2100	0.0000021	0.000000	0.000001	0.0001
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	6900	0.0000069	0.000000	0.000001	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	300	0.0000003	0.000000	0.000000	0.0001
Naphthalene						0.0015	-	-	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729 B=1968.36 C=222.61	7.3729	1968.360	222.61	128.20	1000	0.0000010	0.000000	0.000000	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	280	0.0000003	0.000000	0.000000	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0001	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	95000	0.0000950	0.000001	0.000010	0.0007
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	110	0.0000001	0.000000	0.000000	0.0000
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	170	0.0000002	0.000000	0.000000	0.0000
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	37000	0.0000370	0.000000	0.000005	0.0003
Trichloroethylene						0.5874	-	-	131.4000	0.0010	0.0017	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	970000	0.0009700	0.000007	0.000133	0.0303
Vinylidene chloride						6.3609	-	-	96.5000	0.0001	0.0015	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	80500	0.0000805	0.000001	0.000015	0.0272
Water						0.3384	-	-	18.0000	0.9976	0.9902	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	997635473	0.9976355	0.055424	0.999542	17.9589
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	31500	0.0000315	0.000000	0.000005	0.0001
																					check:	1.00000
									check:	1.0000	1.0000											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-105 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	2.4359		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	2.3298	lbs			
V_V = Vapor Space Volume (cu ft)	205.2507			V_V =	205.2507	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9313			K_S =	0.9316				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	205.2507	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	205.2507	cu ft			
D = Tank Diameter	8.0000	ft							
H_{VO} = Vapor Space Outage	4.0833	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	4.0833	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	8.0000	ft							
H_L = Average Liquid Height	4.0000	ft							
Roof Outage	0.0833	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0833	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0833	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2500	ft			
R_S = Shell Radius	4.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_v = Vapor Molecular Weight	18.8182			M_V =	18.1374	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3406	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3415	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

As per sources listed on page 6-5 of TANKS user manual:

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9313		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9316		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia					
Vapor Space Outage	4.0833	ft					
Working Losses	26.4855	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	25.3761	lbs	
M_V = Vapor Molecular Weight	18.8182			M_V =	18.1374	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia					K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	166.6667			N =	166.6667		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.3467		$K_N = (180 + N)/6N$	K_N =	0.3467		K_P = working loss product factor, dimensionless
Maximum Liquid Volume	3000.0000	gal					for crude oils $K_P = 0.75$
Maximum Liquid Height	8.0000	ft					
Tank Diameter	8.0000	ft					
K_P = Working Loss Product Factor	1.0000			K_P =	1.00		
Total Losses	28.9213	lb		L_T =	27.7059	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-105 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	26.49	2.44	28.92
Acetone	0.16	0.01	0.18
Benzene	0.00	0.00	0.00
Carbon disulfide	0.01	0.00	0.01
Methyl ethyl ketone	0.05	0.00	0.05
Carbon tetrachloride	0.01	0.00	0.01
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.03	0.00	0.03
Dichloroethane (1,1)	0.01	0.00	0.01
Ethylene dichloride	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Methylene chloride	0.64	0.06	0.70
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Tetrachloroethylene	0.02	0.00	0.02
Toluene	0.04	0.00	0.05
Trichloroethane (1,1,1)	0.24	0.02	0.26
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.20	0.02	0.22
Xylenes (mixed isomers)	0.01	0.00	0.01
Water	25.05	2.30	27.36

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
25.37610	2.32984	27.70594
0.12145	0.01115	0.13260
0.00006	0.00001	0.00006
0.00001	0.00000	0.00001
0.00012	0.00001	0.00013
0.00605	0.00056	0.00660
0.00001	0.00000	0.00001
0.03920	0.00360	0.04280
0.00044	0.00004	0.00048
0.00011	0.00001	0.00012
0.03811	0.00350	0.04161
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00010	0.00001	0.00011
0.00000	0.00000	0.00000
0.00007	0.00001	0.00008
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00102	0.00009	0.00112
0.00000	0.00000	0.00000
0.00002	0.00000	0.00002
0.00047	0.00004	0.00051
0.04241	0.00389	0.04630
0.00014	0.00001	0.00016
25.12630	2.30690	27.43321

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-107
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-7 Leachate

Tank Dimensions

Shell Length (ft)	6.58
Diameter (ft)	3.20
Liquid Height (ft)	6.58
Avg. Liquid Height (ft)	3.29
Volume (gal)	395.00
Turnovers	253.16
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-107 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 7 Leachate	All	49.26	44.94	53.57	47.70	0.3387	0.3386	0.3387	18.0507	-	-	18.01	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	100.20	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9995	0.9963	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	131.40	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 7 Leachate	All	49.26	-	-	47.70	0.3387	-	-	18.0507	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0507
Acetone						2.2051	-	-	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	180000	0.00018	0.000003	0.000056	0.0211
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	179000	0.000179	0.000002	0.000045	0.0075
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	167000	0.000167	0.000002	0.000035	0.0386
Toluene						0.2342	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	100.20	5990	0.00000599	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9995	0.9963	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999450410	0.9994504	0.055525	0.999861	17.9834
Xylenes (mixed isomers)						0.0613	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	131.40	17600	0.0000176	0.000000	0.000002	0.0001
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-107 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**				
Standing Losses (lb)	0.3027		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.3027	lbs		
V_V = Vapor Space Volume (cu ft)	26.4597			V_V =	26.4597	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9442			K_S =	0.9442			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	26.4597	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	26.4597	cu ft		
D = Tank Diameter	3.2000	ft						
H_{VO} = Vapor Space Outage	3.2900	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	3.2900	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	6.5800	ft						
H_L = Average Liquid Height	3.2900	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	1.6000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0507			M_V =	18.0507	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0001	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3387	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9442		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9442			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
Vapor Space Outage	3.2900	ft						
Working Losses	4.1506	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	4.1505	lbs		
M_V = Vapor Molecular Weight	18.0507			M_V =	18.0507	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	253.1646			N =	253.1646			
K_N = Turnover Factor	0.2852		$K_N = (180 + N)/6N$	K_N =	0.2852			
Maximum Liquid Volume	395.0000	gal						
Maximum Liquid Height	6.5800	ft						
Tank Diameter	3.2000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	4.4532	lb		L_T =	4.4532	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-107 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 7 Leachate	4.15	0.30	4.45
Acetone	0.00	0.00	0.01
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Water	4.14	0.30	4.44

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
4.15054	0.30268	4.45322
0.00485	0.00035	0.00521
0.00888	0.00065	0.00953
0.00172	0.00013	0.00184
0.00002	0.00000	0.00002
0.00001	0.00000	0.00001
4.13508	0.30155	4.43663

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-108
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-11 Leachate

Tank Dimensions

Shell Length (ft)	16.00
Diameter (ft)	10.33
Liquid Height (ft)	16.00
Avg. Liquid Height (ft)	5.17
Volume (gal)	10,000.00
Turnovers	20.00
Net Throughput (gal/yr)	200,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-108 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 11 Leachate	All	49.26	44.94	53.57	47.70	0.3384	0.3384	0.3384	18.003	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 11 Leachate	All	49.26	-	-	47.70	0.3384	-	-	18.0030	-	-	18.00	-	-	-	-		-	-	-	-	18.0030
Acetone						2.2051	-	-	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	32000	0.000032	0.000001	0.000010	0.0038
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	14100	0.0000141	0.000000	0.000004	0.0006
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	2580	0.00000258	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	0.9998	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999951320	0.9999513	0.055553	0.999986	17.9987
								check:		**1.0000**	**1.0000**									check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-108 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF		AP-42 EQUATIONS	CALCULATIONS				
Standing Losses (lb)	9.1756		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	9.1751	lbs		
V_V = Vapor Space Volume (cu ft)	907.6512			V_V =	907.6512	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0296			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.8373			K_S =	0.8373			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	907.6512	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	907.6512	cu ft		
D = Tank Diameter	10.3300	ft						
H_{VO} = Vapor Space Outage	10.8300	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	10.8300	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	16.0000	ft						
H_L = Average Liquid Height	5.1700	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	5.1650	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0030			M_V =	18.0030	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0296		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3384	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3384	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8373		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.8373			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Space Outage	10.8300	ft						
Working Losses	29.0118	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	29.0118	lbs		
M_V = Vapor Molecular Weight	18.0030			M_V =	18.0030	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Q = Annual Net Throughput	200,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	4,761.90	bbl/yr		
Annual Turnovers	20.0000			N =	20.0000			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	10000.0000	gal						
Maximum Liquid Height	16.0000	ft						
Tank Diameter	10.3300	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	38.1873	lb		L_T =	38.1869	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-108 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 11 Leachate	29.01	9.18	38.19
Acetone	0.01	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	29.00	9.17	38.18

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
29.01179	9.17510	38.18690
0.00605	0.00191	0.00796
0.00095	0.00030	0.00125
0.00003	0.00001	0.00004
29.00477	9.17288	38.17764

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-109
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-10 Leachate

Tank Dimensions

Shell Length (ft)	8.00
Diameter (ft)	8.00
Liquid Height (ft)	8.00
Avg. Liquid Height (ft)	4.00
Volume (gal)	3,000.00
Turnovers	33.33
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-109 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 10 Leachate	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0253	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9980	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
SLF 10 Leachate	All	49.26	-	-	47.70	0.3386	-	-	18.0253	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0253
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	236000	0.000236	0.000004	0.000073	0.0277
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	50300	0.0000503	0.000001	0.000013	0.0021
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	11900	0.0000119	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	24900	0.0000249	0.000000	0.000005	0.0058
Water						0.3384	-	-	18.0000	0.9997	0.9980	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999701800	0.9997018	0.055539	0.999907	17.9897
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-109 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF		AP-42 EQUATIONS	CALCULATIONS				
Standing Losses (lb)	2.2688		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	2.2688	lbs		
V_V = Vapor Space Volume (cu ft)	201.0619			V_V =	201.0619	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9330			K_S =	0.9330			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	201.0619	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	201.0619	cu ft		
D = Tank Diameter	8.0000	ft						
H_{VO} = Vapor Space Outage	4.0000	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	4.0000	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	8.0000	ft						
H_L = Average Liquid Height	4.0000	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	4.0000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0253			M_V =	18.0253	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9330		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9330			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	4.0000	ft						
Working Losses	14.5300	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	14.5299	lbs		
M_V = Vapor Molecular Weight	18.0253			M_V =	18.0253	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	33.3333			N =	33.3333			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	3000.0000	gal						
Maximum Liquid Height	8.0000	ft						
Tank Diameter	8.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	16.7988	lb		L_T =	16.7988	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-109 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 10 Leachate	14.53	2.27	16.80
Acetone	0.02	0.00	0.03
Methylene chloride	0.00	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Water	14.50	2.26	16.77
Methyl isobutyl ketone	0.00	0.00	0.00

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
14.52995	2.26884	16.79879
0.02231	0.00348	0.02579
0.00464	0.00072	0.00537
0.00169	0.00026	0.00196
14.50123	2.26436	16.76559
0.00007	0.00001	0.00009

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-110
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-10 Leachate

Tank Dimensions

Shell Length (ft)	6.58
Diameter (ft)	3.20
Liquid Height (ft)	6.58
Avg. Liquid Height (ft)	3.29
Volume (gal)	395.00
Turnovers	253.16
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-110 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 10 Leachate	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0253	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9980	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
SLF 10 Leachate	All	49.26	-	-	47.70	0.3386	-	-	18.0253	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0253
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	236000	0.000236	0.000004	0.000073	0.0277
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	50300	0.0000503	0.000001	0.000013	0.0021
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	11900	0.0000119	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	24900	0.0000249	0.000000	0.000005	0.0058
Water						0.3384	-	-	18.0000	0.9997	0.9980	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999701800	0.9997018	0.055539	0.999907	17.9897
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-110 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**				
Standing Losses (lb)	0.3022		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.3022	lbs		
V_V = Vapor Space Volume (cu ft)	26.4597			V_V =	26.4597	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9443			K_S =	0.9443			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	26.4597	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	26.4597	cu ft		
D = Tank Diameter	3.2000	ft						
H_{VO} = Vapor Space Outage	3.2900	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	3.2900	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	6.5800	ft						
H_L = Average Liquid Height	3.2900	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	1.6000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0253			M_V =	18.0253	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9443		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9443			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	3.2900	ft						
Working Losses	4.1435	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	4.1435	lbs		
M_V = Vapor Molecular Weight	18.0253			M_V =	18.0253	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	253.1646			N =	253.1646			
K_N = Turnover Factor	0.2852		$K_N = (180 + N)/6N$	K_N =	0.2852			
Maximum Liquid Volume	395.0000	gal						
Maximum Liquid Height	6.5800	ft						
Tank Diameter	3.2000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	4.4456	lb		L_T =	4.4456	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-110 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 10 Leachate	4.14	0.30	4.45
Acetone	0.01	0.00	0.01
Methylene chloride	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Water	4.14	0.30	4.44
Methyl isobutyl ketone	0.00	0.00	0.00

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
4.14346	0.30217	4.44563
0.00636	0.00046	0.00683
0.00132	0.00010	0.00142
0.00048	0.00004	0.00052
4.13527	0.30157	4.43684
0.00002	0.00000	0.00002

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-111
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-11 Leachate

Tank Dimensions

Shell Length (ft)	6.58
Diameter (ft)	3.20
Liquid Height (ft)	6.58
Avg. Liquid Height (ft)	3.29
Volume (gal)	395.00
Turnovers	506.33
Net Throughput (gal/yr)	200,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-111 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 11 Leachate	All	49.26	44.94	53.57	47.70	0.3384	0.3384	0.3384	18.003	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 11 Leachate	All	49.26	-	-	47.70	0.3384	-	-	18.0030	-	-	18.00	-	-	-	-		-	-	-	-	18.0030
Acetone						2.2051	-	-	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	32000	0.000032	0.000001	0.000010	0.0038
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	14100	0.0000141	0.000000	0.000004	0.0006
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	2580	0.00000258	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	0.9998	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999951320	0.9999513	0.055553	0.999986	17.9987
								check:		**1.0000**	**1.0000**									check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-111 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF		AP-42 EQUATIONS	CALCULATIONS				
Standing Losses (lb)	0.3016		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.3016	lbs		
V_V = Vapor Space Volume (cu ft)	26.4597			V_V =	26.4597	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0296			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9443			K_S =	0.9443			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	26.4597	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	26.4597	cu ft		
D = Tank Diameter	3.2000	ft						
H_{VO} = Vapor Space Outage	3.2900	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	3.2900	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	6.5800	ft						
H_L = Average Liquid Height	3.2900	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	1.6000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0030			M_V =	18.0030	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0296		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3384	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3384	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9443		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9443			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Space Outage	3.2900	ft						
Working Losses	6.5542	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	6.5542	lbs		
M_V = Vapor Molecular Weight	18.0030			M_V =	18.0030	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Q = Annual Net Throughput	200,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	4,761.90	bbl/yr		
Annual Turnovers	506.3291			N =	506.3291			
K_N = Turnover Factor	0.2259		$K_N = (180 + N)/6N$	K_N =	0.2259			
Maximum Liquid Volume	395.0000	gal						
Maximum Liquid Height	6.5800	ft						
Tank Diameter	3.2000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	6.8559	lb		L_T =	6.8559	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-111 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 11 Leachate	6.55	0.30	6.86
Acetone	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Water	6.55	0.30	6.85
Methyl isobutyl ketone	0.00	0.00	0.00

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
6.55425	0.30163	6.85588
0.00137	0.00006	0.00143
0.00021	0.00001	0.00022
6.55266	0.30155	6.85421
0.00001	0.00000	0.00001

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-130
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	10.00
Diameter (ft)	7.60
Liquid Height (ft)	10.00
Avg. Liquid Height (ft)	5.00
Volume (gal)	3,393.52
Turnovers	147.34
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-130 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182	-	-	18.31	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3410	-	-	18.8136	-	-	18.31	-	-	-	-	-	-	-	-	-	18.8136
Acetone						2.2051	-	-	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	969665	0.0009697	0.000017	0.000306	0.1148
Benzene						0.8603	-	-	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	60250	0.0000603	0.000001	0.000014	0.0028
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13	25238	0.0000252	0.000000	0.000006	0.0051
Carbon tetrachloride						1.0831	-	-	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934 B=1242.43 C=230	6.9340	1242.430	230.00	153.84	71768	0.0000718	0.000000	0.000009	0.0042
Chlorobenzene						0.0920	-	-	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	556562	0.0005566	0.000005	0.000090	0.0028
Chloroform						1.8160	-	-	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	224333	0.0002243	0.000002	0.000034	0.0219
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	4867	0.0000049	0.000000	0.000001	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	25745	0.0000257	0.000000	0.000004	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	7686	0.0000077	0.000000	0.000001	0.0009
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	39633	0.0000396	0.000000	0.000007	0.0015
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	5277	0.0000053	0.000000	0.000000	0.0000
Ethylbenzene						0.0739	-	-	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	436369	0.0004364	0.000004	0.000075	0.0017
Methyl ethyl ketone						0.7848			72.1000	0.0008	0.0018	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	826000	0.0008260	0.000011	0.000210	0.0348
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	366931	0.0003669	0.000004	0.000067	0.0028
Methylene chloride						4.3481	-	-	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	1952690	0.0019527	0.000023	0.000421	0.4558
Naphthalene						0.0015	-	-	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729 B=1968.36 C=222.61	7.3729	1968.360	222.61	128.20	30704	0.0000307	0.000000	0.000004	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	1286782	0.0012868	0.000008	0.000140	0.0019
Tetrachloroethylene						0.1445	-	-	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	1667635	0.0016676	0.000010	0.000184	0.0129
Toluene						0.2342	-	-	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	2369878	0.0023699	0.000026	0.000471	0.0298
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	2546767	0.0025468	0.000019	0.000349	0.1681
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	90055	0.0000901	0.000001	0.000012	0.0008
Trichloroethylene						0.5874	-	-	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	4520666	0.0045207	0.000034	0.000630	0.1426
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	1950	0.0000020	0.000000	0.000000	0.0007
Water						0.3384	-	-	18.0000	0.9798	0.9462	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	979784851	0.9797849	0.054432	0.996594	17.8008
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	2127698	0.002127698	0.000020	0.000367	0.0070
																					check:	1.00000
									check:	1.0000	1.0000											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-130 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	2.6894		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	2.6829	lbs			
V_V = Vapor Space Volume (cu ft)	230.4144			V_V =	230.4144	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0012			W_V =	0.0012	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9159			K_S =	0.9159				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	230.4144	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	230.4144	cu ft			
D = Tank Diameter	7.6000	ft							
H_{VO} = Vapor Space Outage	5.0792	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	5.0792	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	10.0000	ft							
H_L = Average Liquid Height	5.0000	ft							
Roof Outage	0.0792	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0792	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0792	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2375	ft			
R_S = Shell Radius	3.8000	ft							
Vapor Density									
W_V = Vapor Density	0.0012	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0012	lb / cu ft			0 deg F = 459.67 R
M_v = Vapor Molecular Weight	18.8182			M_V =	18.8136	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3406	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3415	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9159		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9159			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Vapor Space Outage	5.0792	ft						
Working Losses	28.2894	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	28.2811	lbs		
M_V = Vapor Molecular Weight	18.8182			M_V =	18.8136	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	147.3396			N =	147.3396			
K_N = Turnover Factor	0.3703		$K_N = (180 + N)/6N$	K_N =	0.3703			
Maximum Liquid Volume	3393.5200	gal						
Maximum Liquid Height	10.0000	ft						
Tank Diameter	7.6000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	30.9788	lb		L_T =	30.9640	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-130 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	28.29	2.69	30.98
Acetone	0.17	0.02	0.19
Benzene	0.00	0.00	0.00
Carbon disulfide	0.01	0.00	0.01
Methyl ethyl ketone	0.05	0.01	0.06
Carbon tetrachloride	0.01	0.00	0.01
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.03	0.00	0.04
Dichloroethane (1,1)	0.01	0.00	0.01
Ethylene dichloride	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Methylene chloride	0.69	0.07	0.75
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Tetrachloroethylene	0.02	0.00	0.02
Toluene	0.04	0.00	0.05
Trichloroethane (1,1,1)	0.25	0.02	0.28
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.21	0.02	0.23
Xylenes (mixed isomers)	0.01	0.00	0.01
Water	26.76	2.54	29.30

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
28.28108	2.68294	30.96402
0.17257	0.01637	0.18894
0.00418	0.00040	0.00458
0.00764	0.00072	0.00836
0.05232	0.00496	0.05728
0.00627	0.00060	0.00687
0.00413	0.00039	0.00453
0.03288	0.00312	0.03600
0.00137	0.00013	0.00150
0.00221	0.00021	0.00242
0.00100	0.00009	0.00110
0.00000	0.00000	0.00000
0.00260	0.00025	0.00285
0.68523	0.06501	0.75024
0.00000	0.00000	0.00000
0.00428	0.00041	0.00468
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00284	0.00027	0.00310
0.01944	0.00184	0.02129
0.04480	0.00425	0.04904
0.25274	0.02398	0.27672
0.00123	0.00012	0.00135
0.21432	0.02033	0.23465
0.01053	0.00100	0.01153
26.75849	2.53850	29.29699

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-150
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	14.00
Diameter (ft)	10.00
Liquid Height (ft)	14.00
Avg. Liquid Height (ft)	5.00
Volume (gal)	8,000.00
Turnovers	125.0000
Net Throughput (gal/yr)	1,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-150 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3386	0.3386	0.3387	18.0496	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9964	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3384	-	-	18.0000	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0000
Acetone						2.2051	-	-	58.0800	0.0000	0.0000	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	362	0.0000004	0.000000	0.000000	0.0000
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13		0.0000000	0.000000	0.000000	0.0000
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10		0.0000000	0.000000	0.000000	0.0000
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20		0.0000000	0.000000	0.000000	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94		0.0000000	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13		0.0000000	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	1.0000	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999999638	0.9999996	0.055556	1.000000	18.0000
									check:	1.0000	1.0000										check:	1.00000

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-150 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	7.4454		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	7.4440	lbs			
V_V = Vapor Space Volume (cu ft)	715.0396			V_V =	715.0396	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8595			K_S =	0.8596				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	715.0396	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	715.0396	cu ft			
D = Tank Diameter	10.0000	ft							
H_{VO} = Vapor Space Outage	9.1042	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	9.1042	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	14.0000	ft							
H_L = Average Liquid Height	5.0000	ft							
Roof Outage	0.1042	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1042	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1042	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.3125	ft			
R_S = Shell Radius	5.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0496			M_V =	18.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0001	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3387	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8595		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.8596			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	9.1042	ft						
Working Losses	59.1843	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	58.9773	lbs		
M_V = Vapor Molecular Weight	18.0496			M_V =	18.0000	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	1,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	23,809.52	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	125.0000			N =	125.0000			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.4067		$K_N = (180 + N)/6N$	K_N =	0.4067			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	8000.0000	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	14.0000	ft						
Tank Diameter	10.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	66.6296	lb		L_T =	66.4213	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-150 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	59.18	7.45	66.63
Carbon disulfide	0.00	0.00	0.00
Methylene chloride	0.17	0.02	0.19
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.04	0.01	0.05
Water	58.97	7.42	66.39

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
58.97731	7.44398	66.42129
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00014	0.00002	0.00016
58.97717	7.44396	66.42113

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-158
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	18.00
Diameter (ft)	12.00
Liquid Height (ft)	18.00
Avg. Liquid Height (ft)	9.00
Volume (gal)	15,000.00
Turnovers	33.33
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-158 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182	-	-	18.31	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3410	-	-	18.8136	-	-	18.31	-	-	-	-	-	-	-	-	-	18.8136
Acetone						2.2051	-	-	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	969665	0.0009697	0.000017	0.000306	0.1148
Benzene						0.8603	-	-	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	60250	0.0000603	0.000001	0.000014	0.0028
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13	25238	0.0000252	0.000000	0.000006	0.0051
Carbon tetrachloride						1.0831	-	-	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934 B=1242.43 C=230	6.9340	1242.430	230.00	153.84	71768	0.0000718	0.000000	0.000009	0.0042
Chlorobenzene						0.0920	-	-	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	556562	0.0005566	0.000005	0.000090	0.0028
Chloroform						1.8160	-	-	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	224333	0.0002243	0.000002	0.000034	0.0219
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	4867	0.0000049	0.000000	0.000001	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	25745	0.0000257	0.000000	0.000004	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	7686	0.0000077	0.000000	0.000001	0.0009
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	39633	0.0000396	0.000000	0.000007	0.0015
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	5277	0.0000053	0.000000	0.000000	0.0000
Ethylbenzene						0.0739	-	-	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	436369	0.0004364	0.000004	0.000075	0.0017
Methyl ethyl ketone						0.7848			72.1000	0.0008	0.0018	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	826000	0.0008260	0.000011	0.000210	0.0348
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	366931	0.0003669	0.000004	0.000067	0.0028
Methylene chloride						4.3481	-	-	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	1952690	0.0019527	0.000023	0.000421	0.4558
Naphthalene						0.0015	-	-	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729 B=1968.36 C=222.61	7.3729	1968.360	222.61	128.20	30704	0.0000307	0.000000	0.000004	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	1286782	0.0012868	0.000008	0.000140	0.0019
Tetrachloroethylene						0.1445	-	-	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	1667635	0.0016676	0.000010	0.000184	0.0129
Toluene						0.2342	-	-	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	2369878	0.0023699	0.000026	0.000471	0.0298
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	2546767	0.0025468	0.000019	0.000349	0.1681
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	90055	0.0000901	0.000001	0.000012	0.0008
Trichloroethylene						0.5874	-	-	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	4520666	0.0045207	0.000034	0.000630	0.1426
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	1950	0.0000020	0.000000	0.000000	0.0007
Water						0.3384	-	-	18.0000	0.9798	0.9462	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	979784851	0.9797849	0.054432	0.996594	17.8008
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	2127698	0.002127698	0.000020	0.000367	0.0070
																					check:	1.00000
									check:	1.0000	1.0000											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-158 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	11.2896		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	11.2624	lbs			
V_V = Vapor Space Volume (cu ft)	1032.0132			V_V =	1032.0132	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0012			W_V =	0.0012	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8584			K_S =	0.8584				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	1032.0132	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	1032.0132	cu ft			
D = Tank Diameter	12.0000	ft							
H_{VO} = Vapor Space Outage	9.1250	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	9.1250	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	18.0000	ft							
H_L = Average Liquid Height	9.0000	ft							
Roof Outage	0.125	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.125	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1250	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.3750	ft			
R_S = Shell Radius	6.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0012	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0012	lb / cu ft			0 deg F = 459.67 R
M_v = Vapor Molecular Weight	18.8182			M_V =	18.8136	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0009	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3406	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3415	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8584		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.8584			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Vapor Space Outage	9.1250	ft						
Working Losses	76.4004	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	76.3780	lbs		
M_V = Vapor Molecular Weight	18.8182			M_V =	18.8136	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3410	psia						
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	33.3333			N =	33.3333			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	15000.0000	gal						
Maximum Liquid Height	18.0000	ft						
Tank Diameter	12.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	87.6900	lb		L_T =	87.6404	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-158 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	76.40	11.29	87.69
Acetone	0.47	0.07	0.53
Benzene	0.01	0.00	0.01
Carbon disulfide	0.02	0.00	0.02
Methyl ethyl ketone	0.14	0.02	0.16
Carbon tetrachloride	0.02	0.00	0.02
Chlorobenzene	0.01	0.00	0.01
Chloroform	0.09	0.01	0.10
Dichloroethane (1,1)	0.02	0.00	0.02
Ethylene dichloride	0.01	0.00	0.01
Vinylidene chloride	0.01	0.00	0.01
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.01	0.00	0.01
Methylene chloride	1.85	0.27	2.12
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.01	0.00	0.01
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.01	0.00	0.01
Tetrachloroethylene	0.05	0.01	0.06
Toluene	0.12	0.02	0.14
Trichloroethane (1,1,1)	0.68	0.10	0.78
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.58	0.09	0.66
Xylenes (mixed isomers)	0.03	0.00	0.03
Water	72.27	10.68	82.94

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
76.37797	11.26245	87.64042
0.46606	0.06872	0.53478
0.01130	0.00167	0.01296
0.02062	0.00304	0.02366
0.14130	0.02084	0.16213
0.01694	0.00250	0.01944
0.01117	0.00165	0.01281
0.08880	0.01309	0.10189
0.00369	0.00054	0.00423
0.00596	0.00088	0.00684
0.00270	0.00040	0.00310
0.00000	0.00000	0.00000
0.00703	0.00104	0.00807
1.85059	0.27288	2.12347
0.00000	0.00000	0.00000
0.01155	0.00170	0.01325
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00766	0.00113	0.00879
0.05251	0.00774	0.06025
0.12098	0.01784	0.13882
0.68257	0.10065	0.78322
0.00333	0.00049	0.00382
0.57881	0.08535	0.66415
0.02844	0.00419	0.03263
72.26598	10.65611	82.92208

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-160
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Length (ft)	6.50
Diameter (ft)	9.00
Liquid Height (ft)	6.50
Avg. Liquid Height (ft)	3.25
Volume (gal)	3,000.00
Turnovers	5000.0000
Net Throughput (gal/yr)	15,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-160 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3386	0.3386	0.3387	18.0496	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9964	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3386	-	-	18.0496	-	-	18.00	-	-	-	-	-	-	-	-	-	-	18.0496
Acetone						2.2051	-	-	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	114000	0.000114	0.000002	0.000035	0.0134
Carbon disulfide						3.7484	-	-	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942 B=1169.11 C=241.59	6.9420	1169.110	241.59	76.13	1090	0.0000011	0.000000	0.000000	0.0002
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	4880	4.88E-06	0.000000	0.000001	0.0002
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	470	0.0000005	0.000000	0.000000	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0509
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	1120	1.12E-06	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	0.9997	0.9964	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999658440	0.9996584	0.055537	0.999916	17.9850
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-160 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**		**CALCULATIONS**				
Standing Losses (lb)	2.4310		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	2.4306	lbs			
V_V = Vapor Space Volume (cu ft)	212.7202			V_V =	212.7202	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9434			K_S =	0.9434				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	212.7202	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	212.7202	cu ft			
D = Tank Diameter	9.0000	ft							
H_{VO} = Vapor Space Outage	3.3438	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	3.3438	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	6.5000	ft							
H_L = Average Liquid Height	3.2500	ft							
Roof Outage	0.0938	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0938	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0938	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2813	ft			
R_S = Shell Radius	4.5000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0496			M_V =	18.0496	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0001	psia	$R\ T_{LX}\ W_V\ /\ M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3387	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA}$ - 0.25 delta T_V	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA}$ + 0.25 delta T_V	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9434		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9434			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	3.3438	ft						
Working Losses	376.9358	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	376.9358	lbs		
M_V = Vapor Molecular Weight	18.0496			M_V =	18.0496	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	15,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	357,142.86	bbl/yr		for turnovers >36, K_N = (180 + N)/6N
Annual Turnovers	5000.0000			N =	5,000.0000			for turnovers <36, K_N = 1
K_N = Turnover Factor	0.1727		$K_N = (180 + N)/6N$	K_N =	0.1727			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	3000.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	6.5000	ft						
Tank Diameter	9.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	379.3668	lb		L_T =	379.3665	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-160 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	376.94	2.43	379.37
Carbon disulfide	0.00	0.00	0.00
Methylene chloride	1.06	0.01	1.07
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.28	0.00	0.28
Water	375.59	2.42	378.01

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
376.93581	2.43065	379.36646
0.00454	0.00003	0.00457
1.06207	0.00685	1.06892
0.00029	0.00000	0.00029
0.00425	0.00003	0.00428
0.00008	0.00000	0.00008
0.27911	0.00180	0.28091
375.58548	2.42194	378.00742

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-102
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	32.00
Diameter (ft):	44.00
Liquid Height (ft) :	29.50
Avg. Liquid Height (ft):	15.00
Volume (gallons):	350,000.00
Turnovers:	42.86
Net Throughput(gal/yr):	15,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-102 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0099			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9999	0.9992	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-102 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	244.1874
Vapor Space Volume (cu ft):	26,545.9343
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.7615
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26,545.9343
Tank Diameter (ft):	44.0000
Vapor Space Outage (ft):	17.4583
Tank Shell Height (ft):	32.0000
Average Liquid Height (ft):	15.0000
Roof Outage (ft):	0.4583
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.4583
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	22.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0099
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7615
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3385

Vapor Space Outage (ft):	17.4583
Working Losses (lb):	1,886.7554
Vapor Molecular Weight (lb/lb-mole):	18.0099
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Annual Net Throughput (gal/yr.):	15,000,000.0000
Annual Turnovers:	42.8571
Turnover Factor:	0.8667
Maximum Liquid Volume (gal):	350,000.0000
Maximum Liquid Height (ft):	29.5000
Tank Diameter (ft):	44.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2,130.9427

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-102 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	1,886.76	244.19	2,130.94
Carbon disulfide	0.02	0.00	0.03
Methylene chloride	0.04	0.01	0.05
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	1.40	0.18	1.58
Water	1,885.27	243.99	2,129.26

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-103
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	32.00
Diameter (ft):	44.00
Liquid Height (ft) :	29.50
Avg. Liquid Height (ft):	15.00
Volume (gallons):	350,000.00
Turnovers:	1.43
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-103 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-103 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	246.7768
Vapor Space Volume (cu ft):	26,545.9343
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.7610
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26,545.9343
Tank Diameter (ft):	44.0000
Vapor Space Outage (ft):	17.4583
Tank Shell Height (ft):	32.0000
Average Liquid Height (ft):	15.0000
Roof Outage (ft):	0.4583
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.4583
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	22.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7610
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	17.4583
Working Losses (lb):	73.3280
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	1.4286
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	350,000.0000
Maximum Liquid Height (ft):	29.5000
Tank Diameter (ft):	44.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	320.1048

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-103 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	73.33	246.78	320.10
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.01
Vinylidene chloride	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.31	0.40
Methyl isobutyl ketone	0.00	0.01	0.01
Acetone	0.35	1.18	1.53
Methylene chloride	0.21	0.69	0.90
Trichloroethylene	0.00	0.01	0.01
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.02	0.03
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.01	0.01
Diethyl ether	0.01	0.04	0.05
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.71	0.93
Butanol-(1)	0.00	0.01	0.01
Water	72.43	243.77	316.20

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-105
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Lift Station for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	8.00
Diameter (ft):	8.00
Liquid Height (ft) :	8.00
Avg. Liquid Height (ft):	4.00
Volume (gallons):	3,000.00
Turnovers:	166.67
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-105 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182			18.31	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-105 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	2.4359
Vapor Space Volume (cu ft):	205.2507
Vapor Density (lb/cu ft):	0.0012
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9313
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	205.2507
Tank Diameter (ft):	8.0000
Vapor Space Outage (ft):	4.0833
Tank Shell Height (ft):	8.0000
Average Liquid Height (ft):	4.0000
Roof Outage (ft):	0.0833
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0833
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0012
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0009
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3406
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3415
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9313
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3410
Vapor Space Outage (ft):	4.0833
Working Losses (lb):	26.4855
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	166.6667
Turnover Factor:	0.3467
Maximum Liquid Volume (gal):	3,000.0000
Maximum Liquid Height (ft):	8.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	28.9213

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-105 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	26.49	2.44	28.92
Acetone	0.16	0.01	0.18
Benzene	0.00	0.00	0.00
Carbon disulfide	0.01	0.00	0.01
Methyl ethyl ketone	0.05	0.00	0.05
Carbon tetrachloride	0.01	0.00	0.01
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.03	0.00	0.03
Dichloroethane (1,1)	0.01	0.00	0.01
Dichloroethane (1,2)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Methylene chloride	0.64	0.06	0.70
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Tetrachloroethylene	0.02	0.00	0.02
Toluene	0.04	0.00	0.05
Trichloroethane (1,1,1)	0.24	0.02	0.26
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.20	0.02	0.22
Xylenes (mixed isomers)	0.01	0.00	0.01
Water	25.05	2.30	27.36

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank T-107
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-7 Leachate

Tank Dimensions

Shell Height (ft):	6.58
Diameter (ft):	3.20
Liquid Height (ft) :	6.58
Avg. Liquid Height (ft):	3.29
Volume (gallons):	395.00
Turnovers:	253.16
Net Throughput(gal/yr):	100,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank T-107 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 7 Leachate	All	49.26	44.94	53.57	47.70	0.3387	0.3386	0.3387	18.0507			18.01	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9995	0.9963	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank T-107 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.3027
Vapor Space Volume (cu ft):	26.4597
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9442
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26.4597
Tank Diameter (ft):	3.2000
Vapor Space Outage (ft):	3.2900
Tank Shell Height (ft):	6.5800
Average Liquid Height (ft):	3.2900
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	1.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0507
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0001
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9442
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3387

Vapor Space Outage (ft):	3.2900
Working Losses (lb):	4.1506
Vapor Molecular Weight (lb/lb-mole):	18.0507
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Annual Net Throughput (gal/yr.):	100,000.0000
Annual Turnovers:	253.1646
Turnover Factor:	0.2852
Maximum Liquid Volume (gal):	395.0000
Maximum Liquid Height (ft):	6.5800
Tank Diameter (ft):	3.2000
Working Loss Product Factor:	1.0000
Total Losses (lb):	4.4532

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank T-107 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 7 Leachate	4.15	0.30	4.45
Acetone	0.00	0.00	0.01
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Water	4.14	0.30	4.44

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-108
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-11 Leachate

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	10.33
Liquid Height (ft) :	16.00
Avg. Liquid Height (ft):	5.17
Volume (gallons):	10,000.00
Turnovers:	20.00
Net Throughput(gal/yr):	200,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-108 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 11 Leachate	All	49.26	44.94	53.57	47.70	0.3384	0.3384	0.3384	18.0030			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-108 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	9.1756
Vapor Space Volume (cu ft):	907.6512
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0296
Vented Vapor Saturation Factor:	0.8373
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	907.6512
Tank Diameter (ft):	10.3300
Vapor Space Outage (ft):	10.8300
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	5.1700
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	5.1650
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0030
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0296
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8373
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384

Vapor Space Outage (ft):	10.8300
Working Losses (lb):	29.0118
Vapor Molecular Weight (lb/lb-mole):	18.0030
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	200,000.0000
Annual Turnovers:	20.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	10,000.0000
Maximum Liquid Height (ft):	16.0000
Tank Diameter (ft):	10.3300
Working Loss Product Factor:	1.0000
Total Losses (lb):	38.1873

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-108 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 11 Leachate	29.01	9.18	38.19
Acetone	0.01	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Water	29.00	9.17	38.18
Methyl isobutyl ketone	0.00	0.00	0.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-109
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-10 Leachate

Tank Dimensions

Shell Height (ft):	8.00
Diameter (ft):	8.00
Liquid Height (ft) :	8.00
Avg. Liquid Height (ft):	4.00
Volume (gallons):	3,000.00
Turnovers:	33.33
Net Throughput(gal/yr):	100,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-109 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 10 Leachate	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0253			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9980	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-109 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	2.2688
Vapor Space Volume (cu ft):	201.0619
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9330
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	201.0619
Tank Diameter (ft):	8.0000
Vapor Space Outage (ft):	4.0000
Tank Shell Height (ft):	8.0000
Average Liquid Height (ft):	4.0000
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0253
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9330
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386

Vapor Space Outage (ft):	4.0000
Working Losses (lb):	14.5300
Vapor Molecular Weight (lb/lb-mole):	18.0253
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	100,000.0000
Annual Turnovers:	33.3333
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	3,000.0000
Maximum Liquid Height (ft):	8.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	16.7988

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-109 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 10 Leachate	14.53	2.27	16.80
Acetone	0.02	0.00	0.03
Methylene chloride	0.00	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Water	14.50	2.26	16.77
Methyl isobutyl ketone	0.00	0.00	0.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-110
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-10 Leachate

Tank Dimensions

Shell Height (ft):	6.58
Diameter (ft):	3.20
Liquid Height (ft) :	6.58
Avg. Liquid Height (ft):	3.29
Volume (gallons):	395.00
Turnovers:	253.16
Net Throughput(gal/yr):	100,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-110 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 10 Leachate	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0253			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0003	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9980	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-110 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.3022
Vapor Space Volume (cu ft):	26.4597
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9443
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26.4597
Tank Diameter (ft):	3.2000
Vapor Space Outage (ft):	3.2900
Tank Shell Height (ft):	6.5800
Average Liquid Height (ft):	3.2900
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	1.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0253
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9443
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386

Vapor Space Outage (ft):	3.2900
Working Losses (lb):	4.1435
Vapor Molecular Weight (lb/lb-mole):	18.0253
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	100,000.0000
Annual Turnovers:	253.1646
Turnover Factor:	0.2852
Maximum Liquid Volume (gal):	395.0000
Maximum Liquid Height (ft):	6.5800
Tank Diameter (ft):	3.2000
Working Loss Product Factor:	1.0000
Total Losses (lb):	4.4456

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-110 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 10 Leachate	4.14	0.30	4.45
Acetone	0.01	0.00	0.01
Methylene chloride	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Water	4.14	0.30	4.44
Methyl isobutyl ketone	0.00	0.00	0.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-111
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-11 Leachate

Tank Dimensions

Shell Height (ft):	6.58
Diameter (ft):	3.20
Liquid Height (ft) :	6.58
Avg. Liquid Height (ft):	3.29
Volume (gallons):	395.00
Turnovers:	506.33
Net Throughput(gal/yr):	200,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-111 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 11 Leachate	All	49.26	44.94	53.57	47.70	0.3384	0.3384	0.3384	18.0030			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0000	0.0002	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-111 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.3016
Vapor Space Volume (cu ft):	26.4597
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0296
Vented Vapor Saturation Factor:	0.9443
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26.4597
Tank Diameter (ft):	3.2000
Vapor Space Outage (ft):	3.2900
Tank Shell Height (ft):	6.5800
Average Liquid Height (ft):	3.2900
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	1.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0030
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0296
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9443
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384

Vapor Space Outage (ft):	3.2900
Working Losses (lb):	6.5542
Vapor Molecular Weight (lb/lb-mole):	18.0030
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	200,000.0000
Annual Turnovers:	506.3291
Turnover Factor:	0.2259
Maximum Liquid Volume (gal):	395.0000
Maximum Liquid Height (ft):	6.5800
Tank Diameter (ft):	3.2000
Working Loss Product Factor:	1.0000
Total Losses (lb):	6.8559

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-111 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 11 Leachate	6.55	0.30	6.86
Acetone	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Water	6.55	0.30	6.85
Methyl isobutyl ketone	0.00	0.00	0.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-130
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	10.00
Diameter (ft):	7.60
Liquid Height (ft) :	10.00
Avg. Liquid Height (ft):	5.00
Volume (gallons):	3,393.52
Turnovers:	147.34
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-130 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182			18.31	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-130 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	2.6894
Vapor Space Volume (cu ft):	230.4144
Vapor Density (lb/cu ft):	0.0012
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9159
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	230.4144
Tank Diameter (ft):	7.6000
Vapor Space Outage (ft):	5.0792
Tank Shell Height (ft):	10.0000
Average Liquid Height (ft):	5.0000
Roof Outage (ft):	0.0792
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0792
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	3.8000
Vapor Density	
Vapor Density (lb/cu ft):	0.0012
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0009
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3406
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3415
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9159
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3410
Vapor Space Outage (ft):	5.0792
Working Losses (lb):	28.2894
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	147.3397
Turnover Factor:	0.3703
Maximum Liquid Volume (gal):	3,393.5188
Maximum Liquid Height (ft):	10.0000
Tank Diameter (ft):	7.6000
Working Loss Product Factor:	1.0000
Total Losses (lb):	30.9788

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-130 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	28.29	2.69	30.98
Acetone	0.17	0.02	0.19
Benzene	0.00	0.00	0.00
Carbon disulfide	0.01	0.00	0.01
Methyl ethyl ketone	0.05	0.01	0.06
Carbon tetrachloride	0.01	0.00	0.01
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.03	0.00	0.04
Dichloroethane (1,1)	0.01	0.00	0.01
Dichloroethane (1,2)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Methylene chloride	0.69	0.07	0.75
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Tetrachloroethylene	0.02	0.00	0.02
Toluene	0.04	0.00	0.05
Trichloroethane (1,1,1)	0.25	0.02	0.28
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.21	0.02	0.23
Xylenes (mixed isomers)	0.01	0.00	0.01
Water	26.76	2.54	29.30

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-150
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	14.00
Diameter (ft):	10.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	5.00
Volume (gallons):	8,000.00
Turnovers:	125.00
Net Throughput(gal/yr):	1,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-150 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3386	0.3386	0.3387	18.0496			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9964	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-150 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	7.4454
Vapor Space Volume (cu ft):	715.0396
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8595
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	715.0396
Tank Diameter (ft):	10.0000
Vapor Space Outage (ft):	9.1042
Tank Shell Height (ft):	14.0000
Average Liquid Height (ft):	5.0000
Roof Outage (ft):	0.1042
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1042
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0496
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0001
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8595
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	9.1042
Working Losses (lb):	59.1843
Vapor Molecular Weight (lb/lb-mole):	18.0496
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	1,000,000.0000
Annual Turnovers:	125.0000
Turnover Factor:	0.4067
Maximum Liquid Volume (gal):	8,000.0000
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	66.6296

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-150 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	59.18	7.45	66.63
Carbon disulfide	0.00	0.00	0.00
Methylene chloride	0.17	0.02	0.19
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.04	0.01	0.05
Water	58.97	7.42	66.39

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-158
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	18.00
Diameter (ft):	12.00
Liquid Height (ft) :	18.00
Avg. Liquid Height (ft):	9.00
Volume (gallons):	15,000.00
Turnovers:	33.33
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-158 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3410	0.3406	0.3415	18.8182			18.31	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0010	0.0061	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Benzene						0.8603	0.7574	0.9745	78.1100	0.0001	0.0001	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0003	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Carbon tetrachloride						1.0831	0.9599	1.2191	153.8400	0.0001	0.0002	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0006	0.0001	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0002	0.0012	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0002	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0001	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0004	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0008	0.0019	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0004	0.0002	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0020	0.0242	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0015	0.0012	0.0019	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0013	0.0001	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0017	0.0007	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0024	0.0016	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0025	0.0089	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0001	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0045	0.0076	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0001	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9797	0.9459	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0021	0.0004	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-158 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	11.2896
Vapor Space Volume (cu ft):	1,032.0132
Vapor Density (lb/cu ft):	0.0012
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8584
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,032.0132
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	9.1250
Tank Shell Height (ft):	18.0000
Average Liquid Height (ft):	9.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0012
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0009
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3406
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3415
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8584
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3410
Vapor Space Outage (ft):	9.1250
Working Losses (lb):	76.4004
Vapor Molecular Weight (lb/lb-mole):	18.8182
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3410
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	33.3333
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	15,000.0000
Maximum Liquid Height (ft):	18.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	87.6900

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-158 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	76.40	11.29	87.69
Acetone	0.47	0.07	0.53
Benzene	0.01	0.00	0.01
Carbon disulfide	0.02	0.00	0.02
Methyl ethyl ketone	0.14	0.02	0.16
Carbon tetrachloride	0.02	0.00	0.02
Chlorobenzene	0.01	0.00	0.01
Chloroform	0.09	0.01	0.10
Dichloroethane (1,1)	0.02	0.00	0.02
Dichloroethane (1,2)	0.01	0.00	0.01
Vinylidene chloride	0.01	0.00	0.01
Dimethyl phthalate	0.00	0.00	0.00
Ethylbenzene	0.01	0.00	0.01
Methylene chloride	1.85	0.27	2.12
Cresol (-o)	0.00	0.00	0.00
Methyl isobutyl ketone	0.01	0.00	0.01
Cresol (-p)	0.00	0.00	0.00
Naphthalene	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.01	0.00	0.01
Tetrachloroethylene	0.05	0.01	0.06
Toluene	0.12	0.02	0.14
Trichloroethane (1,1,1)	0.68	0.10	0.78
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.58	0.09	0.66
Xylenes (mixed isomers)	0.03	0.00	0.03
Water	72.27	10.68	82.94

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-160
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Storage Tank for SLF 1-6 Leachate

Tank Dimensions

Shell Height (ft):	6.50
Diameter (ft):	9.00
Liquid Height (ft) :	6.50
Avg. Liquid Height (ft):	3.25
Volume (gallons):	3,000.00
Turnovers:	5,000.00
Net Throughput(gal/yr):	15,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-160 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3386	0.3386	0.3387	18.0496			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0007	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon disulfide						3.7484	3.3805	4.1482	76.1300	0.0000	0.0000	76.13	Option 2: A=6.942, B=1169.11, C=241.59
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9997	0.9964	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-160 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	2.4310
Vapor Space Volume (cu ft):	212.7202
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9434
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	212.7202
Tank Diameter (ft):	9.0000
Vapor Space Outage (ft):	3.3438
Tank Shell Height (ft):	6.5000
Average Liquid Height (ft):	3.2500
Roof Outage (ft):	0.0938
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0938
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	4.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0496
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0001
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9434
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	3.3438
Working Losses (lb):	376.9358
Vapor Molecular Weight (lb/lb-mole):	18.0496
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	15,000,000.0000
Annual Turnovers:	5,000.0000
Turnover Factor:	0.1727
Maximum Liquid Volume (gal):	3,000.0000
Maximum Liquid Height (ft):	6.5000
Tank Diameter (ft):	9.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	379.3668

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-160 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	376.94	2.43	379.37
Carbon disulfide	0.00	0.00	0.00
Methylene chloride	1.06	0.01	1.07
Toluene	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.28	0.00	0.28
Water	375.59	2.42	378.01

Attachment 9
Tanks Software Model Output for Groundwater Tanks

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8001
City	Buffalo
State	New York
Company	Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Cone Bottom

Tank Dimensions

Shell Length (ft)	13
Diameter (ft)	8
Volume (gal)	5,000
Turnovers	200
Net Throughput (gal/yr)	1,000,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York(Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8001 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8001 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0025			18.00	
Benzene						1.1140	0.8320	1.4713	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro (1,1,2) trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						7.8064	6.1950	9.7374	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	VOC	HAP	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8001 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0050	-	-	18.00	-	-	-	-	-	-	-	-	-	-	-	-	18.00501
Benzene						1.1140	-	-	78.11	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.905	1211.033	220.79	71-43-2	X	X	78.11	1600	1.60E-06	2.05E-08	3.69E-07	0.0001
Methylene chloride						5.4129	-	-	84.94	0.0000	0.0001	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.409	1325.900	252.60	75-09-2		X	84.94	3470	3.47E-06	4.09E-08	7.35E-07	0.0010
Trichloro (1,1,2) trifluoroethane						4.2021	-	-	187.38	0.0000	0.0001	187.38	Option 2: A=6.88 B=1099.9 C=227.5	6.880	1099.900	227.50	76-13-1	X		187.38	5660	5.66E-06	3.02E-08	5.44E-07	0.0013
Trichloroethane (1,1,1)						1.5780	-	-	133.42	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.643	2136.600	302.80	71-55-6	X	X	133.42	8670	8.67E-06	6.50E-08	1.17E-06	0.0007
Trichloroethylene						0.7781	-	-	131.40	0.0000	0.0001	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	X	X	131.40	29000	2.90E-05	2.21E-07	3.97E-06	0.0012
Vinylidene chloride						7.8063	-	-	96.50	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.972	1099.400	237.20	75-35-4	X	X	96.50	1000	1.00E-06	1.04E-08	1.87E-07	0.0004
Chloroform						2.3280	-	-	119.38	0.0000	0.0000	119.38		6.493	929.440	196.03	67-66-3	X	X	119.38	4820	4.82E-06	4.04E-08	7.27E-07	0.0006
Carbon tetrachloride						1.3843	-	-	153.84	0.0000	0.0000	153.84		6.934	1242.430	230.00	56-23-5	X	X	153.84	3870	3.87E-06	2.52E-08	4.53E-07	0.0003
Ethylene dichloride						0.9008	-	-	98.95	0.0000	0.0000	98.95		7.025	1272.300	222.90	107-06-2	X	X	98.95	4740	4.74E-06	4.79E-08	8.62E-07	0.0002
Trichloroethane (1,1,2)						0.2315	-	-	133.40	0.0000	0.0000	133.40		6.951	1314.410	209.20	79-00-5	X	X	133.4	2390	2.39E-06	1.79E-08	3.23E-07	0.0000
Tetrachloroethylene						0.1959	-	-	165.83	0.0000	0.0000	165.83		6.98	1386.920	217.53	127-18-4	X	X	165.83	2010	2.01E-06	1.21E-08	2.18E-07	0.0000
Chlorobenzene						0.1260	-	-	112.60	0.0000	0.0000	112.60		6.978	1431.050	217.55	108-90-7	X	X	112.6	2960	2.96E-06	2.63E-08	4.73E-07	0.0000
Tetrachloroethane(1,1,2,2)						0.0401	-	-	167.85	0.0000	0.0000	167.85		6.631	1228.100	179.90	79-34-5	X		167.848	1290	1.29E-06	7.69E-09	1.38E-07	0.0000
Water						0.3384	-	-	18.00	0.9999	0.9997	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	-	-	18.00	999928520	1.00E+00	5.56E-02	1.00E+00	17.9991
									check:	1.0000	1.0000												check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8001 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	11.5611	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	11.5610	lbs			
V_V = Vapor Space Volume (cu ft)	416.2110		V_V =	416.2110	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9331		K_S =	0.9331				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	416.2110	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	416.2110	cu ft			
D = Tank Diameter (ft)	8.0000							
D_E = Effective Diameter (ft)	11.5102	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	11.5102	ft			
H_{VO} = Vapor Space Outage (ft)	4.0000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	4.0000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	13.0000							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight (lb/lb-mole)	18.0025							
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.41	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9331	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9331			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	4.0000						

Working Losses (lb)

	45.9324	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	45.9394	lbs		
Vapor Molecular Weight (lb/lb-mole)	18.0025						Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1,000,000	1 bbl/yr = 42 US gal/yr	Q =	23,809.52	bbl/yr		for turnovers >36, K_N = (180 + N)/6N
Annual Turnovers	200.0000						for turnovers <36, K_N = 1
Turnover Factor	0.3167	$K_N = (180 + N)/6N$	K_N =	0.3167			K_P = working loss product factor, dimensionless
Tank Diameter (ft)	8.0000						for crude oils K_P = 0.75
Working Loss Product Factor	1.0000		K_P =	1			for all other organic liquids, K_P = 1
Total Losses (lb)	57.4934		L_T =	57.5004	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8001 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8001 Liquid	45.93	11.56	57.49
Benzene	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloro (1,1,2) trifluoroethane	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Chloroform			
Carbon tetrachloride			
Ethylene dichloride			
Trichloroethane (1,1,2)			
Tetrachloroethylene			
Chlorobenzene			
Tetrachloroethane(1,1,2,2)			
Water	45.92	11.56	57.48

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
45.93940	11.56104	57.50044
0.00024	0.00006	0.00030
0.00255	0.00064	0.00319
0.00323	0.00081	0.00404
0.00186	0.00047	0.00232
0.00306	0.00077	0.00383
0.00106	0.00027	0.00133
0.00152	0.00038	0.00191
0.00073	0.00018	0.00091
0.00058	0.00015	0.00073
0.00008	0.00002	0.00009
0.00005	0.00001	0.00007
0.00005	0.00001	0.00006
0.00001	0.00000	0.00001
45.92438	11.55726	57.48165

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8002
City	Buffalo
State	New York
Company	Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Cone Bottom

Tank Dimensions

Shell Length (ft)	5
Diameter (ft)	4
Volume (gal)	470
Turnovers	2,127.16
Net Throughput (gal/yr)	1,000,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York(Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8002 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8001 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0025			18.00	
Benzene						1.1140	0.8320	1.4713	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro (1,1,2) trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						7.8064	6.1950	9.7374	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	VOC	HAP	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8001 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0050	-	-	18.00	-	-	-	-	-	-	-	-	-	-	-	-	18.00501
Benzene						1.1140	-	-	78.11	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.905	1211.033	220.79	71-43-2	X	X	78.11	1600	1.60E-06	2.05E-08	3.69E-07	0.0001
Methylene chloride						5.4129	-	-	84.94	0.0000	0.0001	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.409	1325.900	252.60	75-09-2		X	84.94	3470	3.47E-06	4.09E-08	7.35E-07	0.0010
Trichloro (1,1,2) trifluoroethane						4.2021	-	-	187.38	0.0000	0.0001	187.38	Option 2: A=6.88 B=1099.9 C=227.5	6.880	1099.900	227.50	76-13-1	X		187.38	5660	5.66E-06	3.02E-08	5.44E-07	0.0013
Trichloroethane (1,1,1)						1.5780	-	-	133.42	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.643	2136.600	302.80	71-55-6	X	X	133.42	8670	8.67E-06	6.50E-08	1.17E-06	0.0007
Trichloroethylene						0.7781	-	-	131.40	0.0000	0.0001	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	X	X	131.40	29000	2.90E-05	2.21E-07	3.97E-06	0.0012
Vinylidene chloride						7.8063	-	-	96.50	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.972	1099.400	237.20	75-35-4	X	X	96.50	1000	1.00E-06	1.04E-08	1.87E-07	0.0004
Chloroform						2.3280	-	-	119.38	0.0000	0.0000	119.38		6.493	929.440	196.03	67-66-3	X	X	119.38	4820	4.82E-06	4.04E-08	7.27E-07	0.0006
Carbon tetrachloride						1.3843	-	-	153.84	0.0000	0.0000	153.84		6.934	1242.430	230.00	56-23-5	X	X	153.84	3870	3.87E-06	2.52E-08	4.53E-07	0.0003
Ethylene dichloride						0.9008	-	-	98.95	0.0000	0.0000	98.95		7.025	1272.300	222.90	107-06-2	X	X	98.95	4740	4.74E-06	4.79E-08	8.62E-07	0.0002
Trichloroethane (1,1,2)						0.2315	-	-	133.40	0.0000	0.0000	133.40		6.951	1314.410	209.20	79-00-5	X	X	133.4	2390	2.39E-06	1.79E-08	3.23E-07	0.0000
Tetrachloroethylene						0.1959	-	-	165.83	0.0000	0.0000	165.83		6.98	1386.920	217.53	127-18-4	X	X	165.83	2010	2.01E-06	1.21E-08	2.18E-07	0.0000
Chlorobenzene						0.1260	-	-	112.60	0.0000	0.0000	112.60		6.978	1431.050	217.55	108-90-7	X	X	112.6	2960	2.96E-06	2.63E-08	4.73E-07	0.0000
Tetrachloroethane(1,1,2,2)						0.0401	-	-	167.85	0.0000	0.0000	167.85		6.631	1228.100	179.90	79-34-5	X		167.848	1290	1.29E-06	7.69E-09	1.38E-07	0.0000
Water						0.3384	-	-	18.00	0.9999	0.9997	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	-	-	18.00	999928520	1.00E+00	5.56E-02	1.00E+00	17.9991
									check:	1.0000	1.0000												check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8002 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**	**CALCULATIONS**				
Standing Losses (lb)	11.5611	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	1.1501	lbs		
V_V = Vapor Space Volume (cu ft)	416.2110		V_V =	40.0203	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744			
K_S = Vented Vapor Saturation Factor	0.9331		K_S =	0.9654			
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	416.2110	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	40.0203	cu ft		
D = Tank Diameter (ft)	4.0000						
D_E = Effective Diameter (ft)	11.5102	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	5.0475	ft		
H_{VO} = Vapor Space Outage (ft)	2.0000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.0000	ft		Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	5.0000						
Vapor Density							
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight (lb/lb-mole)	18.0025						
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310						
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892			
Tank Paint Solar Absorptance (Shell)	0.8900			0.89			As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.41	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor							As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		
Vented Vapor Saturation Factor							
Vented Vapor Saturation Factor	0.9331	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9654			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	2.0000						
Working Losses (lb)	45.9324	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	26.2246	lbs		
Vapor Molecular Weight (lb/lb-mole)	18.0025						Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1,000,000	1 bbl/yr = 42 US gal/yr	Q =	23,809.52	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	2127.1617						for turnovers <36, K_N = 1
Turnover Factor	0.3167	$K_N = (180 + N)/6N$	K_N =	0.1808			K_P = working loss product factor, dimensionless
Tank Diameter (ft)	4.0000						for crude oils K_P = 0.75
Working Loss Product Factor	1.0000		K_P =	1			for all other organic liquids, K_P = 1
Total Losses (lb)	57.4934		L_T =	27.3748	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8002 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8002 Liquid	26.22	1.15	27.37
Benzene	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloro (1,1,2) trifluoroethane	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Chloroform			
Carbon tetrachloride			
Ethylene dichloride			
Trichloroethane (1,1,2)			
Tetrachloroethylene			
Chlorobenzene			
Tetrachloroethane(1,1,2,2)			
Water	26.22	1.15	27.37

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
26.22462	1.15013	27.37475
0.00014	0.00001	0.00014
0.00146	0.00006	0.00152
0.00184	0.00008	0.00192
0.00106	0.00005	0.00111
0.00175	0.00008	0.00182
0.00060	0.00003	0.00063
0.00087	0.00004	0.00091
0.00042	0.00002	0.00043
0.00033	0.00001	0.00035
0.00004	0.00000	0.00004
0.00003	0.00000	0.00003
0.00003	0.00000	0.00003
0.00000	0.00000	0.00000
26.21605	1.14976	27.36581

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8004
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions

Shell Length (ft)	4.66
Diameter (ft)	4.00
Volume (gal)	550
Turnovers	9.09
Net Throughput (gal/yr)	5,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8007 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
		58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18				

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	MW_i (g/mol)	Detected Compounds Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8004 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0051	-	-	18.00	-	-	-	-	-	-	-	-	-	-	18.0051
Methylene chloride						5.4129	-	-	84.9400	0.0000	0.0002	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.409	1325.900	252.60	75-09-2	84.93	13300	0.000013	0.000000	0.000003	0.0038
Trichloroethane (1,1,1)						1.5780	-	-	133.4200	0.0000	0.0001	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.643	2136.600	302.80	71-55-6	133.4	23800	0.000024	0.000000	0.000003	0.0020
Trichloroethylene						0.7781	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	131.39	7280	0.000007	0.000000	0.000001	0.0003
Xylenes (mixed isomers)						0.0851			106.1600	0.0000	0.0000	106.16		7.009	1462.266	215.11	1330-20-7	106.16	9550	0.000010	0.000000	0.000002	0.0000
Toluene						0.3131			92.1400	0.0000	0.0000	92.14		6.954	1344.800	219.48	108-88-3	92.14	5460	0.000005	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9999	0.9997	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	18.00	999940610	0.999941	0.055552	0.999990	17.9989
									check:	**1.0000**	**1.0000**										check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8007 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF	AP-42 EQUATIONS	CALCULATIONS					
Standing Losses (lb)	1.1500	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	1.0718	lbs			
V_V = Vapor Space Volume (cu ft)	40.0203		V_V =	37.2989	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9654		K_S =	0.9654				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	40.0203	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	37.2989	cu ft			
D = Tank Diameter (ft)	4.0000							
D_E = Effective Diameter (ft)	5.0475	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.8729	ft			
H_{VO} = Vapor Space Outage (ft)	2.0000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.0000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	4.6600							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0000		M_V =	18.0051	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor							As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		
Vented Vapor Saturation Factor							
Vented Vapor Saturation Factor	0.9654	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9654			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	2.0000						
Working Losses (lb)	1.4504	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.7254	lbs		
M_V = Vapor Molecular Weight	18.0000		M_V =	18.0051	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	5,000	1 bbl/yr = 42 US gal/yr	Q =	119.05	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	9.09		N =	9.09			for turnovers <36, K_N = 1
K_N = Turnover Factor	1.0000	$K_N = (180 + N)/6N$	K_N =	1.00			K_P = working loss product factor, dimensionless
Tank Diameter (ft)	4.0000						for crude oils K_P = 0.75
K_P = Working Loss Product Factor	1.0000		K_P =	1.00			for all other organic liquids, K_P = 1
Total Losses (lb)	2.6004		L_T =	1.7971	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8007 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8004 Liquid			
Methylene chloride			
Trichloroethane (1,1,1)			
Trichloroethylene			
Xylenes (mixed isomers)			
Toluene			
Water			

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.72537	1.07177	1.79715
0.00015	0.00023	0.00038
0.00008	0.00012	0.00020
0.00001	0.00002	0.00003
0.00000	0.00000	0.00000
0.00000	0.00001	0.00001
0.72512	1.07140	1.79652

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8005
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions

Shell Length (ft)	6.25	
Diameter (ft)	3.00	
Volume (gal)	300	
Turnovers	33.22	33.33
Net Throughput (gal/yr)	10,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8005 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8005 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0003			18.00	
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	VOC	HAP	Detected Compounds MW$_i$ (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW$_i$	X_i	M_v = M_i [(P X_i)/P_{VA}]
Tank 8005 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0006	-	-	18.00	-	-	-	-	-	-	-	-	-	-	-	-	18.00056
Trichloroethylene						0.7781	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	X	X	131.39	15400	1.54E-05	1.17E-07	2.11E-06	0.0006
Chloroethene						38.1072	-	-	62.4980	0.0000	0.0000	62.50		6.4971	783.400	230.01	75-01-4	X	X	62.498	6.7	6.70E-09	1.07E-10	1.93E-09	0.0000
Water						0.3384	-	-	18.0000	1.0000	1.0000	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	-	-	18	999984593.3	1.00E+00	5.56E-02	1.00E+00	17.9999
									check:	1.0000	1.0000												check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8005 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	0.8156	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.8157	lbs			
V_V = Vapor Space Volume (cu ft)	28.1393		V_V =	28.1393	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9738		K_S =	0.9738				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	28.1393	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	28.1393	cu ft			
D = Tank Diameter (ft)	3.0000							
D_E = Effective Diameter (ft)	4.8873	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.8873	ft			
H_{VO} = Vapor Space Outage (ft)	1.5000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	6.2500							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0003		M_V =	18.0006	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}] + [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9738	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9738			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	1.5000						
Working Losses (lb)	1.4503	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	1.4503	lbs		
M_V = Vapor Molecular Weight	18.0003		M_V =	18.0006	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Q = Annual Net Throughput (gal/yr)	10,000	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr		
Annual Turnovers	33.2200		N =	33.33			
K_N = Turnover Factor	1.0000	$K_N = (180 + N)/6N$	K_N =	1.00			
Tank Diameter (ft)	3.0000						
Working Loss Product Factor	1.0000		K_P =	1.00			
Total Losses (lb)	2.2659		L_T =	2.2660	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8005 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8005 Liquid	1.45	0.82	2.27
Trichloroethylene	0.00	0.00	0.00
Vinyl Chloride			
Water	1.45	0.82	2.27

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1.45031	0.81565	2.26596
0.00005	0.00003	0.00008
0.00000	0.00000	0.00000
1.45026	0.81562	2.26588

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8006
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions

Shell Length (ft)	6.25	
Diameter (ft)	3.00	
Volume (gal)	300	
Turnovers	33.2226	33.33
Net Throughput (gal/yr)	10,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8006 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8006 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0066	-	-	18.00	-
Carbon tetrachloride						1.3843	1.0493	1.8035	153.8400	0.0001	0.0004	153.84	Option 2: A=6.934, B=1242.43, C=230
Water						0.3384	0.3384	0.3384	18.0000	0.9999	0.9996	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	MW_i (g/mol)	Detected Compounds: Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8006 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0085	-	-	18.00	-	-	-	-	-	-	-	-	-	-	18.0085
Carbon tetrachloride						1.3843	-	-	153.8400	0.0001	0.0005	153.84	Option 2: A=6.934 B=1242.43 C=230	6.934	1242.430	230.00	56-23-5	153.84	116000	0.000116	0.000001	0.000014	0.0085
Chloroform						2.3280	-	-	119.3800	0.0000	0.0001	119.38		6.493	929.440	196.03	67-66-3	119.38	8710	0.000009	0.000000	0.000001	0.0011
Water						0.3384	-	-	18.0000	0.9999	0.9995	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	18.00	999875290	0.999875	0.055549	0.999985	17.9988
								check:		**1.0000**	**1.0000**										check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8006 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**		**CALCULATIONS**				
Standing Losses (lb)	0.8160	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.8159	lbs			
V_V = Vapor Space Volume (cu ft)	28.1393		V_V =	28.1393	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9738		K_S =	0.9738				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	28.1393	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	28.1393	cu ft			
D = Tank Diameter (ft)	3.0000							
D_E = Effective Diameter (ft)	4.8873	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.8873	ft			
H_{VO} = Vapor Space Outage (ft)	1.5000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	6.2500							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0066		M_V =	18.0085	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	delta $T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		
Vented Vapor Saturation Factor							
Vented Vapor Saturation Factor	0.9738	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9738			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	1.5000						
Working Losses (lb)	1.4508	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	1.4510	lbs		
M_V = Vapor Molecular Weight	18.0066		M_V =	18.0085	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr	
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384					K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18	
Q = Annual Net Throughput (gal/yr)	10,000	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$	
Annual Turnovers	33.2226		N =	33.33		for turnovers <36, K_N = 1	
K_N = Turnover Factor	1.0000	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless	
Tank Diameter (ft)	3.0000					for crude oils K_P = 0.75	
Working Loss Product Factor	1.0000		K_P =	1.00		for all other organic liquids, K_P = 1	
Total Losses (lb)	2.2668		L_T =	2.2669	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8006 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8006 Liquid	1.45	0.82	2.27
Carbon tetrachloride	0.00	0.00	0.00
Chloroform			
Water	1.45	0.82	2.27

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1.45101	0.81594	2.26695
0.00069	0.00039	0.00108
0.00009	0.00005	0.00014
1.45024	0.81550	2.26574

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8007
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions

Shell Length (ft)	5.00
Diameter (ft)	4.00
Volume (gal)	470
Turnovers	21.28
Net Throughput (gal/yr)	10,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8007 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8007 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0012	-	-	18.00	-
Chlorobenzene						0.1260	0.0884	0.1767	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro (1,1,2) trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9999	0.9996	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	MW_i (g/mol)	Detected Compounds: Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8007 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0021	-	-	18.00	-	-	-	-	-	-	-	-	-	-	18.0021
Chlorobenzene						0.1260	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.978	1431.050	217.55	108-90-7	112.56	3380	0.000003	0.000000	0.000001	0.0000
Methylene chloride						5.4129	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.409	1325.900	252.60	75-09-2	84.93	2900	0.000003	0.000000	0.000001	0.0008
Trichloro (1,1,2) trifluoroethane						4.2021	-	-	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88 B=1099.9 C=227.5	6.88	1099.900	227.50	76-13-1	187.38	2900	0.000003	0.000000	0.000000	0.0006
Trichloroethane (1,1,1)						1.5780	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.643	2136.600	302.80	71-55-6	133.4	2200	0.000002	0.000000	0.000000	0.0002
Trichloroethylene						0.7781	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	131.39	3840	0.000004	0.000000	0.000001	0.0002
Dichloroethane(1,1)						2.7921			98.9600	0.0000	0.0000	98.96		6.985	1171.420	228.13	75-34-3	98.96	390	0.000000	0.000000	0.000000	0.0001
Dichloroethene(1,1)						7.8099			96.9400	0.0000	0.0000	96.94		6.972	1099.400	237.20	75-35-4	96.94	250	0.000000	0.000000	0.000000	0.0001
Ethylene dichloride						0.9008			98.9500	0.0000	0.0000	98.95		7.025	1272.300	222.90	107-06-2	98.95	270	0.000000	0.000000	0.000000	0.0000
Dichloropropane(1,2)						0.5618			112.9800	0.0000	0.0000	112.98		6.965	1296.400	221.00	78-87-5	112.98	25	0.000000	0.000000	0.000000	0.0000
Methyl isobutyl ketone						0.1998			100.1600	0.0000	0.0000	100.16		6.672	1168.400	191.90	108-10-1	100.16	57	0.000000	0.000000	0.000000	0.0000
Benzene						1.1140			78.1100	0.0000	0.0000	78.11		6.905	1211.033	220.79	71-43-2	78.11	69	0.000000	0.000000	0.000000	0.0000
Carbon Tetrachloride						1.3843			153.8400	0.0000	0.0000	153.84		6.934	1242.430	230.00	56-23-5	153.84	930	0.000001	0.000000	0.000000	0.0001
Chloroform						2.3280			119.3800	0.0000	0.0000	119.38		6.493	929.440	196.03	67-66-3	119.38	520	0.000001	0.000000	0.000000	0.0001
Ethylbenzene						0.1023			106.1700	0.0000	0.0000	106.17		6.975	1424.255	213.21	100-41-4	106.17	48	0.000000	0.000000	0.000000	0.0000
Xylenes (mixed isomers)						0.0851			106.1600	0.0000	0.0000	106.16		7.009	1462.266	215.11	1330-20-7	106.16	276	0.000000	0.000000	0.000000	0.0000
Tetrachloroethylene						0.1959			165.8300	0.0000	0.0000	165.83		6.98	1386.920	217.53	127-18-4	165.83	52	0.000000	0.000000	0.000000	0.0000
Toluene						0.3131			92.1400	0.0000	0.0000	92.14		6.954	1344.800	219.48	108-88-3	92.14	130	0.000000	0.000000	0.000000	0.0000
Chloroethene						######			62.4980	0.0000	0.0000	62.50		6.497	783.400	230.01	75-01-4	62.498	190	0.000000	0.000000	0.000000	0.0004
Ethyl acetate						1.0780			88.1100	0.0000	0.0000	88.11		7.101	1244.950	217.88	141-78-6	88.11	45	0.000000	0.000000	0.000000	0.0000
o-Dichlorobenzene						0.0132			147.0100	0.0000	0.0000	147.01		7.07	1649.550	213.32	95-50-1	147.01	11300	0.000011	0.000000	0.000001	0.0000
m-Dichlorobenzene						0.0201			147.0000	0.0000	0.0000	147.00		7.304	1782.400	230.01	541-73-1	147	390	0.000000	0.000000	0.000000	0.0000
p-Dichlorobenzene						0.0168			147.0000	0.0000	0.0000	147.00		6.998	1575.110	208.52	104-46-7	147	2720	0.000003	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	0.9999	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	-	18.00	999967118	0.999967	0.055554	0.999995	17.9995
								check:		1.0000	1.0000										check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8007 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	1.1500	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	1.1501	lbs			
V_V = Vapor Space Volume (cu ft)	40.0203		V_V =	40.0203	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9654		K_S =	0.9654				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	40.0203	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	40.0203	cu ft			
D = Tank Diameter (ft)	4.0000							
D_E = Effective Diameter (ft)	5.0475	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	5.0475	ft			
H_{VO} = Vapor Space Outage (ft)	2.0000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.0000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	5.0000							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0012		M_V =	18.0021	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		
Vented Vapor Saturation Factor							
Vented Vapor Saturation Factor	0.9654	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9654			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	2.0000						
Working Losses (lb)	1.4504	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	1.4505	lbs		
M_V = Vapor Molecular Weight	18.0012		M_V =	18.0021	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr	
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384					K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18	
Q = Annual Net Throughput (gal/yr)	10,000	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$	
Annual Turnovers	21.28		N =	21.28		for turnovers <36, $K_N = 1$	
K_N = Turnover Factor	1.0000	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless	
Tank Diameter (ft)	4.0000					for crude oils $K_P = 0.75$	
K_P = Working Loss Product Factor	1.0000		K_P =	1.00		for all other organic liquids, $K_P = 1$	
Total Losses (lb)	2.6004		L_T =	2.6005	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8007 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8007 Liquid	1.45	1.15	2.60
Chlorobenzene	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloro (1,1,2) trifluoroethane	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Dichloroethane(1,1)			
Dichloroethene(1,1)			
Ethylene dichloride			
Dichloropropane(1,2)			
Methyl isobutyl ketone			
Benzene			
Carbon Tetrachloride			
Chloroform			
Ethylbenzene			
Xylenes (mixed isomers)			
Tetrachloroethylene			
Toluene			
Chloroethene			
Ethyl acetate			
o-Dichlorobenzene			
m-Dichlorobenzene			
p-Dichlorobenzene			
Water	1.45	1.15	2.60

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1.45046	1.15005	2.60051
0.00000	0.00000	0.00000
0.00007	0.00005	0.00012
0.00005	0.00004	0.00009
0.00001	0.00001	0.00003
0.00001	0.00001	0.00002
0.00000	0.00000	0.00001
0.00001	0.00001	0.00002
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00001	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00003	0.00002	0.00006
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
1.45025	1.14989	2.60014

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	T-8008
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions	
Shell Length (ft)	7.60
Diameter (ft)	3.50
Volume (gal)	500
Turnovers	2.00
Net Throughput (gal/yr)	1,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8008 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Water	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0000	-	-	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8008 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0057	-	-	18.00	-
Chlorobenzene						0.0486	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55
Methylene chloride						2.7949	-	-	84.9400	0.0000	0.0002	84.94	Option 2: A=7.409 B=1325.9 C=252.6
Tetrachloroethane(1,1,1,2)						0.0123	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9
Trichloroethane(1,1,2)						0.0900	-	-	133.4000	0.0000	0.0000	133.40	
Trichloroethane (1,1,1)						0.7469	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8
Trichloroethylene						0.3299	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7
Dichloroethene(1,1)						4.2041			96.9400	0.0000	0.0000	96.94	
Ethylene dichloride						0.4013			98.9500	0.0000	0.0000	98.95	
Benzene						0.5086			78.1100	0.0000	0.0000	78.11	
Chloroform						1.0916			119.3800	0.0000	0.0000	119.38	
Ethylbenzene						0.0381			106.1700	0.0000	0.0000	106.17	
Tetrachloroethylene						0.0777			165.8300	0.0000	0.0000	165.83	
Toluene						0.1298			92.1400	0.0000	0.0000	92.14	
Chloroethene						23.8531			62.4980	0.0000	0.0001	62.50	
o-Dichlorobenzene						0.0042			147.0100	0.0000	0.0000	147.01	
Water						0.3384	-	-	18.0000	0.9999	0.9996	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com
									check:	**1.0000**	**1.0000**		

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8008 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	1.3441	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	1.3441	lbs			
V_V = Vapor Space Volume (cu ft)	46.5736		V_V =	46.5736	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9696		K_S =	0.9696				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	46.5736	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	46.5736	cu ft			
D = Tank Diameter (ft)	3.5000							
D_E = Effective Diameter (ft)	5.8211	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	5.8211	ft			
H_{VO} = Vapor Space Outage (ft)	1.7500	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.7500	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	7.6000							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0000		M_V =	18.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9696	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9696		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384					
Vapor Space Outage (ft)	1.7500					

Working Losses (lb)	0.1450	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.1450	lbs	
M_V = Vapor Molecular Weight	18.0000		M_V =	18.0057	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384					K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1,000	1 bbl/yr = 42 US gal/yr	Q =	23.81	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	2.00		N =	2.00		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	1.0000	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless
Tank Diameter (ft)	3.5000					for crude oils $K_P = 0.75$
K_P = Working Loss Product Factor	1.0000		K_P =	1.00		for all other organic liquids, $K_P = 1$
Total Losses (lb)	1.4891		L_T =	1.4891	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8008 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Water	0.15	1.34	1.49

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.14504	1.34410	1.48913
0.00000	0.00000	0.00000
0.00003	0.00032	0.00036
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00004	0.00004
0.00000	0.00002	0.00003
0.00000	0.00003	0.00003
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00001	0.00001
0.00000	0.00001	0.00001
0.00001	0.00011	0.00013
0.00000	0.00000	0.00000
0.14498	1.34355	1.48853

Tank 8008 Liquid
Chlorobenzene
Methylene chloride
Tetrachloroethane(1,1,1,2)
Trichloroethane(1,1,2)
Trichloroethane (1,1,1)
Trichloroethylene
Dichloroethene(1,1)
Ethylene dichloride
Benzene
Chloroform
Ethylbenzene
Tetrachloroethylene
Toluene
Chloroethene
o-Dichlorobenzene
Water

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8009
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank; Projected Volume

Tank Dimensions

Shell Length (ft)	5.90
Diameter (ft)	4.10
Volume (gal)	525
Turnovers	952.38
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8009 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 8009 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0019	-	-	18.00	-
Acetone						2.8026	2.1379	3.6292	58.0800	0	0	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon tetrachloride						1.3843	1.0493	1.8035	153.8400	0	0	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.1260	0.0884	0.1767	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						2.3281	1.7585	3.0372	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethane (1,1,2)						0.2315	0.1630	0.3232	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9999	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_U = M_i [(P X_i)/P_{VA}]$
Tank 8009 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0048	-	-	18.00	-	-	-	-	-	-	-	-	-	-	-	-	18.0048
Acetone						2.8026	-	-	58.0800	0.0000	0.0000	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.117	1210.595	229.66	67-64-1			58.08	1000	0.000001	0.000000	0.000000	0.0001
Carbon tetrachloride						1.3843	-	-	153.8400	0.0000	0.0001	153.84	Option 2: A=6.934 B=1242.43 C=230	6.934	1242.430	230.00	56-23-5	X	X	153.84	13000	0.000013	0.000000	0.000002	0.0010
Chlorobenzene						0.1260	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.978	1431.050	217.55	108-90-7	X	X	112.6	2920	2.92E-06	0.000000	0.000000	0.0000
Chloroform						2.3280	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.493	929.440	196.03	67-66-3	X	X	119.39	4100	0.0000041	0.000000	0.000001	0.0005
Methylene chloride						5.4129	-	-	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.409	1325.900	252.60	75-09-2		X	84.94	8000	0.000008	0.000000	0.000002	0.0023
Trichloroethane (1,1,2)						0.2315	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.951	1314.410	209.20	79-00-5	X	X	133.4	1800	0.0000018	0.000000	0.000000	0.0000
Trichloroethylene						0.7781	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.518	1018.600	192.70	79-01-6	X	X	131.4	8480	8.48E-06	0.000000	0.000001	0.0004
Tetrachloroethane(1,1,1,2)						0.1248			167.8480	0.0000	0.0000	167.85		6.898	1365.880	209.74	630-20-6			167.85	230	2.3E-07	0.000000	0.000000	0.0000
Trichloroethane(1,1,1)						1.5780			133.4000	0.0000	0.0000	133.40		8.643	2136.600	302.80	71-55-6			133.4	590	5.9E-07	0.000000	0.000000	0.0000
Tetrachloroethane(1,1,2,2)						0.0401			167.8480	0.0000	0.0000	167.85		6.631	1228.100	179.90	79-34-5			167.85	520	5.2E-07	0.000000	0.000000	0.0000
Dichloroethene(1,1)						7.8099			96.9400	0.0000	0.0000	96.94		6.972	1099.400	237.20	75-35-4			96.94	66	6.6E-08	0.000000	0.000000	0.0000
Ethylene dichloride						0.9008			98.9500	0.0000	0.0000	98.95		7.025	1272.300	222.90	107-06-2			98.95	1200	0.0000012	0.000000	0.000000	0.0001
Benzene						1.1140			78.1100	0.0000	0.0000	78.11		6.905	1211.033	220.79	71-43-2			78.11	120	1.2E-07	0.000000	0.000000	0.0000
Dibromomethane						22.1637			187.8600	0.0000	0.0000	187.86		6.96	986.590	238.33	74-95-3			187.86	470	4.7E-07	0.000000	0.000000	0.0006
Ethylbenzene						0.1023			106.1700	0.0000	0.0000	106.17		6.975	1424.255	213.21	100-41-4			106.17	200	0.0000002	0.000000	0.000000	0.0000
Ethylene dibromide						0.1225			187.8600	0.0000	0.0000	187.86		6.721	1280.820	201.75	106-93-4			187.86	1500	0.0000015	0.000000	0.000000	0.0000
Xylenes (mixed isomers)						0.0851			106.1600	0.0000	0.0000	106.16		7.009	1462.266	215.11	1330-20-7			106.16	160	1.6E-07	0.000000	0.000000	0.0000
Tetrachloroethylene						0.1959			165.8300	0.0000	0.0000	165.83		6.98	1386.920	217.53	127-18-4			165.83	730	7.3E-07	0.000000	0.000000	0.0000
Toluene						0.3131			92.1400	0.0000	0.0000	92.14		6.954	1344.800	219.48	108-88-3			92.14	1130	1.13E-06	0.000000	0.000000	0.0000
Chloroethene						38.1072			62.4980	0.0000	0.0000	62.50		6.497	783.400	230.01	75-01-4			62.498	180	1.8E-07	0.000000	0.000000	0.0004
Trichloro(1,1,2)trifluoroethane						4.2021			187.3760	0.0000	0.0000	187.38		6.88	1099.900	227.50	76-13-1			187.38	1800	0.0000018	0.000000	0.000000	0.0004
o-Dichlorobenzene						0.0132			147.0100	0.0000	0.0000	147.01		7.07	1649.550	213.32	95-50-1			147.01	4550	4.55E-06	0.000000	0.000001	0.0000
p-Dichlorobenzene						0.0168			147.0000	0.0000	0.0000	147.00		6.998	1575.110	208.52	104-46-7			147	1100	0.0000011	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	0.9999	0.9997	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-				18.00	999946154	0.9999462	0.055553	0.999992	17.9990
									check:	1.0000	1.0000												check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8009 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**		**CALCULATIONS**					
Standing Losses (lb)	1.4246	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	1.4246	lbs				
V_V = Vapor Space Volume (cu ft)	49.6147		V_V =	49.6147	cu ft				
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft				
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744					
K_S = Vented Vapor Saturation Factor	0.9645		K_S =	0.9645					
Tank Vapor Space Volume									
V_V = Vapor Space Volume (cu ft)	49.6147	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	49.6147	cu ft				
D = Tank Diameter (ft)	4.1000								
D_E = Effective Diameter (ft)	5.5512	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	5.5512	ft				
H_{VO} = Vapor Space Outage (ft)	2.0500	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.0500	ft				Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	5.9000								
Vapor Density									
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft				0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0019		M_V =	18.0048	lb/lb-mole				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384								
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C		
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R		
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310								
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892					
Tank Paint Solar Absorptance (Shell)	0.8900			0.89					As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d				I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9645	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9645			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	2.0500						
Working Losses (lb)	14.3714	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	14.3742	lbs		
M_V = Vapor Molecular Weight	18.0019		M_V =	18.0048	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Q = Annual Net Throughput (gal/yr)	500,000	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	952.38		N =	952.38			
K_N = Turnover Factor	0.1982	$K_N = (180 + N)/6N$	K_N =	0.1982			
Tank Diameter (ft)	4.1000						
K_P = Working Loss Product Factor	1.0000		K_P =	1.00			
Total Losses (lb)	15.7960		L_T =	15.7988	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8009 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8009 Liquid	14.37	1.42	15.80
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Tetrachloroethane(1,1,1,2)			
Trichloroethane(1,1,1)			
Tetrachloroethane(1,1,2,2)			
Dichloroethene(1,1)			
Ethylene dichloride			
Benzene			
Dibromomethane			
Ethylbenzene			
Ethylene dibromide			
Xylenes (mixed isomers)			
Tetrachloroethylene			
Toluene			
Chloroethene			
Trichloro(1,1,2)trifluoroethane			
o-Dichlorobenzene			
p-Dichlorobenzene			
Water	14.37	1.42	15.79

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
14.37418	1.42458	15.79876
0.00002	0.00000	0.00002
0.00041	0.00004	0.00045
0.00184	0.00018	0.00202
0.00002	0.00000	0.00002
0.00028	0.00003	0.00031
0.00000	0.00000	0.00000
0.00004	0.00000	0.00004
0.00000	0.00000	0.00000
0.00002	0.00000	0.00002
0.00005	0.00000	0.00005
0.00001	0.00000	0.00001
0.00044	0.00004	0.00049
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00002	0.00000	0.00002
0.00029	0.00003	0.00032
0.00032	0.00003	0.00035
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
14.36953	1.42412	15.79365

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-8010
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Projected Volume

Tank Dimensions

Shell Length (ft)	6.46
Diameter (ft)	5.33
Volume (gal)	1,000
Turnovers	500.00
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8010 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Water	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0000	-	-	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds CAS Number	VOC	HAP	MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
Tank 8010 Liquid	All	58.30	-	-	52.02	0.3384	-	-	18.0000	-	-	18.00	-	-	-	-	-	-	-	-	-	-	-	-	18.0000
Carbon tetrachloride						0.6584	-	-	153.8400	0.0000	0.0000	153.84		6.934	1242.430	230.00	56-23-5	X	X	153.84	1.3	1.3E-09	0.000000	0.000000	0.0000
Chloroform						1.0916	-	-	119.3900	0.0000	0.0000	119.39		6.493	929.440	196.03	67-66-3	X	X	119.39	13.8	1.38E-08	0.000000	0.000000	0.0000
Trichloroethane (1,1,2)						0.0900	-	-	133.4000	0.0000	0.0000	133.40		6.951	1314.410	209.20	79-00-5	X	X	133.4	0.69	6.9E-10	0.000000	0.000000	0.0000
Trichloroethylene						0.3299	-	-	131.4000	0.0000	0.0000	131.40		6.518	1018.600	192.70	79-01-6	X	X	131.4	49	4.9E-08	0.000000	0.000000	0.0000
Tetrachloroethane(1,1,1,2)						0.0470			167.8480	0.0000	0.0000	167.85		6.898	1365.880	209.74	630-20-6			167.85	1.3	1.3E-09	0.000000	0.000000	0.0000
Dichloroethene(1,1)						4.2041			96.9400	0.0000	0.0000	96.94		6.972	1099.400	237.20	75-35-4			96.94	0.61	6.1E-10	0.000000	0.000000	0.0000
Ethylene dichloride						0.4013			98.9500	0.0000	0.0000	98.95		7.025	1272.300	222.90	107-06-2			98.95	0.72	7.2E-10	0.000000	0.000000	0.0000
Tetrachloroethylene						0.0777			165.8300	0.0000	0.0000	165.83		6.98	1386.920	217.53	127-18-4			165.83	1.1	1.1E-09	0.000000	0.000000	0.0000
Toluene						0.1298			92.1400	0.0000	0.0000	92.14		6.954	1344.800	219.48	108-88-3			92.14	11.9	1.19E-08	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	1.0000	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-				18.00	999999919.6	0.9999999	0.055556	1.000000	18.0000
									check:	**1.0000**	**1.0000**														

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8010 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**		**CALCULATIONS**					
Standing Losses (lb)	2.6080	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	2.6080	lbs				
V_V = Vapor Space Volume (cu ft)	91.8073		V_V =	91.8073	cu ft				
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft				
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744					
K_S = Vented Vapor Saturation Factor	0.9544		K_S =	0.9544					
Tank Vapor Space Volume									
V_V = Vapor Space Volume (cu ft)	91.8073	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	91.8073	cu ft				
D = Tank Diameter (ft)	5.3300								
D_E = Effective Diameter (ft)	6.6229	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	6.6229	ft				
H_{VO} = Vapor Space Outage (ft)	2.6650	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.6650	ft				Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	6.4600								
Vapor Density									
W_v = Vapor Density (lb/cu ft)	0.0011	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft				0 deg F = 459.67 R
M_v = Vapor Molecular Weight	18.0000		M_V =	18.0000	lb/lb-mole				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384								
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C		
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R		
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310								
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892					
Tank Paint Solar Absorptance (Shell)	0.8900			0.89					As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d				I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0744	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0744		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	40.7601	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)	0.0000		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)	0.0600		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3384						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3384						
Daily Avg. Liquid Surface Temp. (deg R)	517.9736			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)	16.2750		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9544	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9544			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Vapor Space Outage (ft)	2.6650						
Working Losses (lb)	16.4363	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	16.4363	lbs		
M_V = Vapor Molecular Weight	18.0000		M_V =	18.0000	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3384						
Q = Annual Net Throughput (gal/yr)	500,000	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	500.00		N =	500.00			
K_N = Turnover Factor	0.2267	$K_N = (180 + N)/6N$	K_N =	0.2267			
Tank Diameter (ft)	5.3300						
K_P = Working Loss Product Factor	1.0000		K_P =	1.00			
Total Losses (lb)	19.0442		L_T =	19.0443	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8010 - Horizontal Tank
Buffalo, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 8010 Liquid			
Carbon tetrachloride			
Chloroform			
Trichloroethane (1,1,2)			
Trichloroethylene			
Tetrachloroethane(1,1,1,2)			
Dichloroethene(1,1)			
Ethylene dichloride			
Tetrachloroethylene			
Toluene			
Water	16.44	2.61	19.04

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
16.43626	2.60804	19.04430
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
16.43626	2.60804	19.04430

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8001
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Cone Bottom

Tank Dimensions

Shell Length (ft):	13.00
Diameter (ft):	8.00
Volume (gallons):	5,000.00
Turnovers:	200.00
Net Throughput(gal/yr):	1,000,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8001 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Tank 8001 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0025			18.00	
Benzene						1.1140	0.8320	1.4713	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro(1,1,2)trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						7.8064	6.1950	9.7374	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8001 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	11.5611
Vapor Space Volume (cu ft):	416.2110
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9331
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	416.2110
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	11.5102
Vapor Space Outage (ft):	4.0000
Tank Shell Length (ft):	13.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0025
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9331
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	4.0000
Working Losses (lb):	45.9324
Vapor Molecular Weight (lb/lb-mole):	18.0025
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	1,000,000.0000
Annual Turnovers:	200.0000
Turnover Factor:	0.3167
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	57.4934

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8001 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Tank 8001 Liquid	45.93	11.56	57.49
Trichloro(1,1,2)trifluoroethane	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Water	45.92	11.56	57.48

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8002
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	4.00
Volume (gallons):	470.11
Turnovers:	2,127.18
Net Throughput(gal/yr):	1,000,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8002 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Tank 8002 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0025			18.00	
Benzene						1.1140	0.8320	1.4713	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro(1,1,2)trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						7.8064	6.1950	9.7374	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9998	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8002 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	1.1501
Vapor Space Volume (cu ft):	40.0203
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9654
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	40.0203
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.0475
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0025
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9654
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	26.2206
Vapor Molecular Weight (lb/lb-mole):	18.0025
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	1,000,000.0000
Annual Turnovers:	2,127.1844
Turnover Factor:	0.1808
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	27.3707

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8002 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Tank 8002 Liquid	26.22	1.15	27.37
Trichloro(1,1,2)trifluoroethane	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Water	26.22	1.15	27.37

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8005
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):	6.25
Diameter (ft):	3.00
Volume (gallons):	300.00
Turnovers:	33.22
Net Throughput(gal/yr):	10,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8005 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-8005	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0003			18.00	
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	1.0000	1.0000	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8005 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	0.8156
Vapor Space Volume (cu ft):	28.1393
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9738
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	28.1393
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.8873
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	6.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0003
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9738
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	1.4503
Vapor Molecular Weight (lb/lb-mole):	18.0003
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	10,000.0000
Annual Turnovers:	33.2226
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2.2659

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8005 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-8005	1.45	0.82	2.27
Trichloroethylene	0.00	0.00	0.00
Water	1.45	0.82	2.27

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8006
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):		6.25
Diameter (ft):		3.00
Volume (gallons):		300.00
Turnovers:		33.22
Net Throughput(gal/yr):		10,000.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8006 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-8006	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0066			18.00	
Carbon tetrachloride						1.3843	1.0493	1.8035	153.8400	0.0001	0.0004	153.84	Option 2: A=6.934, B=1242.43, C=230
Water						0.3384	0.3384	0.3384	18.0000	0.9999	0.9996	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8006 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	0.8160
Vapor Space Volume (cu ft):	28.1393
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9738
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	28.1393
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.8873
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	6.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0066
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9738
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	1.4508
Vapor Molecular Weight (lb/lb-mole):	18.0066
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	10,000.0000
Annual Turnovers:	33.2226
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2.2668

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8006 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-8006	1.45	0.82	2.27
Carbon tetrachloride	0.00	0.00	0.00
Water	1.45	0.82	2.27

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8007
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	4.00
Volume (gallons):	470.02
Turnovers:	21.28
Net Throughput(gal/yr):	10,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8007 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Tank 80007 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0012			18.00	
Chlorobenzene						0.1260	0.0884	0.1767	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloro(1,1,2)trifluoroethane						4.2021	3.2712	5.3366	187.3800	0.0000	0.0000	187.38	Option 2: A=6.88, B=1099.9, C=227.5
Trichloroethane (1,1,1)						1.5780	1.1909	2.0704	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9999	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8007 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	1.1500
Vapor Space Volume (cu ft):	40.0203
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9654
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	40.0203
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.0475
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0012
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9654
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	1.4504
Vapor Molecular Weight (lb/lb-mole):	18.0012
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	10,000.0000
Annual Turnovers:	21.2759
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2.6004

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8007 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Tank 80007 Liquid	1.45	1.15	2.60
Trichloro(1,1,2)trifluoroethane	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Water	1.45	1.15	2.60

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8008
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):	7.60
Diameter (ft):	3.50
Volume (gallons):	500.00
Turnovers:	2.00
Net Throughput(gal/yr):	1,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8008 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Water	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0000			18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8008 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	1.3441
Vapor Space Volume (cu ft):	46.5736
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9696
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	46.5736
Tank Diameter (ft):	3.5000
Effective Diameter (ft):	5.8211
Vapor Space Outage (ft):	1.7500
Tank Shell Length (ft):	7.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9696
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	1.7500
Working Losses (lb):	0.1450
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	1,000.0000
Annual Turnovers:	2.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1.4891

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8008 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Water	0.15	1.34	1.49

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8009
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank; Projected Volume

Tank Dimensions

Shell Length (ft):	5.90
Diameter (ft):	4.10
Volume (gallons):	525.00
Turnovers:	952.38
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8009 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Tank 8009 Liquid	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0019			18.00	
Acetone						2.8026	2.1379	3.6292	58.0800	0.0000	0.0000	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Carbon tetrachloride						1.3843	1.0493	1.8035	153.8400	0.0000	0.0000	153.84	Option 2: A=6.934, B=1242.43, C=230
Chlorobenzene						0.1260	0.0884	0.1767	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						2.3281	1.7585	3.0372	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethane (1,1,2)						0.2315	0.1630	0.3232	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.7781	0.5664	1.0511	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	1.0000	0.9999	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8009 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	1.4246
Vapor Space Volume (cu ft):	49.6147
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9645
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	49.6147
Tank Diameter (ft):	4.1000
Effective Diameter (ft):	5.5512
Vapor Space Outage (ft):	2.0500
Tank Shell Length (ft):	5.9000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0019
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9645
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	2.0500
Working Losses (lb):	14.3714
Vapor Molecular Weight (lb/lb-mole):	18.0019
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	952.3810
Turnover Factor:	0.1982
Tank Diameter (ft):	4.1000
Working Loss Product Factor:	1.0000
Total Losses (lb):	15.7960

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8009 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Tank 8009 Liquid	14.37	1.42	15.80
Acetone	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Carbon tetrachloride	0.00	0.00	0.00
Methylene chloride	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Water	14.37	1.42	15.79

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-8010
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Projected Volume

Tank Dimensions

Shell Length (ft):	6.46
Diameter (ft):	5.33
Volume (gallons):	1,000.00
Turnovers:	500.00
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-8010 - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Water	All	58.30	48.11	68.49	52.02	0.3384	0.3384	0.3384	18.0000			18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-8010 - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	2.6080
Vapor Space Volume (cu ft):	91.8073
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9544
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	91.8073
Tank Diameter (ft):	5.3300
Effective Diameter (ft):	6.6229
Vapor Space Outage (ft):	2.6650
Tank Shell Length (ft):	6.4600
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3384
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3384
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9544
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3384
Vapor Space Outage (ft):	2.6650
Working Losses (lb):	16.4363
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3384
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	500.0000
Turnover Factor:	0.2267
Tank Diameter (ft):	5.3300
Working Loss Product Factor:	1.0000
Total Losses (lb):	19.0442

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-8010 - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Water	16.44	2.61	19.04

Attachment 10
Sampling Results for Groundwater Storage Tanks

1550 Balmer Road
Model City, NY 14107
716-286-1550 Phone
716-286-0326 Fax

23 April 2013

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1304101

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **04/23/13 10:30**

Client: Environmental Monitoring

Work Order(s): 1304101

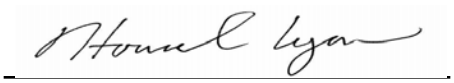
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1304101-01	T8005	Aqueous	04/22/13 10:15	04/22/13 11:21
1304101-02	T8006	Aqueous	04/22/13 10:25	04/22/13 11:21
1304101-03	T8007	Aqueous	04/22/13 10:58	04/22/13 11:21
1304101-04	T8010	Aqueous	04/22/13 10:45	04/22/13 11:21

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

The enclosed analytical results are representative of the sample as received by the laboratory. CWM Chemical Services Laboratory makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. This report is intended for the sole use and benefit of Waste Management and it's companies. No representation concerning significance of the reported data is made to any person or entity. To the best of my knowledge, the information contained in this report is accurate and complete. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

CWM Chemical Services, LLC. **Reported: 04/23/13 10:30**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/22/13 10:15
Work Order:	1304101	Project #:	CWM	Received:	04/22/13 11:21
Lab Sample ID:	1304101-01RE1	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Chloromethane	ND		1000	ug/L	04/22/13	LD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LD	"
Bromomethane	ND		1000	"	"	LD	"
Chloroethane	ND		1000	"	"	LD	"
Trichlorofluoromethane	ND		1000	"	"	LD	"
Diethyl ether	ND		1000	"	"	LD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LD	"
Acetone	ND		1000	"	"	LD	"
1,1-Dichloroethene	ND		1000	"	"	LD	"
Methylene chloride	ND		1000	"	"	LD	"
Carbon disulfide	ND		1000	"	"	LD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LD	"
1,1-Dichloroethane	ND		1000	"	"	LD	"
Vinyl acetate	ND		1000	"	"	LD	"
2-Butanone	ND		1000	"	"	LD	"
Ethyl acetate	ND		1000	"	"	LD	"
Chloroform	ND		1000	"	"	LD	"
1,1,1-Trichloroethane	ND		1000	"	"	LD	"
Carbon tetrachloride	ND		1000	"	"	LD	"
1,2-Dichloroethane	ND		1000	"	"	LD	"
Benzene	ND		1000	"	"	LD	"
Trichloroethene	**7010**		1000	"	"	LD	"
1,2-Dichloropropane	ND		1000	"	"	LD	"
Bromodichloromethane	ND		1000	"	"	LD	"
2-Chloroethylvinyl ether	ND		1000	"	"	LD	"
4-Methyl-2-pentanone	ND		1000	"	"	LD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LD	"
Toluene	ND		1000	"	"	LD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LD	"
1,1,2-Trichloroethane	ND		1000	"	"	LD	"
2-Hexanone	ND		1000	"	"	LD	"
Tetrachloroethene	ND		1000	"	"	LD	"
Dibromochloromethane	ND		1000	"	"	LD	"
Chlorobenzene	ND		1000	"	"	LD	"
Ethylbenzene	ND		1000	"	"	LD	"
Xylenes, total	ND		3000	"	"	LD	"
Styrene	ND		1000	"	"	LD	"
Bromoform	ND		1000	"	"	LD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LD	"
1,3-Dichlorobenzene	ND		1000	"	"	LD	"
1,4-Dichlorobenzene	ND		1000	"	"	LD	"
1,2-Dichlorobenzene	ND		1000	"	"	LD	"
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*85-120*		*"*	LD	*"*
Surrogate: Toluene-d8	*105 %*		*85-115*		*"*	LD	*"*
Surrogate: 4-Bromofluorobenzene	*98.3 %*		*85-115*		*"*	LD	*"*

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/22/13 10:25
Work Order:	1304101	Project #:	CWM	Received:	04/22/13 11:21
Lab Sample ID:	1304101-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Chloromethane	ND		10000	ug/L	04/22/13	LD	EPA 8260C
Vinyl chloride	ND		10000	"	"	LD	"
Bromomethane	ND		10000	"	"	LD	"
Chloroethane	ND		10000	"	"	LD	"
Trichlorofluoromethane	ND		10000	"	"	LD	"
Diethyl ether	ND		10000	"	"	LD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	"	"	LD	"
Acetone	ND		10000	"	"	LD	"
1,1-Dichloroethene	ND		10000	"	"	LD	"
Methylene chloride	ND		10000	"	"	LD	"
Carbon disulfide	ND		10000	"	"	LD	"
trans-1,2-Dichloroethene	ND		10000	"	"	LD	"
1,1-Dichloroethane	ND		10000	"	"	LD	"
Vinyl acetate	ND		10000	"	"	LD	"
2-Butanone	ND		10000	"	"	LD	"
Ethyl acetate	ND		10000	"	"	LD	"
Chloroform	ND		10000	"	"	LD	"
1,1,1-Trichloroethane	ND		10000	"	"	LD	"
Carbon tetrachloride	**102000**		10000	"	"	LD	"
1,2-Dichloroethane	ND		10000	"	"	LD	"
Benzene	ND		10000	"	"	LD	"
Trichloroethene	ND		10000	"	"	LD	"
1,2-Dichloropropane	ND		10000	"	"	LD	"
Bromodichloromethane	ND		10000	"	"	LD	"
2-Chloroethylvinyl ether	ND		10000	"	"	LD	"
4-Methyl-2-pentanone	ND		10000	"	"	LD	"
cis-1,3-Dichloropropene	ND		10000	"	"	LD	"
Toluene	ND		10000	"	"	LD	"
trans-1,3-Dichloropropene	ND		10000	"	"	LD	"
1,1,2-Trichloroethane	ND		10000	"	"	LD	"
2-Hexanone	ND		10000	"	"	LD	"
Tetrachloroethene	ND		10000	"	"	LD	"
Dibromochloromethane	ND		10000	"	"	LD	"
Chlorobenzene	ND		10000	"	"	LD	"
Ethylbenzene	ND		10000	"	"	LD	"
Xylenes, total	ND		30000	"	"	LD	"
Styrene	ND		10000	"	"	LD	"
Bromoform	ND		10000	"	"	LD	"
1,1,2,2-Tetrachloroethane	ND		10000	"	"	LD	"
1,3-Dichlorobenzene	ND		10000	"	"	LD	"
1,4-Dichlorobenzene	ND		10000	"	"	LD	"
1,2-Dichlorobenzene	ND		10000	"	"	LD	"
Surrogate: 1,2-Dichloroethane-d4	*111 %*		*85-120*		"	LD	"
Surrogate: Toluene-d8	*108 %*		*85-115*		"	LD	"
Surrogate: 4-Bromofluorobenzene	*102 %*		*85-115*		"	LD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/22/13 10:58
Work Order:	1304101	Project #:	CWM	Received:	04/22/13 11:21
Lab Sample ID:	1304101-03RE1	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Chloromethane	ND		1000	ug/L	04/22/13	LD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LD	"
Bromomethane	ND		1000	"	"	LD	"
Chloroethane	ND		1000	"	"	LD	"
Trichlorofluoromethane	ND		1000	"	"	LD	"
Diethyl ether	ND		1000	"	"	LD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	**1080**		1000	"	"	LD	"
Acetone	ND		1000	"	"	LD	"
1,1-Dichloroethene	ND		1000	"	"	LD	"
Methylene chloride	**2890**		1000	"	"	LD	"
Carbon disulfide	ND		1000	"	"	LD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LD	"
1,1-Dichloroethane	ND		1000	"	"	LD	"
Vinyl acetate	ND		1000	"	"	LD	"
2-Butanone	ND		1000	"	"	LD	"
Ethyl acetate	ND		1000	"	"	LD	"
Chloroform	ND		1000	"	"	LD	"
1,1,1-Trichloroethane	**1740**		1000	"	"	LD	"
Carbon tetrachloride	ND		1000	"	"	LD	"
1,2-Dichloroethane	ND		1000	"	"	LD	"
Benzene	ND		1000	"	"	LD	"
Trichloroethene	**3840**		1000	"	"	LD	"
1,2-Dichloropropane	ND		1000	"	"	LD	"
Bromodichloromethane	ND		1000	"	"	LD	"
2-Chloroethylvinyl ether	ND		1000	"	"	LD	"
4-Methyl-2-pentanone	ND		1000	"	"	LD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LD	"
Toluene	ND		1000	"	"	LD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LD	"
1,1,2-Trichloroethane	ND		1000	"	"	LD	"
2-Hexanone	ND		1000	"	"	LD	"
Tetrachloroethene	ND		1000	"	"	LD	"
Dibromochloromethane	ND		1000	"	"	LD	"
Chlorobenzene	**2980**		1000	"	"	LD	"
Ethylbenzene	ND		1000	"	"	LD	"
Xylenes, total	ND		3000	"	"	LD	"
Styrene	ND		1000	"	"	LD	"
Bromoform	ND		1000	"	"	LD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LD	"
1,3-Dichlorobenzene	ND		1000	"	"	LD	"
1,4-Dichlorobenzene	**3140**		1000	"	"	LD	"
1,2-Dichlorobenzene	**12900**		1000	"	"	LD	"
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*85-120*		*"*	LD	*"*
Surrogate: Toluene-d8	*105 %*		*85-115*		*"*	LD	*"*
Surrogate: 4-Bromofluorobenzene	*97.5 %*		*85-115*		*"*	LD	*"*

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/22/13 10:45
Work Order:	1304101	Project #:	CWM	Received:	04/22/13 11:21
Lab Sample ID:	1304101-04RE1	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Chloromethane	ND		100	ug/L	04/22/13	LD	EPA 8260C
Vinyl chloride	ND		100	"	"	LD	"
Bromomethane	ND		100	"	"	LD	"
Chloroethane	ND		100	"	"	LD	"
Trichlorofluoromethane	ND		100	"	"	LD	"
Diethyl ether	ND		100	"	"	LD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		100	"	"	LD	"
Acetone	ND		100	"	"	LD	"
1,1-Dichloroethene	ND		100	"	"	LD	"
Methylene chloride	ND		100	"	"	LD	"
Carbon disulfide	ND		100	"	"	LD	"
trans-1,2-Dichloroethene	ND		100	"	"	LD	"
1,1-Dichloroethane	ND		100	"	"	LD	"
Vinyl acetate	ND		100	"	"	LD	"
2-Butanone	ND		100	"	"	LD	"
Ethyl acetate	ND		100	"	"	LD	"
Chloroform	ND		100	"	"	LD	"
1,1,1-Trichloroethane	ND		100	"	"	LD	"
Carbon tetrachloride	ND		100	"	"	LD	"
1,2-Dichloroethane	ND		100	"	"	LD	"
Benzene	ND		100	"	"	LD	"
Trichloroethene	ND		100	"	"	LD	"
1,2-Dichloropropane	ND		100	"	"	LD	"
Bromodichloromethane	ND		100	"	"	LD	"
2-Chloroethylvinyl ether	ND		100	"	"	LD	"
4-Methyl-2-pentanone	ND		100	"	"	LD	"
cis-1,3-Dichloropropene	ND		100	"	"	LD	"
Toluene	ND		100	"	"	LD	"
trans-1,3-Dichloropropene	ND		100	"	"	LD	"
1,1,2-Trichloroethane	ND		100	"	"	LD	"
2-Hexanone	ND		100	"	"	LD	"
Tetrachloroethene	ND		100	"	"	LD	"
Dibromochloromethane	ND		100	"	"	LD	"
Chlorobenzene	ND		100	"	"	LD	"
Ethylbenzene	ND		100	"	"	LD	"
Xylenes, total	ND		300	"	"	LD	"
Styrene	ND		100	"	"	LD	"
Bromoform	ND		100	"	"	LD	"
1,1,2,2-Tetrachloroethane	ND		100	"	"	LD	"
1,3-Dichlorobenzene	ND		100	"	"	LD	"
1,4-Dichlorobenzene	ND		100	"	"	LD	"
1,2-Dichlorobenzene	ND		100	"	"	LD	"
Surrogate: 1,2-Dichloroethane-d4	*106 %*		*85-120*		"	LD	"
Surrogate: Toluene-d8	*103 %*		*85-115*		"	LD	"
Surrogate: 4-Bromofluorobenzene	*96.5 %*		*85-115*		"	LD	"

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis

T-8004

January 2012 - rev. 0

Base Wastewater Sampling (GW Collection System T-8001 111025037CWM.xls, T80(1208026-01

Parameter	Units	Analytical Method	SLF3 System T-8004 10/20/2011	SLF3 System T-8004 08/08/2012	T-8004
Mercury, Total	ng/L	1631	6.9	<25	
Arsenic, dissolved	mg/L	200.7F	<0.005		
Mercury, dissolved	mg/L	1631			
Zinc, dissolved	mg/L	200.7F	0.267		
Phenolic, Total	mg/L	420.4, 420.1			
Volatile Organic Compounds - Purgeables (10)					
Chloromethane	µg/L	8260C	<2500	<2500	<2500
Vinyl Chloride	µg/L	8260C	<2500	<2500	<2500
Bromomethane	µg/L	8260C	<2500	<2500	<2500
Chloroethane	µg/L	8260C	<2500	<2500	<2500
Trichlorofluorometha	µg/L	8260C	<2500	<2500	<2500
Diethyl ether	µg/L	8260C	<2500	<2500	<2500
1,1,2-Trichloro-1,2,2-t	µg/L	8260C	<2500	<2500	<2500
Acetone	µg/L	8260C	<2500	<2500	<2500
1,1-Dichloroethene	µg/L	8260C	<2500	<2500	<2500
Methylene chloride	µg/L	8260C	13300	5450	3430
Carbon disulfide	µg/L	8260C	<2500	<2500	<2500
trans-1,2-Dichlorethe	µg/L	8260C	<2500	<2500	<2500
1,1-Dichloroethane	µg/L	8260C	<2500	<2500	<2500
Vinyl acetate	µg/L	8260C	<2500	<2500	<2500
2-Butanone	µg/L	8260C	<2500	<2500	<2500
Ethyl acetate	µg/L	8260C	<2500	<2500	<2500
Chloroform	µg/L	8260C	<2500	<2500	<2500
1,1,1-Trichloroethane	µg/L	8260C	23800	14300	16400
Carbon tetrachloride	µg/L	8260C	<2500	<2500	<2500
1,2-Dichloroethane	µg/L	8260C	<2500	<2500	<2500
Benzene	µg/L	8260C	<2500	<2500	<2500
Trichloroethene	µg/L	8260C	7280	4260	3480
1,2-Dichlropropane	µg/L	8260C	<2500	<2500	<2500
Bromodichlorometha	µg/L	8260C	<2500	<2500	<2500
2-Chloroethylvinyl eth	µg/L	8260C	<2500	<2500	<2500
4-Methyl-2-pentanon	µg/L	8260C	<2500	<2500	<2500
cis-1,3-Dichloroprope	µg/L	8260C	<2500	<2500	<2500
Toluene	µg/L	8260C	5460	4270	3950
trans-1,3-Dichloropro	µg/L	8260C	<2500	<2500	<2500
1,1,2-Trichloroethane	µg/L	8260C	<2500	<2500	<2500
2-Hexanone	µg/L	8260C	<2500	<2500	<2500
Tetrachloroethene	µg/L	8260C	<2500	<2500	<2500
Dibromochlorometha	µg/L	8260C	<2500	<2500	<2500
Chlorobenzene	µg/L	8260C	<2500	<2500	<2500
Ethylbenezene	µg/L	8260C	<2500	<2500	<2500
Xylenes, total	µg/L	8260C	9550	8820	<7500
Styrene	µg/L	8260C	<2500	<2500	<2500
Bromoform	µg/L	8260C	<2500	<2500	<2500
1,1,2,2-Tetrachloroeth	µg/L	8260C	<2500	<2500	<2500
1,3-Dichlorobenzene	µg/L	8260C	<2500	<2500	<2500
1,4-Dichlorobenzene	µg/L	8260C	<2500	<2500	<2500
1,2-Dichlorobenzene	µg/L	8260C	<2500	<2500	<2500

1242 5630 476 – mg/L

Client Sample ID: EW12
Date Collected: 09/29/14 10:00
Date Received: 09/29/14 13:05

Lab Sample ID: 480-68230-7
Matrix: Ground Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	12000		5000	820	ug/L			10/09/14 19:05	1
1,1,2,2-Tetrachloroethane	7300		5000	210	ug/L			10/09/14 19:05	1
1,1,2-Trichloroethane	880	J	5000	230	ug/L			10/09/14 19:05	1
1,1-Dichloroethane	ND		5000	380	ug/L			10/09/14 19:05	1
1,1-Dichloroethene	1600	J	5000	290	ug/L			10/09/14 19:05	1
1,2-Dichlorobenzene	4300	J	5000	790	ug/L			10/09/14 19:05	1
1,2-Dichloroethane	400	J	5000	210	ug/L			10/09/14 19:05	1
1,2-Dichloropropane	ND		5000	720	ug/L			10/09/14 19:05	1
Benzene	600	J	5000	410	ug/L			10/09/14 19:05	1
Bromoform	ND		5000	260	ug/L			10/09/14 19:05	1
Bromomethane	ND		5000	690	ug/L			10/09/14 19:05	1
Carbon tetrachloride	ND		5000	270	ug/L			10/09/14 19:05	1
Chlorobenzene	2500	J	5000	750	ug/L			10/09/14 19:05	1
Dibromochloromethane	ND		5000	320	ug/L			10/09/14 19:05	1
Chloroethane	ND		5000	320	ug/L			10/09/14 19:05	1
Chloroform	1100	J	5000	340	ug/L			10/09/14 19:05	1
Chloromethane	ND		5000	350	ug/L			10/09/14 19:05	1
Bromodichloromethane	ND		5000	390	ug/L			10/09/14 19:05	1
Ethylbenzene	2400	J	5000	740	ug/L			10/09/14 19:05	1
Methylene Chloride	29000		5000	440	ug/L			10/09/14 19:05	1
Tetrachloroethene	37000		5000	360	ug/L			10/09/14 19:05	1
Toluene	10000		5000	510	ug/L			10/09/14 19:05	1
trans-1,2-Dichloroethene	ND		5000	900	ug/L			10/09/14 19:05	1
trans-1,3-Dichloropropene	ND		5000	370	ug/L			10/09/14 19:05	1
Trichloroethene	18000		5000	460	ug/L			10/09/14 19:05	1
Vinyl chloride	1200	J	5000	900	ug/L			10/09/14 19:05	1
cis-1,3-Dichloropropene	ND		5000	360	ug/L			10/09/14 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 137*		*10/09/14 19:05*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*10/09/14 19:05*	*1*
Toluene-d8 (Surr)	*98*		*71 - 126*		*10/09/14 19:05*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	470	J	10000	440	ug/L		10/02/14 15:39	10/18/14 17:05	1
1,3-Dichlorobenzene	ND		10000	480	ug/L		10/02/14 15:39	10/18/14 17:05	1
1,4-Dichlorobenzene	ND		10000	460	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4,5-Trichlorophenol	ND		5000	480	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4,6-Trichlorophenol	ND		5000	610	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4-Dichlorophenol	ND		5000	510	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4-Dimethylphenol	ND		5000	500	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4-Dinitrophenol	ND		10000	2200	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,4-Dinitrotoluene	ND		5000	450	ug/L		10/02/14 15:39	10/18/14 17:05	1
2,6-Dinitrotoluene	ND		5000	400	ug/L		10/02/14 15:39	10/18/14 17:05	1
2-Chloronaphthalene	ND		5000	460	ug/L		10/02/14 15:39	10/18/14 17:05	1
2-Chlorophenol	ND		5000	530	ug/L		10/02/14 15:39	10/18/14 17:05	1
2-Methylnaphthalene	ND		5000	600	ug/L		10/02/14 15:39	10/18/14 17:05	1
2-Methylphenol	ND		5000	400	ug/L		10/02/14 15:39	10/18/14 17:05	1
2-Nitroaniline	ND		10000	420	ug/L		10/02/14 15:39	10/18/14 17:05	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GW EXT SYS - Even

TestAmerica Job ID: 480-68230-1

Client Sample ID: EW12
Date Collected: 09/29/14 10:00
Date Received: 09/29/14 13:05

Lab Sample ID: 480-68230-7
Matrix: Ground Water

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitrophenol	ND		5000	480	ug/L		10/02/14 15:39	10/18/14 17:05	1
3,3'-Dichlorobenzidine	ND		5000	400	ug/L		10/02/14 15:39	10/18/14 17:05	1
3-Nitroaniline	ND	*	10000	480	ug/L		10/02/14 15:39	10/18/14 17:05	1
4,6-Dinitro-2-methylphenol	ND		10000	2200	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Bromophenyl phenyl ether	ND		5000	450	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Chloro-3-methylphenol	ND		5000	450	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Chloroaniline	ND	*	5000	590	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Chlorophenyl phenyl ether	ND		5000	350	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Methylphenol	ND		10000	360	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Nitroaniline	ND	*	10000	250	ug/L		10/02/14 15:39	10/18/14 17:05	1
4-Nitrophenol	ND		10000	1500	ug/L		10/02/14 15:39	10/18/14 17:05	1
Acenaphthene	ND		5000	410	ug/L		10/02/14 15:39	10/18/14 17:05	1
Acenaphthylene	ND		5000	380	ug/L		10/02/14 15:39	10/18/14 17:05	1
Anthracene	ND		5000	280	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzo[a]anthracene	ND		5000	360	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzo[a]pyrene	ND		5000	470	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzo[b]fluoranthene	ND		5000	340	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzo[g,h,i]perylene	ND		5000	350	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzo[k]fluoranthene	ND		5000	730	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzoic acid	ND	*	150000	100000	ug/L		10/02/14 15:39	10/18/14 17:05	1
Benzyl alcohol	ND		20000	440	ug/L		10/02/14 15:39	10/18/14 17:05	1
Bis(2-chloroethoxy)methane	ND		5000	350	ug/L		10/02/14 15:39	10/18/14 17:05	1
Bis(2-chloroethyl)ether	ND		5000	400	ug/L		10/02/14 15:39	10/18/14 17:05	1
Bis(2-ethylhexyl) phthalate	ND		5000	1800	ug/L		10/02/14 15:39	10/18/14 17:05	1
Butyl benzyl phthalate	ND		5000	420	ug/L		10/02/14 15:39	10/18/14 17:05	1
Chrysene	ND		5000	330	ug/L		10/02/14 15:39	10/18/14 17:05	1
Dibenz(a,h)anthracene	ND		5000	420	ug/L		10/02/14 15:39	10/18/14 17:05	1
Dibenzofuran	ND		10000	510	ug/L		10/02/14 15:39	10/18/14 17:05	1
Diethyl phthalate	**240**	**J**	5000	220	ug/L		10/02/14 15:39	10/18/14 17:05	1
Dimethyl phthalate	ND		5000	360	ug/L		10/02/14 15:39	10/18/14 17:05	1
Di-n-butyl phthalate	ND		5000	310	ug/L		10/02/14 15:39	10/18/14 17:05	1
Di-n-octyl phthalate	ND		5000	470	ug/L		10/02/14 15:39	10/18/14 17:05	1
Fluoranthene	ND		5000	400	ug/L		10/02/14 15:39	10/18/14 17:05	1
Fluorene	ND		5000	360	ug/L		10/02/14 15:39	10/18/14 17:05	1
Hexachlorobenzene	ND		5000	510	ug/L		10/02/14 15:39	10/18/14 17:05	1
Hexachlorobutadiene	ND		5000	680	ug/L		10/02/14 15:39	10/18/14 17:05	1
Hexachlorocyclopentadiene	ND		5000	590	ug/L		10/02/14 15:39	10/18/14 17:05	1
Hexachloroethane	ND		5000	590	ug/L		10/02/14 15:39	10/18/14 17:05	1
Indeno[1,2,3-cd]pyrene	ND		5000	470	ug/L		10/02/14 15:39	10/18/14 17:05	1
Isophorone	ND		5000	430	ug/L		10/02/14 15:39	10/18/14 17:05	1
Naphthalene	ND		5000	760	ug/L		10/02/14 15:39	10/18/14 17:05	1
Nitrobenzene	ND		5000	290	ug/L		10/02/14 15:39	10/18/14 17:05	1
N-Nitrosodimethylamine	ND		10000	2200	ug/L		10/02/14 15:39	10/18/14 17:05	1
N-Nitrosodi-n-propylamine	ND		5000	540	ug/L		10/02/14 15:39	10/18/14 17:05	1
N-Nitrosodiphenylamine	ND		5000	510	ug/L		10/02/14 15:39	10/18/14 17:05	1
Pentachlorophenol	ND		10000	2200	ug/L		10/02/14 15:39	10/18/14 17:05	1
Phenanthrene	**500**	**J B**	5000	440	ug/L		10/02/14 15:39	10/18/14 17:05	1
Phenol	ND		5000	390	ug/L		10/02/14 15:39	10/18/14 17:05	1
Pyrene	ND		5000	340	ug/L		10/02/14 15:39	10/18/14 17:05	1

Client Sample ID: EW12
Lab Sample ID: 480-68230-7
Date Collected: 09/29/14 10:00
Matrix: Ground Water
Date Received: 09/29/14 13:05

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	107		52 - 132	10/02/14 15:39	10/18/14 17:05	1
2,4,6-Tribromophenol (Surr)	85		52 - 132	10/02/14 15:39	10/23/14 13:19	1
2-Fluorobiphenyl	85		48 - 120	10/02/14 15:39	10/18/14 17:05	1
2-Fluorobiphenyl	78		48 - 120	10/02/14 15:39	10/23/14 13:19	1
2-Fluorophenol (Surr)	88		20 - 120	10/02/14 15:39	10/18/14 17:05	1
2-Fluorophenol (Surr)	80		20 - 120	10/02/14 15:39	10/23/14 13:19	1
Nitrobenzene-d5 (Surr)	83		46 - 120	10/02/14 15:39	10/18/14 17:05	1
Nitrobenzene-d5 (Surr)	78		46 - 120	10/02/14 15:39	10/23/14 13:19	1
Phenol-d5 (Surr)	54		16 - 120	10/02/14 15:39	10/18/14 17:05	1
Phenol-d5 (Surr)	51		16 - 120	10/02/14 15:39	10/23/14 13:19	1
p-Terphenyl-d14 (Surr)	103		67 - 150	10/02/14 15:39	10/18/14 17:05	1
p-Terphenyl-d14 (Surr)	93		67 - 150	10/02/14 15:39	10/23/14 13:19	1

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		50	9.2	ug/L		10/07/14 14:56	10/08/14 16:45	1
4,4'-DDE	**17**	**J**	50	12	ug/L		10/07/14 14:56	10/08/14 16:45	1
4,4'-DDT	**69**	**B**	50	11	ug/L		10/07/14 14:56	10/08/14 16:45	1
Alachlor	ND		50	7.9	ug/L		10/07/14 14:56	10/08/14 16:45	1
Aldrin	**43**	**J**	50	8.1	ug/L		10/07/14 14:56	10/08/14 16:45	1
alpha-BHC	**77**	**B**	50	7.7	ug/L		10/07/14 14:56	10/08/14 16:45	1
alpha-Chlordane	ND		50	15	ug/L		10/07/14 14:56	10/08/14 16:45	1
beta-BHC	**31**	**J B**	50	25	ug/L		10/07/14 14:56	10/08/14 16:45	1
Chlordane (technical)	ND		500	290	ug/L		10/07/14 14:56	10/08/14 16:45	1
delta-BHC	**13**	**J B**	50	10	ug/L		10/07/14 14:56	10/08/14 16:45	1
Dieldrin	ND		50	9.8	ug/L		10/07/14 14:56	10/08/14 16:45	1
Endosulfan I	**20**	**J**	50	11	ug/L		10/07/14 14:56	10/08/14 16:45	1
Endosulfan II	ND		50	12	ug/L		10/07/14 14:56	10/08/14 16:45	1
Endosulfan sulfate	ND		50	16	ug/L		10/07/14 14:56	10/08/14 16:45	1
Endrin	ND		50	14	ug/L		10/07/14 14:56	10/08/14 16:45	1
Endrin aldehyde	**23**	**J B**	50	16	ug/L		10/07/14 14:56	10/08/14 16:45	1
gamma-BHC (Lindane)	**32**	**J B**	50	8.0	ug/L		10/07/14 14:56	10/08/14 16:45	1
gamma-Chlordane	**31**	**J B**	50	11	ug/L		10/07/14 14:56	10/08/14 16:45	1
Heptachlor	**130**		50	8.5	ug/L		10/07/14 14:56	10/08/14 16:45	1
Heptachlor epoxide	**63**		50	7.4	ug/L		10/07/14 14:56	10/08/14 16:45	1
Toxaphene	ND		500	120	ug/L		10/07/14 14:56	10/08/14 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	31		20 - 120	10/07/14 14:56	10/08/14 16:45	1
Tetrachloro-m-xylene	75		36 - 120	10/07/14 14:56	10/08/14 16:45	1

Method: 8081B - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND	H	50	9.2	ug/L		10/17/14 13:20	10/18/14 11:37	1
4,4'-DDE	ND	H	50	12	ug/L		10/17/14 13:20	10/18/14 11:37	1
4,4'-DDT	ND	H	50	11	ug/L		10/17/14 13:20	10/18/14 11:37	1
Alachlor	ND	H	50	7.9	ug/L		10/17/14 13:20	10/18/14 11:37	1
Aldrin	ND	H	50	8.1	ug/L		10/17/14 13:20	10/18/14 11:37	1
alpha-BHC	**45**	**J H B**	50	7.7	ug/L		10/17/14 13:20	10/18/14 11:37	1
alpha-Chlordane	ND	H	50	15	ug/L		10/17/14 13:20	10/18/14 11:37	1
beta-BHC	ND	H	50	25	ug/L		10/17/14 13:20	10/18/14 11:37	1

Client Sample ID: EW12
Date Collected: 09/29/14 10:00
Date Received: 09/29/14 13:05

Lab Sample ID: 480-68230-7
Matrix: Ground Water

Method: 8081B - Organochlorine Pesticides (GC) - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND	H	500	290	ug/L		10/17/14 13:20	10/18/14 11:37	1
delta-BHC	**57**	**H**	50	10	ug/L		10/17/14 13:20	10/18/14 11:37	1
Dieldrin	ND	H	50	9.8	ug/L		10/17/14 13:20	10/18/14 11:37	1
Endosulfan I	ND	H	50	11	ug/L		10/17/14 13:20	10/18/14 11:37	1
Endosulfan II	ND	H	50	12	ug/L		10/17/14 13:20	10/18/14 11:37	1
Endosulfan sulfate	ND	H	50	16	ug/L		10/17/14 13:20	10/18/14 11:37	1
Endrin	ND	H	50	14	ug/L		10/17/14 13:20	10/18/14 11:37	1
Endrin aldehyde	**28**	**J H**	50	16	ug/L		10/17/14 13:20	10/18/14 11:37	1
gamma-BHC (Lindane)	**57**	**H**	50	8.0	ug/L		10/17/14 13:20	10/18/14 11:37	1
gamma-Chlordane	ND	H	50	11	ug/L		10/17/14 13:20	10/18/14 11:37	1
Heptachlor	ND	H	50	8.5	ug/L		10/17/14 13:20	10/18/14 11:37	1
Heptachlor epoxide	ND	H	50	7.4	ug/L		10/17/14 13:20	10/18/14 11:37	1
Toxaphene	ND	H	500	120	ug/L		10/17/14 13:20	10/18/14 11:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*20 - 120*	*10/17/14 13:20*	*10/18/14 11:37*	*1*
Tetrachloro-m-xylene	*89*		*36 - 120*	*10/17/14 13:20*	*10/18/14 11:37*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		500	180	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1221	ND		500	180	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1232	ND		500	180	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1242	**2500**		500	180	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1248	ND		500	180	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1254	ND		500	250	ug/L		10/11/14 08:22	10/13/14 10:56	1
PCB-1260	ND		500	250	ug/L		10/11/14 08:22	10/13/14 10:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*88*		*23 - 127*	*10/11/14 08:22*	*10/13/14 10:56*	*1*
DCB Decachlorobiphenyl	*73*		*19 - 126*	*10/11/14 08:22*	*10/13/14 10:56*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		6.0	1.7	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Arsenic	ND		15.0	5.6	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Beryllium	ND		2.0	0.30	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Cadmium	ND		2.0	0.50	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Chromium	ND		4.0	1.0	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Copper	ND		10.0	1.6	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Nickel	ND		10.0	1.3	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Lead	ND		10.0	3.0	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Antimony	ND		20.0	6.8	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Selenium	ND		25.0	8.7	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Thallium	ND		20.0	10.2	mg/L		10/02/14 08:10	10/03/14 18:10	1000
Zinc	**4.7**	**J**	10.0	1.5	mg/L		10/02/14 08:10	10/03/14 18:10	1000

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.12	mg/L		10/03/14 07:40	10/03/14 10:52	1000

1550 Balmer Road
Model City, NY 14107
716-286-1550 Phone
716-286-0326 Fax

28 October 2014

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1410076

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **10/28/14 09:58**

Client: Environmental Monitoring

Work Order(s): 1410076

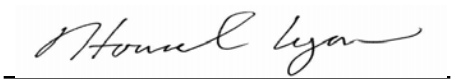
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1410076-01	T8005	Aqueous	10/24/14 10:15	10/24/14 10:39
1410076-02	T8007	Aqueous	10/24/14 10:10	10/24/14 10:39
1410076-03	T8009	Aqueous	10/24/14 10:25	10/24/14 10:39
1410076-04	T8010	Aqueous	10/24/14 10:20	10/24/14 10:39

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

The enclosed analytical results are representative of the sample as received by the laboratory. CWM Chemical Services Laboratory makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. This report is intended for the sole use and benefit of Waste Management and it's companies. No representation concerning significance of the reported data is made to any person or entity. To the best of my knowledge, the information contained in this report is accurate and complete. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:15
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-01RE1	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		50.0	ug/L	10/27/14 13:42	LAD	EPA 8260C
Vinyl chloride	ND		50.0	"	"	LAD	"
Bromomethane	ND		50.0	"	"	LAD	"
Chloroethane	ND		50.0	"	"	LAD	"
Trichlorofluoromethane	ND		50.0	"	"	LAD	"
Diethyl ether	ND		50.0	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		50.0	"	"	LAD	"
Acetone	ND		50.0	"	"	LAD	"
1,1-Dichloroethene	ND		50.0	"	"	LAD	"
Methylene chloride	ND		50.0	"	"	LAD	"
Carbon disulfide	ND		50.0	"	"	LAD	"
trans-1,2-Dichloroethene	ND		50.0	"	"	LAD	"
1,1-Dichloroethane	ND		50.0	"	"	LAD	"
Vinyl acetate	ND		50.0	"	"	LAD	"
2-Butanone	ND		50.0	"	"	LAD	"
Ethyl acetate	ND		50.0	"	"	LAD	"
Chloroform	ND		50.0	"	"	LAD	"
1,1,1-Trichloroethane	ND		50.0	"	"	LAD	"
Carbon tetrachloride	ND		50.0	"	"	LAD	"
1,2-Dichloroethane	ND		50.0	"	"	LAD	"
Benzene	ND		50.0	"	"	LAD	"
Trichloroethene	**552**		50.0	"	"	LAD	"
1,2-Dichloropropane	ND		50.0	"	"	LAD	"
Bromodichloromethane	ND		50.0	"	"	LAD	"
4-Methyl-2-pentanone	ND		50.0	"	"	LAD	"
cis-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
Toluene	ND		50.0	"	"	LAD	"
trans-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
1,1,2-Trichloroethane	ND		50.0	"	"	LAD	"
2-Hexanone	ND		50.0	"	"	LAD	"
Tetrachloroethene	ND		50.0	"	"	LAD	"
Dibromochloromethane	ND		50.0	"	"	LAD	"
Chlorobenzene	ND		50.0	"	"	LAD	"
Ethylbenzene	ND		50.0	"	"	LAD	"
Xylenes (Total)	ND		150	"	"	LAD	"
Styrene	ND		50.0	"	"	LAD	"
Bromoform	ND		50.0	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		50.0	"	"	LAD	"
1,3-Dichlorobenzene	ND		50.0	"	"	LAD	"
1,4-Dichlorobenzene	ND		50.0	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 10/28/14 09:58**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:15
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-01RE1	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		50.0	ug/L	10/27/14 13:42	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*99.0 %*		*80-127*		"	LAD	"
Surrogate: Toluene-d8	*97.2 %*		*82-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*94.1 %*		*79-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:10
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-02	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		1000	ug/L	10/24/14 19:15	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**2620**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	ND		1000	"	"	LAD	"
1,1,1-Trichloroethane	**1380**		1000	"	"	LAD	"
Carbon tetrachloride	ND		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**2510**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**1900**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	**1810**		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 10/28/14 09:58**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:10
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-02	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**7580**		1000	ug/L	10/24/14 19:15	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*98.2 %*		*80-127*		"	LAD	"
Surrogate: Toluene-d8	*97.7 %*		*82-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*93.1 %*		*79-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:25
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-03RE1	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		1000	ug/L	10/27/14 14:13	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**4130**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	**2250**		1000	"	"	LAD	"
1,1,1-Trichloroethane	ND		1000	"	"	LAD	"
Carbon tetrachloride	**3030**		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**3130**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**1660**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	ND		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 10/28/14 09:58**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:25
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-03RE1	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**2530**		1000	ug/L	10/27/14 14:13	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*98.3 %*		*80-127*		"	LAD	"
Surrogate: Toluene-d8	*98.7 %*		*82-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*93.1 %*		*79-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:20
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-04	Client Sample ID:	T8010		Aqueous

Volatiles - Aqueous

Prep Method: EPA 5030C

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Chloromethane	ND		50.0	ug/L	10/24/14 20:18	LAD	EPA 8260C
Vinyl chloride	ND		50.0	"	"	LAD	"
Bromomethane	ND		50.0	"	"	LAD	"
Chloroethane	ND		50.0	"	"	LAD	"
Trichlorofluoromethane	ND		50.0	"	"	LAD	"
Diethyl ether	ND		50.0	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		50.0	"	"	LAD	"
Acetone	ND		50.0	"	"	LAD	"
1,1-Dichloroethene	ND		50.0	"	"	LAD	"
Methylene chloride	ND		50.0	"	"	LAD	"
Carbon disulfide	ND		50.0	"	"	LAD	"
trans-1,2-Dichloroethene	ND		50.0	"	"	LAD	"
1,1-Dichloroethane	ND		50.0	"	"	LAD	"
Vinyl acetate	ND		50.0	"	"	LAD	"
2-Butanone	ND		50.0	"	"	LAD	"
Ethyl acetate	ND		50.0	"	"	LAD	"
Chloroform	ND		50.0	"	"	LAD	"
1,1,1-Trichloroethane	ND		50.0	"	"	LAD	"
Carbon tetrachloride	ND		50.0	"	"	LAD	"
1,2-Dichloroethane	ND		50.0	"	"	LAD	"
Benzene	ND		50.0	"	"	LAD	"
Trichloroethene	ND		50.0	"	"	LAD	"
1,2-Dichloropropane	ND		50.0	"	"	LAD	"
Bromodichloromethane	ND		50.0	"	"	LAD	"
4-Methyl-2-pentanone	ND		50.0	"	"	LAD	"
cis-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
Toluene	ND		50.0	"	"	LAD	"
trans-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
1,1,2-Trichloroethane	ND		50.0	"	"	LAD	"
2-Hexanone	ND		50.0	"	"	LAD	"
Tetrachloroethene	ND		50.0	"	"	LAD	"
Dibromochloromethane	ND		50.0	"	"	LAD	"
Chlorobenzene	ND		50.0	"	"	LAD	"
Ethylbenzene	ND		50.0	"	"	LAD	"
Xylenes (Total)	ND		150	"	"	LAD	"
Styrene	ND		50.0	"	"	LAD	"
Bromoform	ND		50.0	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		50.0	"	"	LAD	"
1,3-Dichlorobenzene	ND		50.0	"	"	LAD	"
1,4-Dichlorobenzene	ND		50.0	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 10/28/14 09:58**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 10:20
Work Order:	1410076	Project #:	CWM	Received:	10/24/14 10:39
Lab Sample ID:	1410076-04	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		50.0	ug/L	10/24/14 20:18	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*94.7 %*		*80-127*		"	LAD	"
Surrogate: Toluene-d8	*98.1 %*		*82-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*93.4 %*		*79-115*		"	LAD	"

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
**	Method is not covered under the laboratory's ELAP certifications.
***	For each PCB fuel sample prepared by method 3580A, the chromatogram is reviewed for large, unexpected peaks. Unless otherwise noted, no such peaks were found.

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28 October 2014

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1410077

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **10/28/14 09:48**

Client: Environmental Monitoring

Work Order(s): 1410077

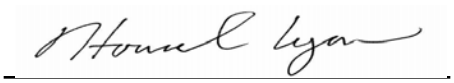
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1410077-01	T8006	Aqueous	10/24/14 12:45	10/24/14 12:50

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

The enclosed analytical results are representative of the sample as received by the laboratory. CWM Chemical Services Laboratory makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. This report is intended for the sole use and benefit of Waste Management and it's companies. No representation concerning significance of the reported data is made to any person or entity. To the best of my knowledge, the information contained in this report is accurate and complete. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 12:45
Work Order:	1410077	Project #:	CWM	Received:	10/24/14 12:50
Lab Sample ID:	1410077-01	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		10000	ug/L	10/24/14 16:04	LAD	EPA 8260C
Vinyl chloride	ND		10000	"	"	LAD	"
Bromomethane	ND		10000	"	"	LAD	"
Chloroethane	ND		10000	"	"	LAD	"
Trichlorofluoromethane	ND		10000	"	"	LAD	"
Diethyl ether	ND		10000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	"	"	LAD	"
Acetone	ND		10000	"	"	LAD	"
1,1-Dichloroethene	ND		10000	"	"	LAD	"
Methylene chloride	ND		10000	"	"	LAD	"
Carbon disulfide	ND		10000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		10000	"	"	LAD	"
1,1-Dichloroethane	ND		10000	"	"	LAD	"
Vinyl acetate	ND		10000	"	"	LAD	"
2-Butanone	ND		10000	"	"	LAD	"
Ethyl acetate	ND		10000	"	"	LAD	"
Chloroform	ND		10000	"	"	LAD	"
1,1,1-Trichloroethane	ND		10000	"	"	LAD	"
Carbon tetrachloride	**68100**		10000	"	"	LAD	"
1,2-Dichloroethane	ND		10000	"	"	LAD	"
Benzene	ND		10000	"	"	LAD	"
Trichloroethene	ND		10000	"	"	LAD	"
1,2-Dichloropropane	ND		10000	"	"	LAD	"
Bromodichloromethane	ND		10000	"	"	LAD	"
4-Methyl-2-pentanone	ND		10000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		10000	"	"	LAD	"
Toluene	ND		10000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		10000	"	"	LAD	"
1,1,2-Trichloroethane	ND		10000	"	"	LAD	"
2-Hexanone	ND		10000	"	"	LAD	"
Tetrachloroethene	ND		10000	"	"	LAD	"
Dibromochloromethane	ND		10000	"	"	LAD	"
Chlorobenzene	ND		10000	"	"	LAD	"
Ethylbenzene	ND		10000	"	"	LAD	"
Xylenes (Total)	ND		30000	"	"	LAD	"
Styrene	ND		10000	"	"	LAD	"
Bromoform	ND		10000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		10000	"	"	LAD	"
1,3-Dichlorobenzene	ND		10000	"	"	LAD	"
1,4-Dichlorobenzene	ND		10000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 10/28/14 09:48**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/24/14 12:45
Work Order:	1410077	Project #:	CWM	Received:	10/24/14 12:50
Lab Sample ID:	1410077-01	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10000	ug/L	10/24/14 16:04	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*98.5 %*		*80-127*		"	LAD	"
Surrogate: Toluene-d8	*98.1 %*		*82-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*95.2 %*		*79-115*		"	LAD	"

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
**	Method is not covered under the laboratory's ELAP certifications.
***	For each PCB fuel sample prepared by method 3580A, the chromatogram is reviewed for large, unexpected peaks. Unless otherwise noted, no such peaks were found.

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26 October 2015

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1510048

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **10/26/15 09:17**

Client: Environmental Monitoring

Work Order(s): 1510048

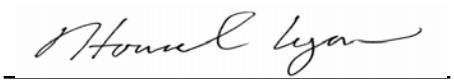
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1510048-01	T8005	Aqueous	10/19/15 12:43	10/19/15 13:38
1510048-02	T8006	Aqueous	10/19/15 12:15	10/19/15 13:38
1510048-03	T8007	Aqueous	10/19/15 13:01	10/19/15 13:38
1510048-04	T8009	Aqueous	10/19/15 11:42	10/19/15 13:38
1510048-05	T8010	Aqueous	10/19/15 11:31	10/19/15 13:38

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

The enclosed analytical results are representative of the sample as received by the laboratory. CWM Chemical Services Laboratory makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. This report is intended for the sole use and benefit of Waste Management and it's companies. No representation concerning significance of the reported data is made to any person or entity. To the best of my knowledge, the information contained in this report is accurate and complete. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 12:43
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C			*Prepared: 10/20/15 06:34*			*Batch: D15J083*	
Chloromethane	ND		1000	ug/L	10/20/15 12:17	JLG	EPA 8260C
Vinyl chloride	ND		1000	"	"	JLG	"
Bromomethane	ND		1000	"	"	JLG	"
Chloroethane	ND		1000	"	"	JLG	"
Trichlorofluoromethane	ND		1000	"	"	JLG	"
Diethyl ether	ND		1000	"	"	JLG	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	JLG	"
Acetone	ND		1000	"	"	JLG	"
1,1-Dichloroethene	ND		1000	"	"	JLG	"
Methylene chloride	ND		1000	"	"	JLG	"
Carbon disulfide	ND		1000	"	"	JLG	"
trans-1,2-Dichloroethene	ND		1000	"	"	JLG	"
1,1-Dichloroethane	ND		1000	"	"	JLG	"
Vinyl acetate	ND		1000	"	"	JLG	"
2-Butanone	ND		1000	"	"	JLG	"
Ethyl acetate	ND		1000	"	"	JLG	"
Chloroform	ND		1000	"	"	JLG	"
1,1,1-Trichloroethane	ND		1000	"	"	JLG	"
Carbon tetrachloride	ND		1000	"	"	JLG	"
1,2-Dichloroethane	ND		1000	"	"	JLG	"
Benzene	ND		1000	"	"	JLG	"
Trichloroethene	**6510**		1000	"	"	JLG	"
1,2-Dichloropropane	ND		1000	"	"	JLG	"
Bromodichloromethane	ND		1000	"	"	JLG	"
4-Methyl-2-pentanone	ND		1000	"	"	JLG	"
cis-1,3-Dichloropropene	ND		1000	"	"	JLG	"
Toluene	ND		1000	"	"	JLG	"
trans-1,3-Dichloropropene	ND		1000	"	"	JLG	"
1,1,2-Trichloroethane	ND		1000	"	"	JLG	"
2-Hexanone	ND		1000	"	"	JLG	"
Tetrachloroethene	ND		1000	"	"	JLG	"
Dibromochloromethane	ND		1000	"	"	JLG	"
Chlorobenzene	ND		1000	"	"	JLG	"
Ethylbenzene	ND		1000	"	"	JLG	"
Xylenes (Total)	ND		3000	"	"	JLG	"
Styrene	ND		1000	"	"	JLG	"
Bromoform	ND		1000	"	"	JLG	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	JLG	"
1,3-Dichlorobenzene	ND		1000	"	"	JLG	"
1,4-Dichlorobenzene	ND		1000	"	"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 12:43
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		1000	ug/L	10/20/15 12:17	JLG	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*102 %*		*85-115*		"	JLG	"
Surrogate: Toluene-d8	*100 %*		*85-115*		"	JLG	"
Surrogate: 4-Bromofluorobenzene	*98.6 %*		*85-115*		"	JLG	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 12:15
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C			*Prepared: 10/20/15 06:34*			*Batch: D15J083*	
Chloromethane	ND		10000	ug/L	10/20/15 12:47	JLG	EPA 8260C
Vinyl chloride	ND		10000	"	"	JLG	"
Bromomethane	ND		10000	"	"	JLG	"
Chloroethane	ND		10000	"	"	JLG	"
Trichlorofluoromethane	ND		10000	"	"	JLG	"
Diethyl ether	ND		10000	"	"	JLG	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	"	"	JLG	"
Acetone	ND		10000	"	"	JLG	"
1,1-Dichloroethene	ND		10000	"	"	JLG	"
Methylene chloride	ND		10000	"	"	JLG	"
Carbon disulfide	ND		10000	"	"	JLG	"
trans-1,2-Dichloroethene	ND		10000	"	"	JLG	"
1,1-Dichloroethane	ND		10000	"	"	JLG	"
Vinyl acetate	ND		10000	"	"	JLG	"
2-Butanone	ND		10000	"	"	JLG	"
Ethyl acetate	ND		10000	"	"	JLG	"
Chloroform	ND		10000	"	"	JLG	"
1,1,1-Trichloroethane	ND		10000	"	"	JLG	"
Carbon tetrachloride	**60600**		10000	"	"	JLG	"
1,2-Dichloroethane	ND		10000	"	"	JLG	"
Benzene	ND		10000	"	"	JLG	"
Trichloroethene	ND		10000	"	"	JLG	"
1,2-Dichloropropane	ND		10000	"	"	JLG	"
Bromodichloromethane	ND		10000	"	"	JLG	"
4-Methyl-2-pentanone	ND		10000	"	"	JLG	"
cis-1,3-Dichloropropene	ND		10000	"	"	JLG	"
Toluene	ND		10000	"	"	JLG	"
trans-1,3-Dichloropropene	ND		10000	"	"	JLG	"
1,1,2-Trichloroethane	ND		10000	"	"	JLG	"
2-Hexanone	ND		10000	"	"	JLG	"
Tetrachloroethene	ND		10000	"	"	JLG	"
Dibromochloromethane	ND		10000	"	"	JLG	"
Chlorobenzene	ND		10000	"	"	JLG	"
Ethylbenzene	ND		10000	"	"	JLG	"
Xylenes (Total)	ND		30000	"	"	JLG	"
Styrene	ND		10000	"	"	JLG	"
Bromoform	ND		10000	"	"	JLG	"
1,1,2,2-Tetrachloroethane	ND		10000	"	"	JLG	"
1,3-Dichlorobenzene	ND		10000	"	"	JLG	"
1,4-Dichlorobenzene	ND		10000	"	"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 12:15
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10000	ug/L	10/20/15 12:47	JLG	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*85-115*		"	JLG	"
Surrogate: Toluene-d8	*101 %*		*85-115*		"	JLG	"
Surrogate: 4-Bromofluorobenzene	*101 %*		*85-115*		"	JLG	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 13:01
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-03	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C			*Prepared: 10/20/15 06:34*			*Batch: D15J083*	
Chloromethane	ND		1000	ug/L	10/20/15 13:18	JLG	EPA 8260C
Vinyl chloride	ND		1000	"	"	JLG	"
Bromomethane	ND		1000	"	"	JLG	"
Chloroethane	ND		1000	"	"	JLG	"
Trichlorofluoromethane	ND		1000	"	"	JLG	"
Diethyl ether	ND		1000	"	"	JLG	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	JLG	"
Acetone	ND		1000	"	"	JLG	"
1,1-Dichloroethene	ND		1000	"	"	JLG	"
Methylene chloride	**2240**		1000	"	"	JLG	"
Carbon disulfide	ND		1000	"	"	JLG	"
trans-1,2-Dichloroethene	ND		1000	"	"	JLG	"
1,1-Dichloroethane	ND		1000	"	"	JLG	"
Vinyl acetate	ND		1000	"	"	JLG	"
2-Butanone	ND		1000	"	"	JLG	"
Ethyl acetate	ND		1000	"	"	JLG	"
Chloroform	ND		1000	"	"	JLG	"
1,1,1-Trichloroethane	**1260**		1000	"	"	JLG	"
Carbon tetrachloride	ND		1000	"	"	JLG	"
1,2-Dichloroethane	ND		1000	"	"	JLG	"
Benzene	ND		1000	"	"	JLG	"
Trichloroethene	**2430**		1000	"	"	JLG	"
1,2-Dichloropropane	ND		1000	"	"	JLG	"
Bromodichloromethane	ND		1000	"	"	JLG	"
4-Methyl-2-pentanone	ND		1000	"	"	JLG	"
cis-1,3-Dichloropropene	ND		1000	"	"	JLG	"
Toluene	ND		1000	"	"	JLG	"
trans-1,3-Dichloropropene	ND		1000	"	"	JLG	"
1,1,2-Trichloroethane	ND		1000	"	"	JLG	"
2-Hexanone	ND		1000	"	"	JLG	"
Tetrachloroethene	ND		1000	"	"	JLG	"
Dibromochloromethane	ND		1000	"	"	JLG	"
Chlorobenzene	**2010**		1000	"	"	JLG	"
Ethylbenzene	ND		1000	"	"	JLG	"
Xylenes (Total)	ND		3000	"	"	JLG	"
Styrene	ND		1000	"	"	JLG	"
Bromoform	ND		1000	"	"	JLG	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	JLG	"
1,3-Dichlorobenzene	ND		1000	"	"	JLG	"
1,4-Dichlorobenzene	**2100**		1000	"	"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 13:01
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-03	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**9320**		1000	ug/L	10/20/15 13:18	JLG	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*99.9 %*		*85-115*		"	JLG	"
Surrogate: Toluene-d8	*100 %*		*85-115*		"	JLG	"
Surrogate: 4-Bromofluorobenzene	*97.2 %*		*85-115*		"	JLG	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:42
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-04	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C			*Prepared: 10/20/15 06:34*			*Batch: D15J083*	
Chloromethane	ND		1000	ug/L	10/20/15 13:47	JLG	EPA 8260C
Vinyl chloride	ND		1000	"	"	JLG	"
Bromomethane	ND		1000	"	"	JLG	"
Chloroethane	ND		1000	"	"	JLG	"
Trichlorofluoromethane	ND		1000	"	"	JLG	"
Diethyl ether	ND		1000	"	"	JLG	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	JLG	"
Acetone	ND		1000	"	"	JLG	"
1,1-Dichloroethene	ND		1000	"	"	JLG	"
Methylene chloride	**8000**		1000	"	"	JLG	"
Carbon disulfide	ND		1000	"	"	JLG	"
trans-1,2-Dichloroethene	ND		1000	"	"	JLG	"
1,1-Dichloroethane	ND		1000	"	"	JLG	"
Vinyl acetate	ND		1000	"	"	JLG	"
2-Butanone	ND		1000	"	"	JLG	"
Ethyl acetate	ND		1000	"	"	JLG	"
Chloroform	**2600**		1000	"	"	JLG	"
1,1,1-Trichloroethane	ND		1000	"	"	JLG	"
Carbon tetrachloride	**2800**		1000	"	"	JLG	"
1,2-Dichloroethane	ND		1000	"	"	JLG	"
Benzene	ND		1000	"	"	JLG	"
Trichloroethene	**4120**		1000	"	"	JLG	"
1,2-Dichloropropane	ND		1000	"	"	JLG	"
Bromodichloromethane	ND		1000	"	"	JLG	"
4-Methyl-2-pentanone	ND		1000	"	"	JLG	"
cis-1,3-Dichloropropene	ND		1000	"	"	JLG	"
Toluene	ND		1000	"	"	JLG	"
trans-1,3-Dichloropropene	ND		1000	"	"	JLG	"
1,1,2-Trichloroethane	**1100**		1000	"	"	JLG	"
2-Hexanone	ND		1000	"	"	JLG	"
Tetrachloroethene	ND		1000	"	"	JLG	"
Dibromochloromethane	ND		1000	"	"	JLG	"
Chlorobenzene	**1900**		1000	"	"	JLG	"
Ethylbenzene	ND		1000	"	"	JLG	"
Xylenes (Total)	ND		3000	"	"	JLG	"
Styrene	ND		1000	"	"	JLG	"
Bromoform	ND		1000	"	"	JLG	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	JLG	"
1,3-Dichlorobenzene	ND		1000	"	"	JLG	"
1,4-Dichlorobenzene	ND		1000	"	"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:42
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-04	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**2170**		1000	ug/L	10/20/15 13:47	JLG	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*85-115*		"	JLG	"
Surrogate: Toluene-d8	*101 %*		*85-115*		"	JLG	"
Surrogate: 4-Bromofluorobenzene	*98.7 %*		*85-115*		"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:42
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-04RE1	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
PCBs							
Prep Method: EPA 3510C			*Prepared: 10/23/15 06:12*			*Batch: D15J097*	
PCB 1016	ND		2.00	ug/L	10/23/15 15:21	JLG	EPA 8082A
PCB 1221	ND		2.00	"	"	JLG	"
PCB 1232	ND		2.00	"	"	JLG	"
PCB 1242	**21.4**		2.00	"	"	JLG	"
PCB 1248	ND		2.00	"	"	JLG	"
PCB 1254	**8.56**		2.00	"	"	JLG	"
PCB 1260	**3.28**		2.00	"	"	JLG	"
PCB 1262	ND		2.00	"	"	JLG	"
PCB 1268	ND		2.00	"	"	JLG	"
Surrogate: TCMX	*101 %*		*82-112*		*"*	JLG	*"*
Surrogate: DCB	*62.1 %*		*26-110*		*"*	JLG	*"*

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:31
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-05	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
PCBs							
Prep Method: EPA 3510C			*Prepared: 10/23/15 06:12*			*Batch: D15J097*	
PCB 1016	ND		1.00	ug/L	10/23/15 13:47	JLG	EPA 8082A
PCB 1221	ND		1.00	"	"	JLG	"
PCB 1232	ND		1.00	"	"	JLG	"
PCB 1242	ND		1.00	"	"	JLG	"
PCB 1248	ND		1.00	"	"	JLG	"
PCB 1254	ND		1.00	"	"	JLG	"
PCB 1260	ND		1.00	"	"	JLG	"
PCB 1262	ND		1.00	"	"	JLG	"
PCB 1268	ND		1.00	"	"	JLG	"
Surrogate: TCMX	*106 %*		*82-112*		*"*	JLG	*"*
Surrogate: DCB	*89.4 %*		*26-110*		*"*	JLG	*"*

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:31
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-05RE1	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C			*Prepared: 10/20/15 06:34*			*Batch: D15J093*	
Chloromethane	ND		10.0	ug/L	10/22/15 11:56	JLG	EPA 8260C
Vinyl chloride	ND		10.0	"	"	JLG	"
Bromomethane	ND		10.0	"	"	JLG	"
Chloroethane	ND		10.0	"	"	JLG	"
Trichlorofluoromethane	ND		10.0	"	"	JLG	"
Diethyl ether	ND		10.0	"	"	JLG	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	"	"	JLG	"
Acetone	ND		10.0	"	"	JLG	"
1,1-Dichloroethene	ND		10.0	"	"	JLG	"
Methylene chloride	ND		10.0	"	"	JLG	"
Carbon disulfide	ND		10.0	"	"	JLG	"
trans-1,2-Dichloroethene	ND		10.0	"	"	JLG	"
1,1-Dichloroethane	ND		10.0	"	"	JLG	"
Vinyl acetate	ND		10.0	"	"	JLG	"
2-Butanone	ND		10.0	"	"	JLG	"
Ethyl acetate	ND		10.0	"	"	JLG	"
Chloroform	ND		10.0	"	"	JLG	"
1,1,1-Trichloroethane	ND		10.0	"	"	JLG	"
Carbon tetrachloride	ND		10.0	"	"	JLG	"
1,2-Dichloroethane	ND		10.0	"	"	JLG	"
Benzene	ND		10.0	"	"	JLG	"
Trichloroethene	**18.8**		10.0	"	"	JLG	"
1,2-Dichloropropane	ND		10.0	"	"	JLG	"
Bromodichloromethane	ND		10.0	"	"	JLG	"
4-Methyl-2-pentanone	ND		10.0	"	"	JLG	"
cis-1,3-Dichloropropene	ND		10.0	"	"	JLG	"
Toluene	ND		10.0	"	"	JLG	"
trans-1,3-Dichloropropene	ND		10.0	"	"	JLG	"
1,1,2-Trichloroethane	ND		10.0	"	"	JLG	"
2-Hexanone	ND		10.0	"	"	JLG	"
Tetrachloroethene	ND		10.0	"	"	JLG	"
Dibromochloromethane	ND		10.0	"	"	JLG	"
Chlorobenzene	ND		10.0	"	"	JLG	"
Ethylbenzene	ND		10.0	"	"	JLG	"
Xylenes (Total)	ND		30.0	"	"	JLG	"
Styrene	ND		10.0	"	"	JLG	"
Bromoform	ND		10.0	"	"	JLG	"
1,1,2,2-Tetrachloroethane	ND		10.0	"	"	JLG	"
1,3-Dichlorobenzene	ND		10.0	"	"	JLG	"
1,4-Dichlorobenzene	ND		10.0	"	"	JLG	"

CWM Chemical Services, LLC. **Reported: 10/26/15 09:17**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	10/19/15 11:31
Work Order:	1510048	Project #:	CWM	Received:	10/19/15 13:38
Lab Sample ID:	1510048-05RE1	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10.0	ug/L	10/22/15 11:56	JLG	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*100 %*		*85-115*		"	JLG	"
Surrogate: Toluene-d8	*99.8 %*		*85-115*		"	JLG	"
Surrogate: 4-Bromofluorobenzene	*97.0 %*		*85-115*		"	JLG	"

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
**	Method is not covered under the laboratory's ELAP certifications.
***	For each PCB fuel sample prepared by method 3580A, the chromatogram is reviewed for large, unexpected peaks. Unless otherwise noted, no such peaks were found.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-48350-1
Client Project/Site: Model City Landfill: GWES Tank Sampling

For:
CWM Chemical Services Inc
1550 Balmer Road
Model City, New York 14107

Attn: Jonathan Rizzo

Candace L. Fox

Authorized for release by:
1/3/2014 2:07:58 PM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-48350-5	T8005	Water	10/18/13 10:30	10/21/13 09:00
480-48350-6	T8006	Water	10/18/13 11:15	10/21/13 09:00
480-48350-7	T8007	Water	10/18/13 10:22	10/21/13 09:00
480-48350-8	T8009	Water	10/18/13 10:40	10/21/13 09:00
480-48350-9	T8010	Water	10/18/13 10:50	10/21/13 09:00
480-48350-10	TB	Water	10/18/13 11:00	10/21/13 09:00

Definitions/Glossary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-48350-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-48350-1

Comments
2-chloroethylvinylether and vinyl chloride were analyzed using unpreserved vials per client request.

Receipt
The samples were received on 10/21/2013 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

GC/MS VOA
Method(s) 8260C: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: P2S1S2S3PCS (480-48274-5 MS), P2S1S2S3PCS (480-48274-5 MSD), T8009 (480-48350-8). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: T8007 (480-48350-7), T8005 (480-48350-5), T8007 (480-48350-7), T8009 (480-48350-8), (480-48350-6 MS), (480-48350-6 MSD), T8006 (480-48350-6). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The Matrix Spike Blank recovery was above TestAmerica's statistically developed internal laboratory QC limits for Chloromethane. This analyte was not a requested spiking compound; therefore the recovery is being reported for advisory purposes only. All other quality control indicators, including the continuing calibration verification, were within method prescribed limits for this analyte.

Method(s) 8260C: The following volatile sample(s) was analyzed with headspace in the sample vial(s) due to multiple injections and/or limited volume: T8010 (480-48350-9).

Method(s) 8260C: The following sample(s) was reported using preserved volume: T8010 (480-48350-9). The unpreserved analyses yielded unusable results.

Method(s) 8260C: Only a preserved vial was received for the following sample(s): TB (480-48350-10).

Method(s) 8260C: The following sample required a further dilution for 1,2-dichlorobenzene. Because the request for several expanded analytes was made after holding time was expired the sample was not re-analyzed: T8007 (480-48350-7).

No other analytical or quality issues were noted.

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8005
Date Collected: 10/18/13 10:30
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		80	28	ug/L			10/29/13 16:31	80
1,1,1-Trichloroethane	ND		80	66	ug/L			10/29/13 16:31	80
1,1,2,2-Tetrachloroethane	ND		80	17	ug/L			10/29/13 16:31	80
1,1,2-Trichloroethane	ND		80	18	ug/L			10/29/13 16:31	80
1,1-Dichloroethane	ND		80	30	ug/L			10/29/13 16:31	80
1,1-Dichloroethene	ND		80	23	ug/L			10/29/13 16:31	80
1,2,3-Trichloropropane	ND		80	71	ug/L			10/29/13 16:31	80
1,2-Dibromo-3-Chloropropane	ND		80	31	ug/L			10/29/13 16:31	80
1,2-Dichloroethane	ND		80	17	ug/L			10/29/13 16:31	80
1,2-Dichloropropane	ND		80	58	ug/L			10/29/13 16:31	80
2-Butanone (MEK)	ND		800	110	ug/L			10/29/13 16:31	80
2-Hexanone	ND		400	99	ug/L			10/29/13 16:31	80
4-Methyl-2-pentanone (MIBK)	ND		400	170	ug/L			10/29/13 16:31	80
Acetone	ND		800	240	ug/L			10/29/13 16:31	80
Acetonitrile	ND		3200	2100	ug/L			10/29/13 16:31	80
Acrolein	ND		1600	1400	ug/L			10/29/13 16:31	80
Acrylonitrile	ND		400	66	ug/L			10/29/13 16:31	80
3-Chloro-1-propene	ND		80	35	ug/L			10/29/13 16:31	80
Benzene	ND		80	33	ug/L			10/29/13 16:31	80
Dichlorobromomethane	ND		80	31	ug/L			10/29/13 16:31	80
Bromoform	ND		80	21	ug/L			10/29/13 16:31	80
Bromomethane	ND		80	55	ug/L			10/29/13 16:31	80
Carbon disulfide	ND		80	15	ug/L			10/29/13 16:31	80
Carbon tetrachloride	ND		80	22	ug/L			10/29/13 16:31	80
Chlorobenzene	ND		80	60	ug/L			10/29/13 16:31	80
Chlorodibromomethane	ND		80	26	ug/L			10/29/13 16:31	80
Chloroethane	ND		80	26	ug/L			10/29/13 16:31	80
Chloroform	ND		80	27	ug/L			10/29/13 16:31	80
Chloromethane	ND		80	28	ug/L			10/29/13 16:31	80
2-Chloro-1,3-butadiene	ND		80	39	ug/L			10/29/13 16:31	80
cis-1,3-Dichloropropene	ND		80	29	ug/L			10/29/13 16:31	80
Dibromomethane	ND		80	33	ug/L			10/29/13 16:31	80
Dichlorodifluoromethane	ND		80	54	ug/L			10/29/13 16:31	80
Ethyl methacrylate	ND		80	47	ug/L			10/29/13 16:31	80
Ethylbenzene	ND		80	59	ug/L			10/29/13 16:31	80
Ethylene Dibromide	ND		80	58	ug/L			10/29/13 16:31	80
Iodomethane	ND		80	24	ug/L			10/29/13 16:31	80
Methacrylonitrile	ND		400	55	ug/L			10/29/13 16:31	80
Methyl methacrylate	ND		80	49	ug/L			10/29/13 16:31	80
Methylene Chloride	ND		80	35	ug/L			10/29/13 16:31	80
m-Xylene & p-Xylene	ND		160	53	ug/L			10/29/13 16:31	80
o-Xylene	ND		80	61	ug/L			10/29/13 16:31	80
Propionitrile	ND		800	460	ug/L			10/29/13 16:31	80
Styrene	ND		80	58	ug/L			10/29/13 16:31	80
Tetrachloroethene	ND		80	29	ug/L			10/29/13 16:31	80
Toluene	ND		80	41	ug/L			10/29/13 16:31	80
Vinyl chloride	**6.7**		1.0	0.90	ug/L			10/25/13 18:06	1
trans-1,2-Dichloroethene	ND		80	72	ug/L			10/29/13 16:31	80
trans-1,3-Dichloropropene	ND		80	30	ug/L			10/29/13 16:31	80

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8005
Date Collected: 10/18/13 10:30
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,4-Dichloro-2-butene	ND		400	170	ug/L			10/29/13 16:31	80
Trichloroethene	**5500**		80	37	ug/L			10/29/13 16:31	80
Trichlorofluoromethane	ND		80	70	ug/L			10/29/13 16:31	80
Vinyl acetate	ND		400	68	ug/L			10/29/13 16:31	80
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/25/13 18:06	1
Diethyl ether	ND		80	58	ug/L			10/29/13 16:31	80
Ethyl acetate	ND		80	53	ug/L			10/29/13 16:31	80
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		80	25	ug/L			10/29/13 16:31	80
1,3-Dichlorobenzene	ND		80	62	ug/L			10/29/13 16:31	80
1,2-Dichlorobenzene	ND		80	63	ug/L			10/29/13 16:31	80
1,4-Dichlorobenzene	ND		80	67	ug/L			10/29/13 16:31	80

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 137*		*10/29/13 16:31*	*80*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*10/29/13 16:31*	*80*
Toluene-d8 (Surr)	*103*		*71 - 126*		*10/25/13 18:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*10/25/13 18:06*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*10/25/13 18:06*	*1*
Toluene-d8 (Surr)	*100*		*71 - 126*		*10/29/13 16:31*	*80*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8006
Date Collected: 10/18/13 11:15
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1000	350	ug/L			10/30/13 10:23	1000
1,1,1-Trichloroethane	ND		1000	820	ug/L			10/30/13 10:23	1000
1,1,2,2-Tetrachloroethane	ND		1000	210	ug/L			10/30/13 10:23	1000
1,1,2-Trichloroethane	ND		1000	230	ug/L			10/30/13 10:23	1000
1,1-Dichloroethane	ND		1000	380	ug/L			10/30/13 10:23	1000
1,1-Dichloroethene	ND		1000	290	ug/L			10/30/13 10:23	1000
1,2,3-Trichloropropane	ND		1000	890	ug/L			10/30/13 10:23	1000
1,2-Dibromo-3-Chloropropane	ND		1000	390	ug/L			10/30/13 10:23	1000
1,2-Dichloroethane	ND		1000	210	ug/L			10/30/13 10:23	1000
1,2-Dichloropropane	ND		1000	720	ug/L			10/30/13 10:23	1000
2-Butanone (MEK)	ND		10000	1300	ug/L			10/30/13 10:23	1000
2-Hexanone	ND		5000	1200	ug/L			10/30/13 10:23	1000
4-Methyl-2-pentanone (MIBK)	ND		5000	2100	ug/L			10/30/13 10:23	1000
Acetone	ND		10000	3000	ug/L			10/30/13 10:23	1000
Acetonitrile	ND		40000	26000	ug/L			10/30/13 10:23	1000
Acrolein	ND		20000	18000	ug/L			10/30/13 10:23	1000
Acrylonitrile	ND		5000	830	ug/L			10/30/13 10:23	1000
3-Chloro-1-propene	ND		1000	440	ug/L			10/30/13 10:23	1000
Benzene	ND		1000	410	ug/L			10/30/13 10:23	1000
Dichlorobromomethane	ND		1000	390	ug/L			10/30/13 10:23	1000
Bromoform	ND		1000	260	ug/L			10/30/13 10:23	1000
Bromomethane	ND		1000	690	ug/L			10/30/13 10:23	1000
Carbon disulfide	ND		1000	190	ug/L			10/30/13 10:23	1000
Carbon tetrachloride	**67000**		1000	270	ug/L			10/30/13 10:23	1000
Chlorobenzene	ND		1000	750	ug/L			10/30/13 10:23	1000
Chlorodibromomethane	ND		1000	320	ug/L			10/30/13 10:23	1000
Chloroethane	ND		1000	320	ug/L			10/30/13 10:23	1000
Chloroform	**8500**		1000	340	ug/L			10/30/13 10:23	1000
Chloromethane	ND	*	1000	350	ug/L			10/30/13 10:23	1000
2-Chloro-1,3-butadiene	ND		1000	490	ug/L			10/30/13 10:23	1000
cis-1,3-Dichloropropene	ND		1000	360	ug/L			10/30/13 10:23	1000
Dibromomethane	ND		1000	410	ug/L			10/30/13 10:23	1000
Dichlorodifluoromethane	ND		1000	680	ug/L			10/30/13 10:23	1000
Ethyl methacrylate	ND		1000	590	ug/L			10/30/13 10:23	1000
Ethylbenzene	ND		1000	740	ug/L			10/30/13 10:23	1000
Ethylene Dibromide	ND		1000	730	ug/L			10/30/13 10:23	1000
Iodomethane	ND		1000	300	ug/L			10/30/13 10:23	1000
Methacrylonitrile	ND		5000	690	ug/L			10/30/13 10:23	1000
Methyl methacrylate	ND		1000	610	ug/L			10/30/13 10:23	1000
Methylene Chloride	ND		1000	440	ug/L			10/30/13 10:23	1000
m-Xylene & p-Xylene	ND		2000	660	ug/L			10/30/13 10:23	1000
o-Xylene	ND		1000	760	ug/L			10/30/13 10:23	1000
Propionitrile	ND		10000	5800	ug/L			10/30/13 10:23	1000
Styrene	ND		1000	730	ug/L			10/30/13 10:23	1000
Tetrachloroethene	ND		1000	360	ug/L			10/30/13 10:23	1000
Toluene	ND		1000	510	ug/L			10/30/13 10:23	1000
Vinyl chloride	ND		1.0	0.90	ug/L			10/25/13 18:28	1
trans-1,2-Dichloroethene	ND		1000	900	ug/L			10/30/13 10:23	1000
trans-1,3-Dichloropropene	ND		1000	370	ug/L			10/30/13 10:23	1000

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8006
Date Collected: 10/18/13 11:15
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,4-Dichloro-2-butene	ND		5000	2100	ug/L			10/30/13 10:23	1000
Trichloroethene	ND		1000	460	ug/L			10/30/13 10:23	1000
Trichlorofluoromethane	ND		1000	880	ug/L			10/30/13 10:23	1000
Vinyl acetate	ND		5000	850	ug/L			10/30/13 10:23	1000
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/25/13 18:28	1
Diethyl ether	ND		1000	720	ug/L			10/30/13 10:23	1000
Ethyl acetate	ND		1000	660	ug/L			10/30/13 10:23	1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	310	ug/L			10/30/13 10:23	1000
1,3-Dichlorobenzene	ND		1000	780	ug/L			10/30/13 10:23	1000
1,2-Dichlorobenzene	ND		1000	790	ug/L			10/30/13 10:23	1000
1,4-Dichlorobenzene	ND		1000	840	ug/L			10/30/13 10:23	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 137*		*10/29/13 16:52*	*200*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 137*		*10/30/13 10:23*	*1000*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/29/13 16:52*	*200*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*10/30/13 10:23*	*1000*
Toluene-d8 (Surr)	*103*		*71 - 126*		*10/25/13 18:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 137*		*10/25/13 18:28*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/25/13 18:28*	*1*
Toluene-d8 (Surr)	*100*		*71 - 126*		*10/29/13 16:52*	*200*
Toluene-d8 (Surr)	*94*		*71 - 126*		*10/30/13 10:23*	*1000*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8007
Date Collected: 10/18/13 10:22
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		20	7.0	ug/L			10/25/13 18:50	20
1,1,2,2-Tetrachloroethane	ND		20	4.2	ug/L			10/25/13 18:50	20
1,1,2-Trichloroethane	ND		20	4.6	ug/L			10/25/13 18:50	20
1,1-Dichloroethane	**390**		20	7.6	ug/L			10/25/13 18:50	20
1,1-Dichloroethene	**250**		20	5.8	ug/L			10/25/13 18:50	20
1,2,3-Trichloropropane	ND		20	18	ug/L			10/25/13 18:50	20
1,2-Dibromo-3-Chloropropane	ND		20	7.8	ug/L			10/25/13 18:50	20
1,2-Dichloroethane	**270**		20	4.2	ug/L			10/25/13 18:50	20
1,2-Dichloropropane	**25**		20	14	ug/L			10/25/13 18:50	20
2-Butanone (MEK)	ND		200	26	ug/L			10/25/13 18:50	20
2-Hexanone	ND		100	25	ug/L			10/25/13 18:50	20
4-Methyl-2-pentanone (MIBK)	**57**	**J**	100	42	ug/L			10/25/13 18:50	20
Acetone	ND		200	60	ug/L			10/25/13 18:50	20
Acetonitrile	ND		800	520	ug/L			10/25/13 18:50	20
Acrolein	ND		400	360	ug/L			10/25/13 18:50	20
Acrylonitrile	ND		100	17	ug/L			10/25/13 18:50	20
3-Chloro-1-propene	ND		20	8.8	ug/L			10/25/13 18:50	20
Benzene	**69**		20	8.2	ug/L			10/25/13 18:50	20
Dichlorobromomethane	ND		20	7.8	ug/L			10/25/13 18:50	20
Bromoform	ND		20	5.2	ug/L			10/25/13 18:50	20
Bromomethane	ND		20	14	ug/L			10/25/13 18:50	20
Carbon disulfide	ND		20	3.8	ug/L			10/25/13 18:50	20
Carbon tetrachloride	**930**		20	5.4	ug/L			10/25/13 18:50	20
Chlorodibromomethane	ND		20	6.4	ug/L			10/25/13 18:50	20
Chloroethane	ND		20	6.4	ug/L			10/25/13 18:50	20
Chloroform	**520**		20	6.8	ug/L			10/25/13 18:50	20
Chloromethane	ND		20	7.0	ug/L			10/25/13 18:50	20
2-Chloro-1,3-butadiene	ND		20	9.8	ug/L			10/25/13 18:50	20
cis-1,3-Dichloropropene	ND		20	7.2	ug/L			10/25/13 18:50	20
Dibromomethane	**19**	**J**	20	8.2	ug/L			10/25/13 18:50	20
Dichlorodifluoromethane	ND		20	14	ug/L			10/25/13 18:50	20
Ethyl methacrylate	ND		20	12	ug/L			10/25/13 18:50	20
Ethylbenzene	**48**		20	15	ug/L			10/25/13 18:50	20
Ethylene Dibromide	ND		20	15	ug/L			10/25/13 18:50	20
Iodomethane	ND		20	6.0	ug/L			10/25/13 18:50	20
Methacrylonitrile	ND		100	14	ug/L			10/25/13 18:50	20
Methyl methacrylate	ND		20	12	ug/L			10/25/13 18:50	20
m-Xylene & p-Xylene	**96**		40	13	ug/L			10/25/13 18:50	20
o-Xylene	**180**		20	15	ug/L			10/25/13 18:50	20
Propionitrile	ND		200	120	ug/L			10/25/13 18:50	20
Styrene	ND		20	15	ug/L			10/25/13 18:50	20
Tetrachloroethene	**52**		20	7.2	ug/L			10/25/13 18:50	20
Toluene	**130**		20	10	ug/L			10/25/13 18:50	20
Vinyl chloride	**190**	**H**	100	90	ug/L			11/05/13 00:27	100
trans-1,2-Dichloroethene	ND		20	18	ug/L			10/25/13 18:50	20
trans-1,3-Dichloropropene	ND		20	7.4	ug/L			10/25/13 18:50	20
trans-1,4-Dichloro-2-butene	ND		100	42	ug/L			10/25/13 18:50	20
Trichlorofluoromethane	ND		20	18	ug/L			10/25/13 18:50	20
Vinyl acetate	ND		100	17	ug/L			10/25/13 18:50	20

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8007
Date Collected: 10/18/13 10:22
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND	H	500	96	ug/L			11/05/13 00:27	100
Diethyl ether	ND		20	14	ug/L			10/25/13 18:50	20
Ethyl acetate	**45**		20	13	ug/L			10/25/13 18:50	20
1,1,2-Trichloro-1,2,2-trifluoroethane	**1100**		20	6.2	ug/L			10/25/13 18:50	20
1,3-Dichlorobenzene	**390**		20	16	ug/L			10/25/13 18:50	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 137*		*10/25/13 18:50*	*20*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*10/25/13 18:50*	*20*
Toluene-d8 (Surr)	*104*		*71 - 126*		*11/05/13 00:27*	*100*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 137*		*11/05/13 00:27*	*100*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*11/05/13 00:27*	*100*
Toluene-d8 (Surr)	*100*		*71 - 126*		*10/25/13 18:50*	*20*

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**2200**		100	82	ug/L			10/29/13 17:14	100
Chlorobenzene	**2200**		100	75	ug/L			10/29/13 17:14	100
Methylene Chloride	**2900**		100	44	ug/L			10/29/13 17:14	100
Trichloroethene	**3300**		100	46	ug/L			10/29/13 17:14	100
1,2-Dichlorobenzene	**11000**	**E**	100	79	ug/L			10/29/13 17:14	100
1,4-Dichlorobenzene	**2400**		100	84	ug/L			10/29/13 17:14	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 137*		*10/29/13 17:14*	*100*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*10/29/13 17:14*	*100*
Toluene-d8 (Surr)	*100*		*71 - 126*		*10/29/13 17:14*	*100*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8009
Date Collected: 10/18/13 10:40
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	**230**		200	70	ug/L			10/29/13 17:36	200
1,1,1-Trichloroethane	**590**		200	160	ug/L			10/29/13 17:36	200
1,1,2,2-Tetrachloroethane	**520**		200	42	ug/L			10/29/13 17:36	200
1,1,2-Trichloroethane	**1800**		200	46	ug/L			10/29/13 17:36	200
1,1-Dichloroethane	ND		200	76	ug/L			10/29/13 17:36	200
1,1-Dichloroethene	**66**	**J**	200	58	ug/L			10/29/13 17:36	200
1,2,3-Trichloropropane	ND		200	180	ug/L			10/29/13 17:36	200
1,2-Dibromo-3-Chloropropane	ND		200	78	ug/L			10/29/13 17:36	200
1,2-Dichloroethane	**1200**		200	42	ug/L			10/29/13 17:36	200
1,2-Dichloropropane	ND		200	140	ug/L			10/29/13 17:36	200
2-Butanone (MEK)	ND		2000	260	ug/L			10/29/13 17:36	200
2-Hexanone	ND		1000	250	ug/L			10/29/13 17:36	200
4-Methyl-2-pentanone (MIBK)	ND		1000	420	ug/L			10/29/13 17:36	200
Acetone	ND		2000	600	ug/L			10/29/13 17:36	200
Acetonitrile	ND		8000	5200	ug/L			10/29/13 17:36	200
Acrolein	ND		4000	3600	ug/L			10/29/13 17:36	200
Acrylonitrile	ND		1000	170	ug/L			10/29/13 17:36	200
3-Chloro-1-propene	ND		200	88	ug/L			10/29/13 17:36	200
Benzene	**120**	**J**	200	82	ug/L			10/29/13 17:36	200
Dichlorobromomethane	ND		200	78	ug/L			10/29/13 17:36	200
Bromoform	ND		200	52	ug/L			10/29/13 17:36	200
Bromomethane	ND		200	140	ug/L			10/29/13 17:36	200
Carbon disulfide	ND		200	38	ug/L			10/29/13 17:36	200
Carbon tetrachloride	**13000**		200	54	ug/L			10/29/13 17:36	200
Chlorobenzene	**2600**		200	150	ug/L			10/29/13 17:36	200
Chlorodibromomethane	ND		200	64	ug/L			10/29/13 17:36	200
Chloroethane	ND		200	64	ug/L			10/29/13 17:36	200
Chloroform	**4100**		200	68	ug/L			10/29/13 17:36	200
Chloromethane	ND		200	70	ug/L			10/29/13 17:36	200
2-Chloro-1,3-butadiene	ND		200	98	ug/L			10/29/13 17:36	200
cis-1,3-Dichloropropene	ND		200	72	ug/L			10/29/13 17:36	200
Dibromomethane	**470**		200	82	ug/L			10/29/13 17:36	200
Dichlorodifluoromethane	ND		200	140	ug/L			10/29/13 17:36	200
Ethyl methacrylate	ND		200	120	ug/L			10/29/13 17:36	200
Ethylbenzene	**200**		200	150	ug/L			10/29/13 17:36	200
Ethylene Dibromide	**1500**		200	150	ug/L			10/29/13 17:36	200
Iodomethane	ND		200	60	ug/L			10/29/13 17:36	200
Methacrylonitrile	ND		1000	140	ug/L			10/29/13 17:36	200
Methyl methacrylate	ND		200	120	ug/L			10/29/13 17:36	200
Methylene Chloride	**5900**		200	88	ug/L			10/29/13 17:36	200
m-Xylene & p-Xylene	**160**	**J**	400	130	ug/L			10/29/13 17:36	200
o-Xylene	ND		200	150	ug/L			10/29/13 17:36	200
Propionitrile	ND		2000	1200	ug/L			10/29/13 17:36	200
Styrene	ND		200	150	ug/L			10/29/13 17:36	200
Tetrachloroethene	**730**		200	72	ug/L			10/29/13 17:36	200
Toluene	**1000**		200	100	ug/L			10/29/13 17:36	200
Vinyl chloride	**180**		20	18	ug/L			10/25/13 19:12	20
trans-1,2-Dichloroethene	ND		200	180	ug/L			10/29/13 17:36	200
trans-1,3-Dichloropropene	ND		200	74	ug/L			10/29/13 17:36	200

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8009
Date Collected: 10/18/13 10:40
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,4-Dichloro-2-butene	ND		1000	420	ug/L			10/29/13 17:36	200
Trichloroethene	**6900**		200	92	ug/L			10/29/13 17:36	200
Trichlorofluoromethane	ND		200	180	ug/L			10/29/13 17:36	200
Vinyl acetate	ND		1000	170	ug/L			10/29/13 17:36	200
2-Chloroethyl vinyl ether	ND		100	19	ug/L			10/25/13 19:12	20
Diethyl ether	ND		200	140	ug/L			10/29/13 17:36	200
Ethyl acetate	ND		200	130	ug/L			10/29/13 17:36	200
1,1,2-Trichloro-1,2,2-trifluoroethane	**1800**		200	62	ug/L			10/29/13 17:36	200
1,3-Dichlorobenzene	ND		200	160	ug/L			10/29/13 17:36	200
1,2-Dichlorobenzene	**4300**		200	160	ug/L			10/29/13 17:36	200
1,4-Dichlorobenzene	**1100**		200	170	ug/L			10/29/13 17:36	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 137*		*10/29/13 17:36*	*200*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/29/13 17:36*	*200*
Toluene-d8 (Surr)	*101*		*71 - 126*		*10/25/13 19:12*	*20*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*10/25/13 19:12*	*20*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*10/25/13 19:12*	*20*
Toluene-d8 (Surr)	*100*		*71 - 126*		*10/29/13 17:36*	*200*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8010
Date Collected: 10/18/13 10:50
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-9
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			10/29/13 17:58	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			10/29/13 17:58	1
1,1,2,2-Tetrachloroethane	**1.3**		1.0	0.21	ug/L			10/29/13 17:58	1
1,1,2-Trichloroethane	**0.69**	**J**	1.0	0.23	ug/L			10/29/13 17:58	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			10/29/13 17:58	1
1,1-Dichloroethene	**0.61**	**J**	1.0	0.29	ug/L			10/29/13 17:58	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			10/29/13 17:58	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			10/29/13 17:58	1
1,2-Dichloroethane	**0.72**	**J**	1.0	0.21	ug/L			10/29/13 17:58	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			10/29/13 17:58	1
2-Butanone (MEK)	ND		10	1.3	ug/L			10/29/13 17:58	1
2-Hexanone	ND		5.0	1.2	ug/L			10/29/13 17:58	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			10/29/13 17:58	1
Acetone	ND		10	3.0	ug/L			10/29/13 17:58	1
Acetonitrile	ND		40	26	ug/L			10/29/13 17:58	1
Acrolein	ND		20	18	ug/L			10/29/13 17:58	1
Acrylonitrile	ND		5.0	0.83	ug/L			10/29/13 17:58	1
3-Chloro-1-propene	ND		1.0	0.44	ug/L			10/29/13 17:58	1
Benzene	ND		1.0	0.41	ug/L			10/29/13 17:58	1
Dichlorobromomethane	ND		1.0	0.39	ug/L			10/29/13 17:58	1
Bromoform	ND		1.0	0.26	ug/L			10/29/13 17:58	1
Bromomethane	ND		1.0	0.69	ug/L			10/29/13 17:58	1
Carbon disulfide	ND		1.0	0.19	ug/L			10/29/13 17:58	1
Carbon tetrachloride	**1.3**		1.0	0.27	ug/L			10/29/13 17:58	1
Chlorobenzene	ND		1.0	0.75	ug/L			10/29/13 17:58	1
Chlorodibromomethane	ND		1.0	0.32	ug/L			10/29/13 17:58	1
Chloroethane	ND		1.0	0.32	ug/L			10/29/13 17:58	1
Chloroform	**11**		1.0	0.34	ug/L			10/29/13 17:58	1
Chloromethane	ND		1.0	0.35	ug/L			10/29/13 17:58	1
2-Chloro-1,3-butadiene	ND		1.0	0.49	ug/L			10/29/13 17:58	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			10/29/13 17:58	1
Dibromomethane	ND		1.0	0.41	ug/L			10/29/13 17:58	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			10/29/13 17:58	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			10/29/13 17:58	1
Ethylbenzene	ND		1.0	0.74	ug/L			10/29/13 17:58	1
Ethylene Dibromide	ND		1.0	0.73	ug/L			10/29/13 17:58	1
Iodomethane	ND		1.0	0.30	ug/L			10/29/13 17:58	1
Methacrylonitrile	ND		5.0	0.69	ug/L			10/29/13 17:58	1
Methyl methacrylate	ND		1.0	0.61	ug/L			10/29/13 17:58	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/29/13 17:58	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			10/29/13 17:58	1
o-Xylene	ND		1.0	0.76	ug/L			10/29/13 17:58	1
Propionitrile	ND		10	5.8	ug/L			10/29/13 17:58	1
Styrene	ND		1.0	0.73	ug/L			10/29/13 17:58	1
Tetrachloroethene	**1.1**		1.0	0.36	ug/L			10/29/13 17:58	1
Toluene	ND		1.0	0.51	ug/L			10/29/13 17:58	1
Vinyl chloride	ND		1.0	0.90	ug/L			10/29/13 17:58	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/29/13 17:58	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/29/13 17:58	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8010
Date Collected: 10/18/13 10:50
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-9
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,4-Dichloro-2-butene	ND		5.0	2.1	ug/L			10/29/13 17:58	1
Trichloroethene	**49**		1.0	0.46	ug/L			10/29/13 17:58	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/29/13 17:58	1
Vinyl acetate	ND		5.0	0.85	ug/L			10/29/13 17:58	1
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/29/13 17:58	1
Diethyl ether	ND		1.0	0.72	ug/L			10/29/13 17:58	1
Ethyl acetate	ND		1.0	0.66	ug/L			10/29/13 17:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			10/29/13 17:58	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			10/29/13 17:58	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			10/29/13 17:58	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			10/29/13 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 137*		*10/29/13 17:58*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/29/13 17:58*	*1*
Toluene-d8 (Surr)	*101*		*71 - 126*		*10/29/13 17:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 137*		*10/29/13 17:58*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/29/13 17:58*	*1*
Toluene-d8 (Surr)	*101*		*71 - 126*		*10/29/13 17:58*	*1*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: TB
Date Collected: 10/18/13 11:00
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-10
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			10/29/13 18:20	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			10/29/13 18:20	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			10/29/13 18:20	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			10/29/13 18:20	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			10/29/13 18:20	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			10/29/13 18:20	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			10/29/13 18:20	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			10/29/13 18:20	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			10/29/13 18:20	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			10/29/13 18:20	1
2-Butanone (MEK)	ND		10	1.3	ug/L			10/29/13 18:20	1
2-Hexanone	ND		5.0	1.2	ug/L			10/29/13 18:20	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			10/29/13 18:20	1
Acetone	ND		10	3.0	ug/L			10/29/13 18:20	1
Acetonitrile	ND		40	26	ug/L			10/29/13 18:20	1
Acrolein	ND		20	18	ug/L			10/29/13 18:20	1
Acrylonitrile	ND		5.0	0.83	ug/L			10/29/13 18:20	1
3-Chloro-1-propene	ND		1.0	0.44	ug/L			10/29/13 18:20	1
Benzene	ND		1.0	0.41	ug/L			10/29/13 18:20	1
Dichlorobromomethane	ND		1.0	0.39	ug/L			10/29/13 18:20	1
Bromoform	ND		1.0	0.26	ug/L			10/29/13 18:20	1
Bromomethane	ND		1.0	0.69	ug/L			10/29/13 18:20	1
Carbon disulfide	ND		1.0	0.19	ug/L			10/29/13 18:20	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			10/29/13 18:20	1
Chlorobenzene	ND		1.0	0.75	ug/L			10/29/13 18:20	1
Chlorodibromomethane	ND		1.0	0.32	ug/L			10/29/13 18:20	1
Chloroethane	ND		1.0	0.32	ug/L			10/29/13 18:20	1
Chloroform	ND		1.0	0.34	ug/L			10/29/13 18:20	1
Chloromethane	ND		1.0	0.35	ug/L			10/29/13 18:20	1
2-Chloro-1,3-butadiene	ND		1.0	0.49	ug/L			10/29/13 18:20	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			10/29/13 18:20	1
Dibromomethane	ND		1.0	0.41	ug/L			10/29/13 18:20	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			10/29/13 18:20	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			10/29/13 18:20	1
Ethylbenzene	ND		1.0	0.74	ug/L			10/29/13 18:20	1
Ethylene Dibromide	ND		1.0	0.73	ug/L			10/29/13 18:20	1
Iodomethane	ND		1.0	0.30	ug/L			10/29/13 18:20	1
Methacrylonitrile	ND		5.0	0.69	ug/L			10/29/13 18:20	1
Methyl methacrylate	ND		1.0	0.61	ug/L			10/29/13 18:20	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/29/13 18:20	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			10/29/13 18:20	1
o-Xylene	ND		1.0	0.76	ug/L			10/29/13 18:20	1
Propionitrile	ND		10	5.8	ug/L			10/29/13 18:20	1
Styrene	ND		1.0	0.73	ug/L			10/29/13 18:20	1
Tetrachloroethene	ND		1.0	0.36	ug/L			10/29/13 18:20	1
Toluene	ND		1.0	0.51	ug/L			10/29/13 18:20	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/29/13 18:20	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/29/13 18:20	1
trans-1,4-Dichloro-2-butene	ND		5.0	2.1	ug/L			10/29/13 18:20	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: TB
Date Collected: 10/18/13 11:00
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-10
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0	0.46	ug/L			10/29/13 18:20	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/29/13 18:20	1
Vinyl acetate	ND		5.0	0.85	ug/L			10/29/13 18:20	1
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/29/13 18:20	1
Diethyl ether	ND		1.0	0.72	ug/L			10/29/13 18:20	1
Ethyl acetate	ND		1.0	0.66	ug/L			10/29/13 18:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			10/29/13 18:20	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			10/29/13 18:20	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			10/29/13 18:20	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			10/29/13 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 137*		*10/29/13 18:20*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*10/29/13 18:20*	*1*
Toluene-d8 (Surr)	*101*		*71 - 126*		*10/29/13 18:20*	*1*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-147478/7
Matrix: Water
Analysis Batch: 147478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			10/25/13 11:09	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			10/25/13 11:09	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			10/25/13 11:09	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			10/25/13 11:09	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			10/25/13 11:09	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			10/25/13 11:09	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			10/25/13 11:09	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			10/25/13 11:09	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			10/25/13 11:09	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			10/25/13 11:09	1
2-Butanone (MEK)	ND		10	1.3	ug/L			10/25/13 11:09	1
2-Hexanone	ND		5.0	1.2	ug/L			10/25/13 11:09	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			10/25/13 11:09	1
Acetone	ND		10	3.0	ug/L			10/25/13 11:09	1
Acetonitrile	ND		40	26	ug/L			10/25/13 11:09	1
Acrolein	ND		20	18	ug/L			10/25/13 11:09	1
Acrylonitrile	ND		5.0	0.83	ug/L			10/25/13 11:09	1
3-Chloro-1-propene	ND		1.0	0.44	ug/L			10/25/13 11:09	1
Benzene	ND		1.0	0.41	ug/L			10/25/13 11:09	1
Dichlorobromomethane	ND		1.0	0.39	ug/L			10/25/13 11:09	1
Bromoform	ND		1.0	0.26	ug/L			10/25/13 11:09	1
Bromomethane	ND		1.0	0.69	ug/L			10/25/13 11:09	1
Carbon disulfide	ND		1.0	0.19	ug/L			10/25/13 11:09	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			10/25/13 11:09	1
Chlorobenzene	ND		1.0	0.75	ug/L			10/25/13 11:09	1
Chlorodibromomethane	ND		1.0	0.32	ug/L			10/25/13 11:09	1
Chloroethane	ND		1.0	0.32	ug/L			10/25/13 11:09	1
Chloroform	ND		1.0	0.34	ug/L			10/25/13 11:09	1
Chloromethane	ND		1.0	0.35	ug/L			10/25/13 11:09	1
2-Chloro-1,3-butadiene	ND		1.0	0.49	ug/L			10/25/13 11:09	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			10/25/13 11:09	1
Dibromomethane	ND		1.0	0.41	ug/L			10/25/13 11:09	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			10/25/13 11:09	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			10/25/13 11:09	1
Ethylbenzene	ND		1.0	0.74	ug/L			10/25/13 11:09	1
Ethylene Dibromide	ND		1.0	0.73	ug/L			10/25/13 11:09	1
Iodomethane	ND		1.0	0.30	ug/L			10/25/13 11:09	1
Methacrylonitrile	ND		5.0	0.69	ug/L			10/25/13 11:09	1
Methyl methacrylate	ND		1.0	0.61	ug/L			10/25/13 11:09	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/25/13 11:09	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			10/25/13 11:09	1
o-Xylene	ND		1.0	0.76	ug/L			10/25/13 11:09	1
Propionitrile	ND		10	5.8	ug/L			10/25/13 11:09	1
Styrene	ND		1.0	0.73	ug/L			10/25/13 11:09	1
Tetrachloroethene	ND		1.0	0.36	ug/L			10/25/13 11:09	1
Toluene	ND		1.0	0.51	ug/L			10/25/13 11:09	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/25/13 11:09	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/25/13 11:09	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-147478/7
Matrix: Water
Analysis Batch: 147478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,4-Dichloro-2-butene	ND		5.0	2.1	ug/L			10/25/13 11:09	1
Trichloroethene	ND		1.0	0.46	ug/L			10/25/13 11:09	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/25/13 11:09	1
Vinyl acetate	ND		5.0	0.85	ug/L			10/25/13 11:09	1
Diethyl ether	ND		1.0	0.72	ug/L			10/25/13 11:09	1
Ethyl acetate	ND		1.0	0.66	ug/L			10/25/13 11:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			10/25/13 11:09	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			10/25/13 11:09	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			10/25/13 11:09	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			10/25/13 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*10/25/13 11:09*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*10/25/13 11:09*	*1*
Toluene-d8 (Surr)	*102*		*71 - 126*		*10/25/13 11:09*	*1*

Lab Sample ID: LCS 480-147478/5
Matrix: Water
Analysis Batch: 147478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	25.0	23.7		ug/L		95	71 - 129
1,1-Dichloroethene	25.0	23.7		ug/L		95	58 - 121
1,2-Dichloroethane	25.0	23.5		ug/L		94	75 - 127
Benzene	25.0	23.3		ug/L		93	71 - 124
Chlorobenzene	25.0	22.9		ug/L		92	72 - 120
Ethylbenzene	25.0	23.7		ug/L		95	77 - 123
m-Xylene & p-Xylene	50.0	47.1		ug/L		94	76 - 122
o-Xylene	25.0	23.9		ug/L		95	76 - 122
Tetrachloroethene	25.0	23.0		ug/L		92	74 - 122
Toluene	25.0	22.7		ug/L		91	80 - 122
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	73 - 127
Trichloroethene	25.0	23.0		ug/L		92	74 - 123
1,2-Dichlorobenzene	25.0	23.8		ug/L		95	80 - 124

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 137*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*
Toluene-d8 (Surr)	*99*		*71 - 126*

Lab Sample ID: MB 480-148529/6
Matrix: Water
Analysis Batch: 148529

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			10/30/13 09:45	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			10/30/13 09:45	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			10/30/13 09:45	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-148529/6
Matrix: Water
Analysis Batch: 148529

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			10/30/13 09:45	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			10/30/13 09:45	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			10/30/13 09:45	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			10/30/13 09:45	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			10/30/13 09:45	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			10/30/13 09:45	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			10/30/13 09:45	1
2-Butanone (MEK)	ND		10	1.3	ug/L			10/30/13 09:45	1
2-Hexanone	ND		5.0	1.2	ug/L			10/30/13 09:45	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			10/30/13 09:45	1
Acetone	ND		10	3.0	ug/L			10/30/13 09:45	1
Acetonitrile	ND		40	26	ug/L			10/30/13 09:45	1
Acrolein	ND		20	18	ug/L			10/30/13 09:45	1
Acrylonitrile	ND		5.0	0.83	ug/L			10/30/13 09:45	1
3-Chloro-1-propene	ND		1.0	0.44	ug/L			10/30/13 09:45	1
Benzene	ND		1.0	0.41	ug/L			10/30/13 09:45	1
Dichlorobromomethane	ND		1.0	0.39	ug/L			10/30/13 09:45	1
Bromoform	ND		1.0	0.26	ug/L			10/30/13 09:45	1
Bromomethane	ND		1.0	0.69	ug/L			10/30/13 09:45	1
Carbon disulfide	ND		1.0	0.19	ug/L			10/30/13 09:45	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			10/30/13 09:45	1
Chlorobenzene	ND		1.0	0.75	ug/L			10/30/13 09:45	1
Chlorodibromomethane	ND		1.0	0.32	ug/L			10/30/13 09:45	1
Chloroethane	ND		1.0	0.32	ug/L			10/30/13 09:45	1
Chloroform	ND		1.0	0.34	ug/L			10/30/13 09:45	1
Chloromethane	ND		1.0	0.35	ug/L			10/30/13 09:45	1
2-Chloro-1,3-butadiene	ND		1.0	0.49	ug/L			10/30/13 09:45	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			10/30/13 09:45	1
Dibromomethane	ND		1.0	0.41	ug/L			10/30/13 09:45	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			10/30/13 09:45	1
Ethyl methacrylate	ND		1.0	0.59	ug/L			10/30/13 09:45	1
Ethylbenzene	ND		1.0	0.74	ug/L			10/30/13 09:45	1
Ethylene Dibromide	ND		1.0	0.73	ug/L			10/30/13 09:45	1
Iodomethane	ND		1.0	0.30	ug/L			10/30/13 09:45	1
Methacrylonitrile	ND		5.0	0.69	ug/L			10/30/13 09:45	1
Methyl methacrylate	ND		1.0	0.61	ug/L			10/30/13 09:45	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/30/13 09:45	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			10/30/13 09:45	1
o-Xylene	ND		1.0	0.76	ug/L			10/30/13 09:45	1
Propionitrile	ND		10	5.8	ug/L			10/30/13 09:45	1
Styrene	ND		1.0	0.73	ug/L			10/30/13 09:45	1
Tetrachloroethene	ND		1.0	0.36	ug/L			10/30/13 09:45	1
Toluene	ND		1.0	0.51	ug/L			10/30/13 09:45	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/30/13 09:45	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/30/13 09:45	1
trans-1,4-Dichloro-2-butene	ND		5.0	2.1	ug/L			10/30/13 09:45	1
Trichloroethene	ND		1.0	0.46	ug/L			10/30/13 09:45	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/30/13 09:45	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-148529/6
Matrix: Water
Analysis Batch: 148529

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl acetate	ND		5.0	0.85	ug/L			10/30/13 09:45	1
Diethyl ether	ND		1.0	0.72	ug/L			10/30/13 09:45	1
Ethyl acetate	ND		1.0	0.66	ug/L			10/30/13 09:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			10/30/13 09:45	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			10/30/13 09:45	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			10/30/13 09:45	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			10/30/13 09:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*10/30/13 09:45*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*10/30/13 09:45*	*1*
Toluene-d8 (Surr)	*95*		*71 - 126*		*10/30/13 09:45*	*1*

Lab Sample ID: LCS 480-148529/5
Matrix: Water
Analysis Batch: 148529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	25.0	27.1		ug/L		109	71 - 129
1,1-Dichloroethene	25.0	27.1		ug/L		108	58 - 121
1,2-Dichloroethane	25.0	26.5		ug/L		106	75 - 127
Benzene	25.0	26.9		ug/L		108	71 - 124
Chlorobenzene	25.0	24.1		ug/L		96	72 - 120
Ethylbenzene	25.0	24.5		ug/L		98	77 - 123
m-Xylene & p-Xylene	50.0	48.1		ug/L		96	76 - 122
o-Xylene	25.0	23.9		ug/L		96	76 - 122
Tetrachloroethene	25.0	22.9		ug/L		92	74 - 122
Toluene	25.0	24.3		ug/L		97	80 - 122
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	73 - 127
Trichloroethene	25.0	25.9		ug/L		103	74 - 123
1,2-Dichlorobenzene	25.0	23.9		ug/L		96	80 - 124

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 137*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*
Toluene-d8 (Surr)	*96*		*71 - 126*

Lab Sample ID: 480-48350-6 MS
Matrix: Water
Analysis Batch: 148529

Client Sample ID: T8006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	ND		25000	27600		ug/L		110	71 - 129
1,1-Dichloroethene	ND		25000	27900		ug/L		112	58 - 121
1,2-Dichloroethane	ND		25000	26700		ug/L		107	75 - 127
Benzene	ND		25000	27400		ug/L		110	71 - 124
Chlorobenzene	ND		25000	25800		ug/L		103	72 - 120
Ethylbenzene	ND		25000	25800		ug/L		103	77 - 123

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-48350-6 MS
Matrix: Water
Analysis Batch: 148529

Client Sample ID: T8006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
m-Xylene & p-Xylene	ND		50000	50900		ug/L		102	76 - 122
o-Xylene	ND		25000	25000		ug/L		100	76 - 122
Tetrachloroethene	ND		25000	24800		ug/L		99	74 - 122
Toluene	ND		25000	25600		ug/L		102	80 - 122
trans-1,2-Dichloroethene	ND		25000	26900		ug/L		108	73 - 127
Trichloroethene	ND		25000	27100		ug/L		108	74 - 123
1,2-Dichlorobenzene	ND		25000	24500		ug/L		98	80 - 124

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 137*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*
Toluene-d8 (Surr)	*100*		*71 - 126*

Lab Sample ID: 480-48350-6 MSD
Matrix: Water
Analysis Batch: 148529

Client Sample ID: T8006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane	ND		25000	27700		ug/L		111	71 - 129	0	20
1,1-Dichloroethene	ND		25000	27100		ug/L		108	58 - 121	3	16
1,2-Dichloroethane	ND		25000	26600		ug/L		106	75 - 127	1	20
Benzene	ND		25000	27100		ug/L		108	71 - 124	1	13
Chlorobenzene	ND		25000	24300		ug/L		97	72 - 120	6	25
Ethylbenzene	ND		25000	24800		ug/L		99	77 - 123	4	15
m-Xylene & p-Xylene	ND		50000	49000		ug/L		98	76 - 122	4	16
o-Xylene	ND		25000	24000		ug/L		96	76 - 122	4	16
Tetrachloroethene	ND		25000	23300		ug/L		93	74 - 122	6	20
Toluene	ND		25000	24500		ug/L		98	80 - 122	4	15
trans-1,2-Dichloroethene	ND		25000	26700		ug/L		107	73 - 127	1	20
Trichloroethene	ND		25000	26300		ug/L		105	74 - 123	3	16
1,2-Dichlorobenzene	ND		25000	23700		ug/L		95	80 - 124	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 137*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*
Toluene-d8 (Surr)	*95*		*71 - 126*

Lab Sample ID: MB 480-149692/5
Matrix: Water
Analysis Batch: 149692

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		1.0	0.90	ug/L			11/04/13 23:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*11/04/13 23:05*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*11/04/13 23:05*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-149692/5
Matrix: Water
Analysis Batch: 149692

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		71 - 126		11/04/13 23:05	1

Lab Sample ID: LCS 480-149692/4
Matrix: Water
Analysis Batch: 149692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	25.0	24.4		ug/L		98	65 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		66 - 137
4-Bromofluorobenzene (Surr)	105		73 - 120
Toluene-d8 (Surr)	104		71 - 126

Lab Sample ID: LCSD 480-149692/26
Matrix: Water
Analysis Batch: 149692

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	25.0	23.4		ug/L		94	65 - 133	4	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		66 - 137
4-Bromofluorobenzene (Surr)	103		73 - 120
Toluene-d8 (Surr)	107		71 - 126

Lab Sample ID: MB 480-158160/7
Matrix: Water
Analysis Batch: 158160

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		1.0	0.90	ug/L			10/25/13 11:09	1
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/25/13 11:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		66 - 137		10/25/13 11:09	1
4-Bromofluorobenzene (Surr)	100		73 - 120		10/25/13 11:09	1
Toluene-d8 (Surr)	102		71 - 126		10/25/13 11:09	1

Lab Sample ID: LCS 480-158160/5
Matrix: Water
Analysis Batch: 158160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	25.0	22.7		ug/L		91	65 - 133
2-Chloroethyl vinyl ether	125	120		ug/L		96	70 - 129

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-158160/5
Matrix: Water
Analysis Batch: 158160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		66 - 137
4-Bromofluorobenzene (Surr)	101		73 - 120
Toluene-d8 (Surr)	99		71 - 126

Lab Sample ID: MB 480-158169/7
Matrix: Water
Analysis Batch: 158169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		1.0	0.90	ug/L			10/29/13 11:07	1
2-Chloroethyl vinyl ether	ND		5.0	0.96	ug/L			10/29/13 11:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		66 - 137		10/29/13 11:07	1
4-Bromofluorobenzene (Surr)	98		73 - 120		10/29/13 11:07	1
Toluene-d8 (Surr)	101		71 - 126		10/29/13 11:07	1

Lab Sample ID: LCS 480-158169/5
Matrix: Water
Analysis Batch: 158169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	25.0	19.7		ug/L		79	65 - 133
2-Chloroethyl vinyl ether	125	115		ug/L		92	70 - 129

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 137
4-Bromofluorobenzene (Surr)	99		73 - 120
Toluene-d8 (Surr)	98		71 - 126

Lab Chronicle

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: T8005

Lab Sample ID: 480-48350-5

Date Collected: 10/18/13 10:30

Matrix: Water

Date Received: 10/21/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		80	148248	10/29/13 16:31	RAL	TAL BUF
Total/NA	Analysis	8260C		1	158160	10/25/13 18:06	MKP	TAL BUF

Client Sample ID: T8006

Lab Sample ID: 480-48350-6

Date Collected: 10/18/13 11:15

Matrix: Water

Date Received: 10/21/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		200	148248	10/29/13 16:52	RAL	TAL BUF
Total/NA	Analysis	8260C		1000	148529	10/30/13 10:23	NMD1	TAL BUF
Total/NA	Analysis	8260C		1	158160	10/25/13 18:28	MKP	TAL BUF

Client Sample ID: T8007

Lab Sample ID: 480-48350-7

Date Collected: 10/18/13 10:22

Matrix: Water

Date Received: 10/21/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		20	147478	10/25/13 18:50	NMD1	TAL BUF
Total/NA	Analysis	8260C	DL	100	148248	10/29/13 17:14	RAL	TAL BUF
Total/NA	Analysis	8260C		100	149692	11/05/13 00:27	NQN	TAL BUF

Client Sample ID: T8009

Lab Sample ID: 480-48350-8

Date Collected: 10/18/13 10:40

Matrix: Water

Date Received: 10/21/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		200	148248	10/29/13 17:36	RAL	TAL BUF
Total/NA	Analysis	8260C		20	158160	10/25/13 19:12	MKP	TAL BUF

Client Sample ID: T8010

Lab Sample ID: 480-48350-9

Date Collected: 10/18/13 10:50

Matrix: Water

Date Received: 10/21/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	148248	10/29/13 17:58	RAL	TAL BUF
Total/NA	Analysis	8260C		1	158169	10/29/13 17:58	MKP	TAL BUF

Lab Chronicle

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Client Sample ID: TB
Date Collected: 10/18/13 11:00
Date Received: 10/21/13 09:00

Lab Sample ID: 480-48350-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	148248	10/29/13 18:20	RAL	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: CWM Chemical Services Inc
TestAmerica Job ID: 480-48350-1
Project/Site: Model City Landfill: GWES Tank Sampling

Laboratory: TestAmerica Buffalo

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0686	07-06-14
California	NELAP	9	1169CA	09-30-14
Connecticut	State Program	1	PH-0568	09-30-14
Florida	NELAP	4	E87672	06-30-14
Georgia	State Program	4	N/A	03-31-14
Illinois	NELAP	5	200003	09-30-14
Iowa	State Program	7	374	03-01-15
Kansas	NELAP	7	E-10187	01-31-14
Kentucky	State Program	4	90029	12-31-13 *
Kentucky (UST)	State Program	4	30	04-01-14
Louisiana	NELAP	6	02031	06-30-14
Maine	State Program	1	NY00044	12-04-14
Maryland	State Program	3	294	03-31-14
Massachusetts	State Program	1	M-NY044	06-30-14
Michigan	State Program	5	9937	04-01-14
Minnesota	NELAP	5	036-999-337	12-31-13 *
New Hampshire	NELAP	1	2337	11-17-14
New Jersey	NELAP	2	NY455	06-30-14
New York	NELAP	2	10026	04-01-14
North Dakota	State Program	8	R-176	03-31-14
Oklahoma	State Program	6	9421	08-31-14
Oregon	NELAP	10	NY200003	06-09-14
Pennsylvania	NELAP	3	68-00281	07-31-14
Rhode Island	State Program	1	LAO00328	12-31-13 *
Tennessee	State Program	4	TN02970	04-01-14
Texas	NELAP	6	T104704412-11-2	07-31-14
USDA	Federal		P330-11-00386	11-22-14
Virginia	NELAP	3	460185	09-14-14
Washington	State Program	10	C784	02-10-14
West Virginia DEP	State Program	3	252	03-31-14
Wisconsin	State Program	5	998310390	08-31-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill: GWES Tank Sampling

TestAmerica Job ID: 480-48350-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

WASTE MANAGEMENT CHAIN OF CUSTODY

Internal Use Only

Sampler Name (Print)	Signature:
J. Hardy	Jessica Hardy
Site Name: CWM	Spec Request: AC
Site Location: Model City, NY	Event Name: GWES Tank Sampling

TA Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	8260VOA	T-METALS	D-METALS	CHLORIDE/SULFATE/NITRATE PH, TSS, TDS	ALK / CARB / BICARB	HARDNESS	NH_3 / COD	TOC	8260VOA					Additional Analysis/Remarks
				INDICATE PRESERVATIVE BY USING KEY BELOW (OPTIONAL)															
				INDICATE CONTAINER BY USING KEY BELOW															
	T8005	10-18-13	1030hr	W	G	2/1								2/6					
	T8006	↓	1115	↓	↓	↓								↓					
	T8007		1022																
	T8009		1040																
	T8010		1050																
	TB		1100	↓	↓									↓					

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Karen S. Mehr	CWM	10/18/13	1130	Unknown	TA	10/21/13	0900
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

Matrix Key
WW = Wastewater
W = Water/Groundwater
S = Solid
SI = Sludge
MS = Miscellaneous Solids
OI = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other

Preservation Key
1. HCl, Cool to 4°
2. H_2SO_4, Cool to 4°
3. HNO_3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS: Temp 4.6 ICE #1

Courier:

Bill of Lading:

TAL-8219 (1108)

Where a purchaser (Client) places an order for laboratory, consulting or sampling services from TestAmerica Laboratories, Inc., a Delaware corporation (referred to as "TestAmerica"), TestAmerica shall provide the ordered services pursuant to these Terms and Conditions, the related Quotation or Price Schedule, as agreed in a negotiated contract. In the absence of a written agreement to the contrary, the Order constitutes an acceptance of the Client or TestAmerica's offer to do business under these Terms and Conditions, and an agreement to be bound by these Terms and Conditions. No contrary or additional terms and conditions expressed in a Client's document shall be deemed to become a part of the contract created upon acceptance of these Terms and Conditions, unless accepted by TestAmerica in writing.

1. ORDERS AND RECEIPT OF SAMPLES

1.1 The Client may place the Order (i.e., specify a Scope of Work) either by submitting a purchase order to TestAmerica in writing or by telephone subsequently confirmed in writing, or by negotiated contract. Whichever option the Client selects for placing the Order, the Order shall not be valid unless it contains sufficient specification to enable TestAmerica to carry out the Client's requirements. In particular, samples must be accompanied by: a) adequate instruction on type of analysis requested, and b) complete written disclosure of the known or suspected presence of any hazardous substances, as defined by applicable federal or state law. Where any samples which were not accompanied by the required disclosure, cause interruptions in the lab's ability to process work due to contamination or instruments or work areas, the Client will be responsible for the costs of clean up and recovery.

1.2 The Client shall provide one week's advance notice of the sample delivery schedule, or any changes to the schedule, wherever possible. Upon timely delivery of samples, TestAmerica will use its best efforts to meet mutually agreed turnaround times. All turnaround times will be calculated from the point in time when TestAmerica has determined that it can proceed with defined work following receipt, inspection of samples, and resolution of any discrepancies (in Chain-of-Custody forms and project guidance regarding work to be done (Sample Delivery Acceptance). TestAmerica reserves the right to modify or delay its turnaround time commitment, to change the date upon which TestAmerica will accept samples, or refuse Sample Delivery Acceptance for the affected samples.

1.3 TestAmerica reserves the right, exercisable at any time, to refuse or revoke Sample Delivery Acceptance for any sample which in the sole judgment of TestAmerica: a) is of unsuitable volume, b) may pose a risk or become unsuitable for handling, transport, or processing and may present, safety, environmental or other reason, whether or not due to the presence in the sample of any hazardous substance and whether or not such presence has been disclosed to TestAmerica by the Client, or c) holding times cannot be met, due to passage of more than 48 hours from the time of sampling or 1/2 the holding time for the requested test, whichever is less.

1.4 Prior to Sample Delivery Acceptance, the entire risk of loss or damage to samples remains with the Client, except where TestAmerica provides courier services. In no event will TestAmerica have any responsibility or liability for the action or inaction of any carrier shipping or delivering any sample to or from TestAmerica's premises. Client is responsible to assure that any sample containing any hazardous substance which is to be delivered to TestAmerica's premises will be packaged, labeled, transported and delivered properly and in accordance with applicable laws.

2. PAYMENT TERMS

2.1 Services performed by TestAmerica will be in accordance with prices quoted and later confirmed in writing or as stated in the Price Schedule. Quoted prices do not include sales tax. Applicable sales tax will be added to invoices where required by law. Where requested services on a group of samples received are logged in together at the laboratory total less than $200, there will be a minimum transaction charge of $200 for the sample group, or as shown on any related quote from TestAmerica. An Environmental Management Fee of 5% of the invoice value will also be applied, at TestAmerica's discretion.

2.2 Invoices may be submitted to Client upon completion of any sample delivery group. Billing corrections must be requested within 30 days of invoice date. Payment in advance is required for all Clients except those whose credit has been established with TestAmerica. For Clients with approved credit, payment terms are net 30 days from the date to invoice by TestAmerica. All overdue payments are subject to an additional interest and service charge of one and one-half percent (1.5%) (or the maximum rate permissible by law, whichever is lesser) per month or portion thereof from the due date until the date of payment. All fees are charged or billed directly to the Client. Billing of a third party will not be accepted without a statement, signed by the third party, that acknowledges and accepts payment responsibility.

2.3 TestAmerica may suspend work and withhold delivery of data under this order at any time in the event Client fails to make timely payment of its invoices. Client shall be responsible for all costs and expenses of collection including reasonable attorney's fees. TestAmerica reserves the right to refuse to proceed with work at any time based upon an unfavorable Client credit report.

3. CHANGE ORDERS, TERMINATION

3.1 Changes to the Scope of Work, price, or result delivery date may be initiated by TestAmerica after Sample Delivery Acceptance due to any condition which conflicts with analytical QA or other protocols warranted in these Terms and Conditions. TestAmerica will not proceed with such changes until an agreement with the Client is reached on the amount of any cost, schedule change or technical change to the Scope of Work, and such agreement is documented in writing.

3.2 Changes to the Scope of Work, including but not limited to increasing or decreasing the work, changing test and analysis specification, or acceleration in the performance to the work may result in a change in cost and delivery acceptance. Such a change will be documented in writing and may result in a change in cost and turnaround time commitment. TestAmerica's acceptance of such changes is contingent upon technical feasibility and operational capacity.

3.3 Suspension or termination of all or any part of the work may be initiated by the Client. TestAmerica will be compensated consistent with Section 2 of these Terms and Conditions. TestAmerica will complete all work in progress and be paid in full for all work completed.

4. WARRANTIES AND LIABILITY

4.1 Where applicable, TestAmerica will use analytical methodologies which are in substantial conformity with published test methods. TestAmerica has implemented these methods in its Laboratory Quality Manuals and referenced Standard Operating Procedures and where the nature or composition of the sample requires it, TestAmerica reserves the right to deviate from these methodologies as necessary or appropriate, based on its reasonable judgment of TestAmerica, which deviations, if any, will be made on a basis consistent with recognized standards of the industry and/or TestAmerica's Laboratory Quality Manuals. Client may request that TestAmerica samples to comply with TestAmerica's Quality Manuals will be deemed to have met holding times provided the initial analysis was performed within the applicable holding time. Where reanalysis demonstrates that sample matrix interference is the cause of failure to meet any Quality Manual requirements, the warranty will be deemed to have been met.

4.2 TestAmerica shall start preparation and/or analysis within holding times provided that Sample Delivery Acceptance occurs within 48 hours of sampling or 1/2 of the holding time for the test, whichever is less. Where resolution of inconsistencies leading to Sample Delivery Acceptance does not occur within this period, TestAmerica will use its best efforts to meet holding times and will proceed with the work provided that, in TestAmerica's judgment, the chain-of-custody or definition of the Scope of Work provide sufficient guidance. Reanalysis of samples to comply with TestAmerica's Quality Manuals will be deemed to have met holding times provided the prior to agreement on a QAPP, TestAmerica will proceed with analyses under its standard Quality Manuals then in effect, and TestAmerica will not be responsible for any resampling of other charges if work must be repeated to comply with a subsequently finalized QAPP.

4.3 TestAmerica warrants that it possesses and maintains all licenses and certifications which are required to perform services under these Terms and Conditions provided that such requirements are specified in writing to TestAmerica prior to Sample Delivery Acceptance. TestAmerica will notify the Client in writing of any decertification or revocation of any license, or notice of either, which affects work in progress.

4.4 The warranty obligations set forth in Sections 4.1, 4.2 and 4.3 are the sole and exclusive warranties given by TestAmerica in connection with any services performed by TestAmerica or any Results generated from such services, and TestAmerica gives and makes NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND.

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EXPRESS OR IMPLIED. No representative of TestAmerica is authorized to give or make any other representation or warranty or modify this warranty in any way.

4.5 Client's sole and exclusive remedy for the breach of warranty in connection with any services performed by TestAmerica, will be limited to repeating any services performed, contingent on the Client's providing, at the request of TestAmerica and at the Client's expense, additional sample(s) if necessary. Any reanalysis requested by the Client generating Results consistent with the original Results will be at the Client's expense. If resampling is necessary, TestAmerica's liability for resampling costs will be limited to actual cost or one hundred and fifty dollars ($150) per sample, whichever is less.

4.6 TestAmerica's liability for any and all causes of action arising hereunder, whether based in contract, tort, warranty, negligence or otherwise, shall be limited to the lesser amount of compensation for the services performed during the year after TestAmerica's completion of the services. Under no circumstances shall TestAmerica be responsible for loss of use, loss of profits, or any special, indirect, incidental or consequential damages occasioned by the services performed or by application or use of the reports prepared.

4.7 In no event shall TestAmerica have any responsibility or liability to the Client for any failure or delay in performance by TestAmerica which results, directly or indirectly, in whole or in part, from any cause or circumstance beyond the reasonable control of TestAmerica. Such causes and circumstances shall include, but not be limited to, acts of God, acts of Client, acts of any governmental authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, equipment breakdown, matrix interference or unknown highly contaminated samples that impact instrument operation, unavailability of supplies from usual suppliers, difficulties or delays in transportation, mail or delivery services, or any other cause beyond TestAmerica's reasonable control.

5. RESULTS, WORK PRODUCT

5.1 Data or information provided to TestAmerica or generated by services performed under this agreement shall only become the property of the Client upon receipt in full by TestAmerica of payment for the whole Order. Ownership of any analytical method, QA/QC protocols, software programs or equipment developed by TestAmerica for performance of work will be retained by TestAmerica, and Client shall not disclose such information to any third party.

5.2 Data and sample materials provided by Client or at Client's request, and the result obtained by TestAmerica shall be held in confidence (unless such information is generally available to the public or is in the public domain or Client has failed to pay TestAmerica for all services rendered or is otherwise in breach of these Terms and Conditions), subject to any disclosure required by law or legal process.

5.3 Should the Results delivered by TestAmerica be used by the Client or Client's client, even though subsequently determined not to meet the warranties described in these Terms and Conditions, then the compensation will be adjusted based upon mutual agreement. In no case shall the Client unreasonably withhold TestAmerica's right to independently defend its data.

5.4 TestAmerica reserves the right to perform the services at any laboratory in the TestAmerica network, unless the Client has specified a particular location for the work. In addition, TestAmerica reserves the right to subcontract services ordered by the Client to another laboratory or laboratories, if, in TestAmerica's sole judgment, it is reasonably necessary. Appropriate or advisable to do so. TestAmerica will in no way be liable for any subcontracted services (outside the TestAmerica network) except for work performed at laboratories which have been audited and approved by TestAmerica.

5.5 TestAmerica shall dispose of the Client's samples 30 days after the analytical report is issued, unless instructed to store them for an alternate period of time or return such samples to the Client, in a manner consistent with U.S. Environmental Protection Agency regulations or other applicable federal, state or local requirements. All samples in Summa canisters will be retained for 5 days after analysis and data review. Longer storage periods may be requested and may be accommodated as space allows for an additional charge. Any samples or projects that are canceled or not accepted, or for which return was requested, may be returned to the Client at his own expense. TestAmerica reserves the right to return to the Client any sample or unused portion of a sample that is not within TestAmerica's permitted capability or the capabilities of TestAmerica's designated waste disposal vendor(s). ALL DIOXIN, MIXED WASTE, AND RADIOACTIVE SAMPLES WILL BE RETURNED TO THE CLIENT, unless prior arrangements for disposal are made.

5.6 Unless a different time period is agreed to in any order under these Terms and Conditions, TestAmerica agrees to retain all records for five (5) years.

5.7 In the event that TestAmerica is required to respond to legal process related to services for Client, Client agrees to reimburse TestAmerica for hourly charges for personnel involved in the response and attorney fees reasonably incurred in obtaining advice concerning the response, preparation to testify, and appearances related to the legal process, travel and all reasonable expenses associated with the litigation.

6. INSURANCE

6.1 TestAmerica shall maintain in force during the performance of services under these Terms and Conditions, Workers' Compensation and Employers Liability Insurance in accordance with the laws of the states having jurisdiction over TestAmerica's employees who are engaged in the performance of the work. TestAmerica shall also maintain during such period, Comprehensive General and Contractual Liability (limit of $1,000,000 per occurrence/ $2,000,000aggregate), Comprehensive Automobile Liability, owned and hired, ($1,000,000 combined single limit), and Professional Pollution Liability Insurance (limit of $5,000,000 per occurrence/aggregate).

7. AUDIT

7.1 Upon prior notice to TestAmerica, the Client may audit and inspect TestAmerica's records and accounts covering reimbursable costs related to work done for the Client, for a period of two (2) years after completion of the work. The purpose of any such audit shall be only for verification of such costs, and TestAmerica shall not be required to provide access to cost records where prices are expressed as fixed fees or published unit prices.

8. MISCELLANEOUS PROVISIONS

8.1 These Terms and Conditions, together with any additions or revisions which may be agreed to in writing by TestAmerica, embody the whole agreement of the parties and provide the only remedies available. There are no promises, terms, conditions, understandings, obligations or agreements other than those contained herein, and these Terms and Conditions shall supersede all previous communications, representations, or agreements, either verbal or written, between the Client and TestAmerica. These Terms and Conditions, and any transaction or agreements to which they apply, shall be governed both as to interpretation and performance by the laws of the state where TestAmerica's services are performed.

8.2 The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of these Terms and Conditions, the intent of the parties being that the provisions be severable. The section headings for these Terms and Conditions are intended solely for convenient reference and shall not define, limit or affect in any way these Terms and Conditions or their interpretations. No waiver by either party of any provision, term or condition hereof or of any obligation of the other party hereunder shall constitute a waiver of any subsequent breach or other obligation.

8.3 The obligations, liabilities, and remedies of the parties, as provided herein, are exclusive and in lieu of any others available at law or in equity. Indemnifications, releases from liability and limitations of liability shall apply, notwithstanding the fault, negligence or strict liability of the party to be indemnified, released, or whose liability is limited, except to the extent of sole negligence or willful misconduct.

1550 Balmer Road
Model City, NY 14107
716-286-1550 Phone
716-286-0326 Fax

01 May 2014

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1404140

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **05/01/14 10:15**

Client: Environmental Monitoring

Work Order(s): 1404140

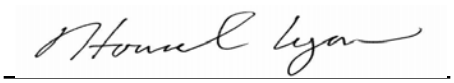
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1404140-01	T8005	Aqueous	04/24/14 11:38	04/24/14 12:08
1404140-02	T8006	Aqueous	04/24/14 12:04	04/24/14 12:08
1404140-03	T8007	Aqueous	04/24/14 11:30	04/24/14 12:08
1404140-04	T8009	Aqueous	04/24/14 11:50	04/24/14 12:08
1404140-05	T8010	Aqueous	04/24/14 11:45	04/24/14 12:08

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

The enclosed analytical results are representative of the sample as received by the laboratory. CWM Chemical Services Laboratory makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. This report is intended for the sole use and benefit of Waste Management and it's companies. No representation concerning significance of the reported data is made to any person or entity. To the best of my knowledge, the information contained in this report is accurate and complete. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:38
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		1000	ug/L	04/25/14 19:19	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	ND		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	ND		1000	"	"	LAD	"
1,1,1-Trichloroethane	ND		1000	"	"	LAD	"
Carbon tetrachloride	ND		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**9620**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	ND		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	ND		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 05/01/14 10:15**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:38
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		1000	ug/L	04/25/14 19:19	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*91.9 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*91.9 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*92.1 %*		*81-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 12:04
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		10000	ug/L	04/25/14 19:47	LAD	EPA 8260C
Vinyl chloride	ND		10000	"	"	LAD	"
Bromomethane	ND		10000	"	"	LAD	"
Chloroethane	ND		10000	"	"	LAD	"
Trichlorofluoromethane	ND		10000	"	"	LAD	"
Diethyl ether	ND		10000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	"	"	LAD	"
Acetone	ND		10000	"	"	LAD	"
1,1-Dichloroethene	ND		10000	"	"	LAD	"
Methylene chloride	ND		10000	"	"	LAD	"
Carbon disulfide	ND		10000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		10000	"	"	LAD	"
1,1-Dichloroethane	ND		10000	"	"	LAD	"
Vinyl acetate	ND		10000	"	"	LAD	"
2-Butanone	ND		10000	"	"	LAD	"
Ethyl acetate	ND		10000	"	"	LAD	"
Chloroform	ND		10000	"	"	LAD	"
1,1,1-Trichloroethane	ND		10000	"	"	LAD	"
Carbon tetrachloride	**80400**		10000	"	"	LAD	"
1,2-Dichloroethane	ND		10000	"	"	LAD	"
Benzene	ND		10000	"	"	LAD	"
Trichloroethene	ND		10000	"	"	LAD	"
1,2-Dichloropropane	ND		10000	"	"	LAD	"
Bromodichloromethane	ND		10000	"	"	LAD	"
4-Methyl-2-pentanone	ND		10000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		10000	"	"	LAD	"
Toluene	ND		10000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		10000	"	"	LAD	"
1,1,2-Trichloroethane	ND		10000	"	"	LAD	"
2-Hexanone	ND		10000	"	"	LAD	"
Tetrachloroethene	ND		10000	"	"	LAD	"
Dibromochloromethane	ND		10000	"	"	LAD	"
Chlorobenzene	ND		10000	"	"	LAD	"
Ethylbenzene	ND		10000	"	"	LAD	"
Xylenes (Total)	ND		30000	"	"	LAD	"
Styrene	ND		10000	"	"	LAD	"
Bromoform	ND		10000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		10000	"	"	LAD	"
1,3-Dichlorobenzene	ND		10000	"	"	LAD	"
1,4-Dichlorobenzene	ND		10000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 05/01/14 10:15**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 12:04
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10000	ug/L	04/25/14 19:47	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*93.6 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*93.4 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*91.2 %*		*81-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:30
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-03RE1	Client Sample ID:	T8007		Aqueous

Volatiles - Aqueous

Prep Method: EPA 5030C

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Chloromethane	ND		1000	ug/L	04/30/14 22:46	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**2470**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	ND		1000	"	"	LAD	"
1,1,1-Trichloroethane	**1430**		1000	"	"	LAD	"
Carbon tetrachloride	ND		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**2770**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**3380**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	**2720**		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 05/01/14 10:15**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:30
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-03RE1	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**10000**		1000	ug/L	04/30/14 22:46	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*101 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*104 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*100 %*		*85-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:50
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-04	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		2000	ug/L	04/25/14 20:44	LAD	EPA 8260C
Vinyl chloride	ND		2000	"	"	LAD	"
Bromomethane	ND		2000	"	"	LAD	"
Chloroethane	ND		2000	"	"	LAD	"
Trichlorofluoromethane	ND		2000	"	"	LAD	"
Diethyl ether	ND		2000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2000	"	"	LAD	"
Acetone	ND		2000	"	"	LAD	"
1,1-Dichloroethene	ND		2000	"	"	LAD	"
Methylene chloride	**6130**		2000	"	"	LAD	"
Carbon disulfide	ND		2000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		2000	"	"	LAD	"
1,1-Dichloroethane	ND		2000	"	"	LAD	"
Vinyl acetate	ND		2000	"	"	LAD	"
2-Butanone	ND		2000	"	"	LAD	"
Ethyl acetate	ND		2000	"	"	LAD	"
Chloroform	**3740**		2000	"	"	LAD	"
1,1,1-Trichloroethane	ND		2000	"	"	LAD	"
Carbon tetrachloride	**8800**		2000	"	"	LAD	"
1,2-Dichloroethane	ND		2000	"	"	LAD	"
Benzene	ND		2000	"	"	LAD	"
Trichloroethene	**8480**		2000	"	"	LAD	"
1,2-Dichloropropane	ND		2000	"	"	LAD	"
Bromodichloromethane	ND		2000	"	"	LAD	"
4-Methyl-2-pentanone	ND		2000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		2000	"	"	LAD	"
Toluene	ND		2000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		2000	"	"	LAD	"
1,1,2-Trichloroethane	ND		2000	"	"	LAD	"
2-Hexanone	ND		2000	"	"	LAD	"
Tetrachloroethene	ND		2000	"	"	LAD	"
Dibromochloromethane	ND		2000	"	"	LAD	"
Chlorobenzene	**2920**		2000	"	"	LAD	"
Ethylbenzene	ND		2000	"	"	LAD	"
Xylenes (Total)	ND		6000	"	"	LAD	"
Styrene	ND		2000	"	"	LAD	"
Bromoform	ND		2000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		2000	"	"	LAD	"
1,3-Dichlorobenzene	ND		2000	"	"	LAD	"
1,4-Dichlorobenzene	ND		2000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 05/01/14 10:15**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:50
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-04	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**4550**		2000	ug/L	04/25/14 20:44	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*91.6 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*92.2 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*91.3 %*		*81-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:45
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-05	Client Sample ID:	T8010		Aqueous

Volatiles - Aqueous

Prep Method: EPA 5030C

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Chloromethane	ND		50.0	ug/L	04/25/14 21:14	LAD	EPA 8260C
Vinyl chloride	ND		50.0	"	"	LAD	"
Bromomethane	ND		50.0	"	"	LAD	"
Chloroethane	ND		50.0	"	"	LAD	"
Trichlorofluoromethane	ND		50.0	"	"	LAD	"
Diethyl ether	ND		50.0	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		50.0	"	"	LAD	"
Acetone	ND		50.0	"	"	LAD	"
1,1-Dichloroethene	ND		50.0	"	"	LAD	"
Methylene chloride	ND		50.0	"	"	LAD	"
Carbon disulfide	ND		50.0	"	"	LAD	"
trans-1,2-Dichloroethene	ND		50.0	"	"	LAD	"
1,1-Dichloroethane	ND		50.0	"	"	LAD	"
Vinyl acetate	ND		50.0	"	"	LAD	"
2-Butanone	ND		50.0	"	"	LAD	"
Ethyl acetate	ND		50.0	"	"	LAD	"
Chloroform	ND		50.0	"	"	LAD	"
1,1,1-Trichloroethane	ND		50.0	"	"	LAD	"
Carbon tetrachloride	ND		50.0	"	"	LAD	"
1,2-Dichloroethane	ND		50.0	"	"	LAD	"
Benzene	ND		50.0	"	"	LAD	"
Trichloroethene	ND		50.0	"	"	LAD	"
1,2-Dichloropropane	ND		50.0	"	"	LAD	"
Bromodichloromethane	ND		50.0	"	"	LAD	"
4-Methyl-2-pentanone	ND		50.0	"	"	LAD	"
cis-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
Toluene	ND		50.0	"	"	LAD	"
trans-1,3-Dichloropropene	ND		50.0	"	"	LAD	"
1,1,2-Trichloroethane	ND		50.0	"	"	LAD	"
2-Hexanone	ND		50.0	"	"	LAD	"
Tetrachloroethene	ND		50.0	"	"	LAD	"
Dibromochloromethane	ND		50.0	"	"	LAD	"
Chlorobenzene	ND		50.0	"	"	LAD	"
Ethylbenzene	ND		50.0	"	"	LAD	"
Xylenes (Total)	ND		150	"	"	LAD	"
Styrene	ND		50.0	"	"	LAD	"
Bromoform	ND		50.0	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		50.0	"	"	LAD	"
1,3-Dichlorobenzene	ND		50.0	"	"	LAD	"
1,4-Dichlorobenzene	ND		50.0	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 05/01/14 10:15**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/14 11:45
Work Order:	1404140	Project #:	CWM	Received:	04/24/14 12:08
Lab Sample ID:	1404140-05	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		50.0	ug/L	04/25/14 21:14	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*92.9 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*91.9 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*91.8 %*		*81-115*		"	LAD	"

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
**	Method is not covered under the laboratory's ELAP certifications.
***	For each PCB fuel sample prepared by method 3580A, the chromatogram is reviewed for large, unexpected peaks. Unless otherwise noted, no such peaks were found.

1550 Balmer Road
Model City, NY 14107
716-286-1550 Phone
716-286-0326 Fax

29 April 2015

Jill Banaszak
Environmental Monitoring
1550 Balmer Road
Model City, NY 14107

RE: T8000's
Work Order(s): 1504143

CERTIFICATES

NYSDOH LAB ID No.: 11383
U.S. EPA LAB CODE: NY01252

CWM Chemical Services, LLC. **Reported:** **04/29/15 10:18**

Client: Environmental Monitoring

Work Order(s): 1504143

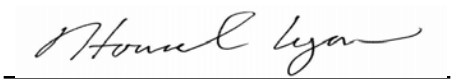
ANALYTICAL REPORT FOR SAMPLES

LabSample ID	Client Sample ID	Matrix	Date Sampled	Date Received
1504143-01	T8005	Aqueous	04/24/15 14:21	04/24/15 15:35
1504143-02	T8006	Aqueous	04/24/15 15:11	04/24/15 15:35
1504143-03	T8007	Aqueous	04/24/15 14:40	04/24/15 15:35
1504143-04	T8009	Aqueous	04/24/15 14:55	04/24/15 15:35
1504143-05	T8010	Aqueous	04/24/15 15:17	04/24/15 15:35

All Quality Control associated with these samples met EPA or laboratory specifications unless noted.

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According to Sample Collection Requirements for Non-Potable Water located in the ELAP Certification Manual, pH analysis is required within 15 minutes of sample collection. Analysis is generally not completed within 15 minutes, but as soon as possible after laboratory receipt.

Approved By: 

Title: QA/QC Coordinator

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:21
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		1000	ug/L	04/27/15 11:42	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	ND		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	ND		1000	"	"	LAD	"
1,1,1-Trichloroethane	ND		1000	"	"	LAD	"
Carbon tetrachloride	ND		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**15400**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	ND		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	ND		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:21
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-01	Client Sample ID:	T8005		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		1000	ug/L	04/27/15 11:42	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*94.3 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*102 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*97.0 %*		*85-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:11
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		5000	ug/L	04/27/15 12:11	LAD	EPA 8260C
Vinyl chloride	ND		5000	"	"	LAD	"
Bromomethane	ND		5000	"	"	LAD	"
Chloroethane	ND		5000	"	"	LAD	"
Trichlorofluoromethane	ND		5000	"	"	LAD	"
Diethyl ether	ND		5000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5000	"	"	LAD	"
Acetone	ND		5000	"	"	LAD	"
1,1-Dichloroethene	ND		5000	"	"	LAD	"
Methylene chloride	ND		5000	"	"	LAD	"
Carbon disulfide	ND		5000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		5000	"	"	LAD	"
1,1-Dichloroethane	ND		5000	"	"	LAD	"
Vinyl acetate	ND		5000	"	"	LAD	"
2-Butanone	ND		5000	"	"	LAD	"
Ethyl acetate	ND		5000	"	"	LAD	"
Chloroform	**8710**		5000	"	"	LAD	"
1,1,1-Trichloroethane	ND		5000	"	"	LAD	"
Carbon tetrachloride	**116000**	E	5000	"	"	LAD	"
1,2-Dichloroethane	ND		5000	"	"	LAD	"
Benzene	ND		5000	"	"	LAD	"
Trichloroethene	ND		5000	"	"	LAD	"
1,2-Dichloropropane	ND		5000	"	"	LAD	"
Bromodichloromethane	ND		5000	"	"	LAD	"
4-Methyl-2-pentanone	ND		5000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		5000	"	"	LAD	"
Toluene	ND		5000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		5000	"	"	LAD	"
1,1,2-Trichloroethane	ND		5000	"	"	LAD	"
2-Hexanone	ND		5000	"	"	LAD	"
Tetrachloroethene	ND		5000	"	"	LAD	"
Dibromochloromethane	ND		5000	"	"	LAD	"
Chlorobenzene	ND		5000	"	"	LAD	"
Ethylbenzene	ND		5000	"	"	LAD	"
Xylenes (Total)	ND		15000	"	"	LAD	"
Styrene	ND		5000	"	"	LAD	"
Bromoform	ND		5000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		5000	"	"	LAD	"
1,3-Dichlorobenzene	ND		5000	"	"	LAD	"
1,4-Dichlorobenzene	ND		5000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:11
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-02	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		5000	ug/L	04/27/15 12:11	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*96.0 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*102 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*96.6 %*		*85-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:11
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-02RE1	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		10000	ug/L	04/28/15 14:34	LAD	EPA 8260C
Vinyl chloride	ND		10000	"	"	LAD	"
Bromomethane	ND		10000	"	"	LAD	"
Chloroethane	ND		10000	"	"	LAD	"
Trichlorofluoromethane	ND		10000	"	"	LAD	"
Diethyl ether	ND		10000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	"	"	LAD	"
Acetone	ND		10000	"	"	LAD	"
1,1-Dichloroethene	ND		10000	"	"	LAD	"
Methylene chloride	ND		10000	"	"	LAD	"
Carbon disulfide	ND		10000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		10000	"	"	LAD	"
1,1-Dichloroethane	ND		10000	"	"	LAD	"
Vinyl acetate	ND		10000	"	"	LAD	"
2-Butanone	ND		10000	"	"	LAD	"
Ethyl acetate	ND		10000	"	"	LAD	"
Chloroform	ND		10000	"	"	LAD	"
1,1,1-Trichloroethane	ND		10000	"	"	LAD	"
Carbon tetrachloride	**102000**		10000	"	"	LAD	"
1,2-Dichloroethane	ND		10000	"	"	LAD	"
Benzene	ND		10000	"	"	LAD	"
Trichloroethene	ND		10000	"	"	LAD	"
1,2-Dichloropropane	ND		10000	"	"	LAD	"
Bromodichloromethane	ND		10000	"	"	LAD	"
4-Methyl-2-pentanone	ND		10000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		10000	"	"	LAD	"
Toluene	ND		10000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		10000	"	"	LAD	"
1,1,2-Trichloroethane	ND		10000	"	"	LAD	"
2-Hexanone	ND		10000	"	"	LAD	"
Tetrachloroethene	ND		10000	"	"	LAD	"
Dibromochloromethane	ND		10000	"	"	LAD	"
Chlorobenzene	ND		10000	"	"	LAD	"
Ethylbenzene	ND		10000	"	"	LAD	"
Xylenes (Total)	ND		30000	"	"	LAD	"
Styrene	ND		10000	"	"	LAD	"
Bromoform	ND		10000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		10000	"	"	LAD	"
1,3-Dichlorobenzene	ND		10000	"	"	LAD	"
1,4-Dichlorobenzene	ND		10000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:11
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-02RE1	Client Sample ID:	T8006		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10000	ug/L	04/28/15 14:34	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*98.3 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*105 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*97.0 %*		*85-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:40
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-03	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		1000	ug/L	04/27/15 12:39	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	**1180**		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**2730**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	ND		1000	"	"	LAD	"
1,1,1-Trichloroethane	**1690**		1000	"	"	LAD	"
Carbon tetrachloride	ND		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**3300**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	ND		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	ND		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**3700**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	**2900**		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:40
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-03	Client Sample ID:	T8007		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	**11300**		1000	ug/L	04/27/15 12:39	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*93.1 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*103 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*96.0 %*		*85-115*		"	LAD	"

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:55
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-04	Client Sample ID:	T8009		Aqueous

Volatiles - Aqueous

Prep Method: EPA 5030C

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Chloromethane	ND		1000	ug/L	04/27/15 13:07	LAD	EPA 8260C
Vinyl chloride	ND		1000	"	"	LAD	"
Bromomethane	ND		1000	"	"	LAD	"
Chloroethane	ND		1000	"	"	LAD	"
Trichlorofluoromethane	ND		1000	"	"	LAD	"
Diethyl ether	ND		1000	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	**1050**		1000	"	"	LAD	"
Acetone	ND		1000	"	"	LAD	"
1,1-Dichloroethene	ND		1000	"	"	LAD	"
Methylene chloride	**3750**		1000	"	"	LAD	"
Carbon disulfide	ND		1000	"	"	LAD	"
trans-1,2-Dichloroethene	ND		1000	"	"	LAD	"
1,1-Dichloroethane	ND		1000	"	"	LAD	"
Vinyl acetate	ND		1000	"	"	LAD	"
2-Butanone	ND		1000	"	"	LAD	"
Ethyl acetate	ND		1000	"	"	LAD	"
Chloroform	**3050**		1000	"	"	LAD	"
1,1,1-Trichloroethane	ND		1000	"	"	LAD	"
Carbon tetrachloride	**6620**		1000	"	"	LAD	"
1,2-Dichloroethane	ND		1000	"	"	LAD	"
Benzene	ND		1000	"	"	LAD	"
Trichloroethene	**5560**		1000	"	"	LAD	"
1,2-Dichloropropane	ND		1000	"	"	LAD	"
Bromodichloromethane	ND		1000	"	"	LAD	"
4-Methyl-2-pentanone	ND		1000	"	"	LAD	"
cis-1,3-Dichloropropene	ND		1000	"	"	LAD	"
Toluene	**1130**		1000	"	"	LAD	"
trans-1,3-Dichloropropene	ND		1000	"	"	LAD	"
1,1,2-Trichloroethane	**1120**		1000	"	"	LAD	"
2-Hexanone	ND		1000	"	"	LAD	"
Tetrachloroethene	ND		1000	"	"	LAD	"
Dibromochloromethane	ND		1000	"	"	LAD	"
Chlorobenzene	**1990**		1000	"	"	LAD	"
Ethylbenzene	ND		1000	"	"	LAD	"
Xylenes (Total)	ND		3000	"	"	LAD	"
Styrene	ND		1000	"	"	LAD	"
Bromoform	ND		1000	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		1000	"	"	LAD	"
1,3-Dichlorobenzene	ND		1000	"	"	LAD	"
1,4-Dichlorobenzene	ND		1000	"	"	LAD	"
1,2-Dichlorobenzene	**2600**		1000	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 14:55
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-04	Client Sample ID:	T8009		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Surrogate: 1,2-Dichloroethane-d4	*95.4 %*		*85-115*		*04/27/15 13:07*	LAD	*EPA 8260C*
Surrogate: Toluene-d8	*104 %*		*85-115*		*"*	LAD	*"*
Surrogate: 4-Bromofluorobenzene	*96.6 %*		*85-115*		*"*	LAD	*"*

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:17
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-05	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
Volatiles - Aqueous							
Prep Method: EPA 5030C							
Chloromethane	ND		10.0	ug/L	04/27/15 13:34	LAD	EPA 8260C
Vinyl chloride	ND		10.0	"	"	LAD	"
Bromomethane	ND		10.0	"	"	LAD	"
Chloroethane	ND		10.0	"	"	LAD	"
Trichlorofluoromethane	ND		10.0	"	"	LAD	"
Diethyl ether	ND		10.0	"	"	LAD	"
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	"	"	LAD	"
Acetone	ND		10.0	"	"	LAD	"
1,1-Dichloroethene	ND		10.0	"	"	LAD	"
Methylene chloride	ND		10.0	"	"	LAD	"
Carbon disulfide	ND		10.0	"	"	LAD	"
trans-1,2-Dichloroethene	ND		10.0	"	"	LAD	"
1,1-Dichloroethane	ND		10.0	"	"	LAD	"
Vinyl acetate	ND		10.0	"	"	LAD	"
2-Butanone	ND		10.0	"	"	LAD	"
Ethyl acetate	ND		10.0	"	"	LAD	"
Chloroform	ND		10.0	"	"	LAD	"
1,1,1-Trichloroethane	ND		10.0	"	"	LAD	"
Carbon tetrachloride	ND		10.0	"	"	LAD	"
1,2-Dichloroethane	ND		10.0	"	"	LAD	"
Benzene	ND		10.0	"	"	LAD	"
Trichloroethene	**16.0**		10.0	"	"	LAD	"
1,2-Dichloropropane	ND		10.0	"	"	LAD	"
Bromodichloromethane	ND		10.0	"	"	LAD	"
4-Methyl-2-pentanone	ND		10.0	"	"	LAD	"
cis-1,3-Dichloropropene	ND		10.0	"	"	LAD	"
Toluene	**11.9**		10.0	"	"	LAD	"
trans-1,3-Dichloropropene	ND		10.0	"	"	LAD	"
1,1,2-Trichloroethane	ND		10.0	"	"	LAD	"
2-Hexanone	ND		10.0	"	"	LAD	"
Tetrachloroethene	ND		10.0	"	"	LAD	"
Dibromochloromethane	ND		10.0	"	"	LAD	"
Chlorobenzene	**13.8**		10.0	"	"	LAD	"
Ethylbenzene	ND		10.0	"	"	LAD	"
Xylenes (Total)	ND		30.0	"	"	LAD	"
Styrene	ND		10.0	"	"	LAD	"
Bromoform	ND		10.0	"	"	LAD	"
1,1,2,2-Tetrachloroethane	ND		10.0	"	"	LAD	"
1,3-Dichlorobenzene	ND		10.0	"	"	LAD	"
1,4-Dichlorobenzene	ND		10.0	"	"	LAD	"

CWM Chemical Services, LLC. **Reported: 04/29/15 10:18**

Client:	Environmental Monitoring	Project:	T8000's	Sampled:	04/24/15 15:17
Work Order:	1504143	Project #:	CWM	Received:	04/24/15 15:35
Lab Sample ID:	1504143-05	Client Sample ID:	T8010		Aqueous

Analyte	Result	Notes	Reporting Limit	Units	Analyzed	Analyst	Method
1,2-Dichlorobenzene	ND		10.0	ug/L	04/27/15 13:34	LAD	EPA 8260C
Surrogate: 1,2-Dichloroethane-d4	*94.5 %*		*85-115*		"	LAD	"
Surrogate: Toluene-d8	*104 %*		*85-115*		"	LAD	"
Surrogate: 4-Bromofluorobenzene	*96.0 %*		*85-115*		"	LAD	"

Notes and Definitions

E	Concentration exceeds calibration range. Result is estimated.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
**	Method is not covered under the laboratory's ELAP certifications.
***	For each PCB fuel sample prepared by method 3580A, the chromatogram is reviewed for large, unexpected peaks. Unless otherwise noted, no such peaks were found.

Attachment 11
Tanks Software Model Output for ATWS Tanks

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	Frac Tank #3
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	SLF-7 Leachate Processing

Tank Dimensions

Shell Length (ft)	11.00
Diameter (ft)	18.00
Liquid Height (ft)	11.00
Avg. Liquid Height (ft)	5.50
Volume (gal)	21,000.00
Turnovers	2.38
Net Throughput (gal/yr)	50,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 7 Leachate	All	49.26	44.94	53.57	47.70	0.3387	0.3386	0.3387	18.0507	-	-	18.01	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	100.20	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9995	0.9963	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	131.40	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 7 Leachate	All	49.26	-	-	47.70	0.3387	-	-	18.0507	-	-	18.01	-	-	-	-		-	-	-	-	18.0507
Acetone						2.2051	-	-	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	180000	0.00018	0.000003	0.000056	0.0211
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	179000	0.000179	0.000002	0.000045	0.0075
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	167000	0.000167	0.000002	0.000035	0.0386
Toluene						0.2342	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	100.20	5990	0.00000599	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9995	0.9963	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999450410	0.9994504	0.055525	0.999861	17.9834
Xylenes (mixed isomers)						0.0613	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	131.40	17600	0.0000176	0.000000	0.000002	0.0001
									check:	**1.0000**	**1.0000**									check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF		AP-42 EQUATIONS	CALCULATIONS				
Standing Losses (lb)	15.4329		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	15.4303	lbs		
V_V = Vapor Space Volume (cu ft)	1399.5795			V_V =	1399.5795	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9102			K_S =	0.9102			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	1399.5795	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	1399.5795	cu ft		
D = Tank Diameter	18.0000	ft						
H_{VO} = Vapor Space Outage	5.5000	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	5.5000	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	11.0000	ft						
H_L = Average Liquid Height	5.5000	ft						
Roof Outage	0.0000	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0000	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0000	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0000	ft/ft	$H_R = S_R * R_S$	H_R =	0.0000	ft		
R_S = Shell Radius	9.0000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0507			M_V =	18.0507	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0001	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3387	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9102		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.9102			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						
Vapor Space Outage	5.5000	ft						
Working Losses	7.2774	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	7.2774	lbs		
M_V = Vapor Molecular Weight	18.0507			M_V =	18.0507	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3387	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	50,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	1,190.48	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	2.3810			N =	2.3810			for turnovers <36, K_N = 1
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	21000.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	11.0000	ft						
Tank Diameter	18.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	22.7103	lb		L_T =	22.7077	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 7 Leachate	7.28	15.43	22.71
Methyl ethyl ketone	0.00	0.01	0.01
Toluene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Water	7.25	15.38	22.63
Acetone	0.01	0.02	0.03
Methylene chloride	0.02	0.03	0.05

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
7.28	15.43	22.71
0.00	0.01	0.01
0.00	0.00	0.00
0.00	0.00	0.00
7.25	15.37	22.62
0.01	0.02	0.03
0.02	0.03	0.05

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-100
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	3 Year average + GW + Bulk Receipts

Tank Dimensions

Shell Length (ft)	23.00	
Diameter (ft)	35.00	
Liquid Height (ft)	23.00	
Avg. Liquid Height (ft)	12.50	
Volume (gal)	160,545.00	
Turnovers	18.6864	18.6863
Net Throughput (gal/yr)	3,000,000	
Is tank heated (y/n)	N	

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-100 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
T-100 Liquid	All	49.26	-	-	47.70	0.3386	-	-	18.0276	-	-	18.00	-	-	-	-		-	-	-	-	18.0276
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	237000	0.000237	0.000004	0.000073	0.0278
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	80500	0.0000805	0.000001	0.000020	0.0034
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	9950	0.00000995	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	31500	0.0000315	0.000000	0.000007	0.0073
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	4160	0.00000416	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9996	0.9979	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999636890	0.99963689	0.055535	0.999897	17.9890
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-100 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**				
Standing Losses (lb)	105.8100		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	105.8077	lbs		
V_V = Vapor Space Volume (cu ft)	10452.9541			V_V =	10452.9541	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.8369			K_S =	0.8369			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	10452.9541	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	10452.9541	cu ft		
D = Tank Diameter	35.0000	ft						
H_{VO} = Vapor Space Outage	10.8646	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	10.8646	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	23.0000	ft						
H_L = Average Liquid Height	12.5000	ft						
Roof Outage	0.3646	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.3646	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.3646	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	1.0938	ft		
R_S = Shell Radius	17.5000	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA}$ - 0.25 delta T_V	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA}$ + 0.25 delta T_V	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8369		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.8369			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	10.8646	ft						
Working Losses	435.9674	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	435.9674	lbs		
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	18.6864			N =	18.6863			for turnovers <36, K_N = 1
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	160545.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	23.0000	ft						
Tank Diameter	35.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	541.7774	lb		L_T =	541.7751	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-100 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-100 Liquid	435.97	105.81	541.78
Methyl ethyl ketone	0.08	0.02	0.10
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	435.03	105.58	540.62
Acetone	0.67	0.16	0.84
Methylene chloride	0.18	0.04	0.22

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
435.96739	105.80774	541.77512
0.08125	0.01972	0.10097
0.00314	0.00076	0.00391
0.00185	0.00045	0.00230
435.03289	105.58094	540.61383
0.67211	0.16312	0.83523
0.17614	0.04275	0.21889

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-210
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-1111/1112 - T-1410 divided by 3

Tank Dimensions

Shell Length (ft)	15.00
Diameter (ft)	18.50
Liquid Height (ft)	15.00
Avg. Liquid Height (ft)	7.50
Volume (gal)	30,000.00
Turnovers	16.67
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-210 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820				
																					check:	**1.00000**
										check:	**1.0000**	**1.0000**										

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-210 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	22.1705	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	2067.8194	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.8784				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	2067.8194	cu ft			
D = Tank Diameter	18.5000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	7.6927	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	15.0000	ft							
H_L = Average Liquid Height	7.5000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1927	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.5781	ft			
R_S = Shell Radius	9.2500	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{delta} P_V - \text{delta } P_B)/(P_A - P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX} - T_{AN}) + 0.028 * \text{alpha} * I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia	P_{VX} =	
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia	P_{VN} =	
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053 * P_{VA} * H_{VO})]$	K_S =	0.8784			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses

	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	73.3280	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	16.6667			N =	16.6667			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	30000.0000	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	15.0000	ft						
Tank Diameter	18.5000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	95.4985	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-210 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
73.32801	22.17049	95.49850
0.00103	0.00031	0.00134
0.00017	0.00005	0.00023
0.00128	0.00039	0.00166
0.00056	0.00017	0.00073
0.00102	0.00031	0.00133
0.00640	0.00194	0.00834
0.00114	0.00034	0.00149
0.00004	0.00001	0.00005
0.00017	0.00005	0.00022
0.00002	0.00001	0.00003
0.00031	0.00009	0.00041
0.00304	0.00092	0.00396
0.01116	0.00337	0.01454
0.00000	0.00000	0.00000
0.00046	0.00014	0.00060
0.00002	0.00000	0.00002
0.00024	0.00007	0.00031
0.00021	0.00006	0.00028
0.00000	0.00000	0.00000
0.00002	0.00001	0.00002
0.00007	0.00002	0.00009
0.09268	0.02802	0.12071
0.00245	0.00074	0.00319
0.35037	0.10593	0.45631
0.20539	0.06210	0.26749
0.00164	0.00050	0.00214
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00014	0.00004	0.00019
0.21232	0.06420	0.27652
0.00211	0.00064	0.00275
72.43351	21.90004	94.33356

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-220
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-1111 + T-1112 - T-1410 divided by 3

Tank Dimensions

Shell Length (ft)	15.00
Diameter (ft)	18.50
Liquid Height (ft)	15.00
Avg. Liquid Height (ft)	7.50
Volume (gal)	30,000.00
Turnovers	16.67
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-220 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Ethylene dichloride						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820				
																					check:	**1.00000**
										check:	**1.0000**	**1.0000**										

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-220 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	22.1705	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	2067.8194	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.8784				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	2067.8194	cu ft			
D = Tank Diameter	18.5000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	7.6927	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	15.0000	ft							
H_L = Average Liquid Height	7.5000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1927	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.5781	ft			
R_S = Shell Radius	9.2500	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.8784			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	73.3280	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	16.6667			N =	16.6667			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	30000.0000	gal						
Maximum Liquid Height	15.0000	ft						
Tank Diameter	18.5000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	95.4985	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-220 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
73.32801	22.17049	95.49850
0.00103	0.00031	0.00134
0.00017	0.00005	0.00023
0.00128	0.00039	0.00166
0.00056	0.00017	0.00073
0.00102	0.00031	0.00133
0.00640	0.00194	0.00834
0.00114	0.00034	0.00149
0.00004	0.00001	0.00005
0.00017	0.00005	0.00022
0.00002	0.00001	0.00003
0.00031	0.00009	0.00041
0.00304	0.00092	0.00396
0.01116	0.00337	0.01454
0.00000	0.00000	0.00000
0.00046	0.00014	0.00060
0.00002	0.00000	0.00002
0.00024	0.00007	0.00031
0.00021	0.00006	0.00028
0.00000	0.00000	0.00000
0.00002	0.00001	0.00002
0.00007	0.00002	0.00009
0.09268	0.02802	0.12071
0.00245	0.00074	0.00319
0.35037	0.10593	0.45631
0.20539	0.06210	0.26749
0.00164	0.00050	0.00214
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00014	0.00004	0.00019
0.21232	0.06420	0.27652
0.00211	0.00064	0.00275
72.43351	21.90004	94.33356

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-230
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-1111 / T-1112 - T-1410 divided by 3

Tank Dimensions

Shell Length (ft)	15.00
Diameter (ft)	18.50
Liquid Height (ft)	15.00
Avg. Liquid Height (ft)	7.50
Volume (gal)	30,000.00
Turnovers	16.67
Net Throughput (gal/yr)	500,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-230 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820				
																					check:	**1.00000**
										check:	**1.0000**	**1.0000**										

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-230 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	22.1705	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	2067.8194	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.8784				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	2067.8194	cu ft			
D = Tank Diameter	18.5000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	7.6927	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	15.0000	ft							
H_L = Average Liquid Height	7.5000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1927	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.5781	ft			
R_S = Shell Radius	9.2500	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.8784			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	73.3280	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	500,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	11,904.76	bbl/yr		
Annual Turnovers	16.6667			N =	16.6667			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	30000.0000	gal						
Maximum Liquid Height	15.0000	ft						
Tank Diameter	18.5000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	95.4985	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-230 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
73.32801	22.17049	95.49850
0.00103	0.00031	0.00134
0.00017	0.00005	0.00023
0.00128	0.00039	0.00166
0.00056	0.00017	0.00073
0.00102	0.00031	0.00133
0.00640	0.00194	0.00834
0.00114	0.00034	0.00149
0.00004	0.00001	0.00005
0.00017	0.00005	0.00022
0.00002	0.00001	0.00003
0.00031	0.00009	0.00041
0.00304	0.00092	0.00396
0.01116	0.00337	0.01454
0.00000	0.00000	0.00000
0.00046	0.00014	0.00060
0.00002	0.00000	0.00002
0.00024	0.00007	0.00031
0.00021	0.00006	0.00028
0.00000	0.00000	0.00000
0.00002	0.00001	0.00002
0.00007	0.00002	0.00009
0.09268	0.02802	0.12071
0.00245	0.00074	0.00319
0.35037	0.10593	0.45631
0.20539	0.06210	0.26749
0.00164	0.00050	0.00214
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00014	0.00004	0.00019
0.21232	0.06420	0.27652
0.00211	0.00064	0.00275
72.43351	21.90004	94.33356

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-710
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	

Tank Dimensions

Shell Length (ft)	16.00
Diameter (ft)	9.00
Liquid Height (ft)	16.00
Avg. Liquid Height (ft)	16.00
Volume (gal)	8,000.00
Turnovers	12.50
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-710 - Vertical Fixed Roof Tank
Model City, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_u = M_i [(P X_i)/P_{VA}]$
Tank 710 Liquid	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.15	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene Dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820	0.00000082	0.000000	0.000000	0.0000
									check:	**1.0000**	**1.0000**										check:	**1.00000**

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-710 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0727	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	5.9641	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.9983				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	5.9641	cu ft			
D = Tank Diameter	9.0000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	0.0938	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	16.0000	ft							
H_L = Average Liquid Height	16.0000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0938	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2813	ft			
R_S = Shell Radius	4.5000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.9983			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	14.6656	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	12.5000			N =	12.5000			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	8000.0000	gal						
Maximum Liquid Height	16.0000	ft						
Tank Diameter	9.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	14.7383	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-710 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

CALCULATED VALUES

Components	Losses (lbs)			Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*	*Working Loss*	*Breathing Loss*	*Total Emissions*
Tank 710 Liquid				14.66560	0.07267	14.73828
Trichloroethane (1,1,1)				0.00021	0.00000	0.00021
Trichloroethane (1,1,2)				0.00003	0.00000	0.00004
Dichloroethane (1,1)				0.00026	0.00000	0.00026
Vinylidene chloride				0.00011	0.00000	0.00011
Ethylene Dichloride				0.00020	0.00000	0.00021
Dioxane (1,4)				0.00128	0.00001	0.00129
Acetonitrile				0.00023	0.00000	0.00023
Acrylonitrile				0.00001	0.00000	0.00001
Benzene				0.00003	0.00000	0.00003
Chlorobenzene				0.00000	0.00000	0.00000
Ethyl chloride				0.00006	0.00000	0.00006
Chloroform				0.00061	0.00000	0.00061
Diethyl ether				0.00223	0.00001	0.00224
Ethylbenzene				0.00000	0.00000	0.00000
Iso-butyl alcohol				0.00009	0.00000	0.00009
Tetrachloroethylene				0.00000	0.00000	0.00000
Toluene				0.00005	0.00000	0.00005
Dichloroethylene (-trans-1,2)				0.00004	0.00000	0.00004
Xylenes (mixed isomers)				0.00000	0.00000	0.00000
Cyclohexanone				0.00000	0.00000	0.00000
Tetrachloroethane (1,1,2,2)				0.00001	0.00000	0.00001
Methyl ethyl ketone				0.01854	0.00009	0.01863
Methyl isobutyl ketone				0.00049	0.00000	0.00049
Acetone				0.07007	0.00035	0.07042
Methylene chloride				0.04108	0.00020	0.04128
Trichloroethylene				0.00033	0.00000	0.00033
Cresol (-o)				0.00000	0.00000	0.00000
Cresol (-m)				0.00000	0.00000	0.00000
Cresol (-p)				0.00000	0.00000	0.00000
Aniline				0.00000	0.00000	0.00000
Dimethyl phthalate				0.00000	0.00000	0.00000
Pyridine				0.00003	0.00000	0.00003
Methyl alcohol				0.04246	0.00021	0.04267
Butanol-(1)				0.00042	0.00000	0.00042
Water				14.48670	0.07179	14.55849

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-810
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	

Tank Dimensions

Shell Length (ft)	16.00
Diameter (ft)	9.00
Liquid Height (ft)	16.00
Avg. Liquid Height (ft)	16.00
Volume (gal)	8,000.00
Turnovers	12.50
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-810 - Vertical Fixed Roof Tank
Model City, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_u = M_i [(P X_i)/P_{VA}]$
Tank 810 Liquid	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.15	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene Dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820	0.00000082	0.000000	0.000000	0.0000
									check:	**1.0000**	**1.0000**										check:	**1.00000**

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-810 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0727	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	5.9641	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.9983				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	5.9641	cu ft			
D = Tank Diameter	9.0000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	0.0938	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	16.0000	ft							
H_L = Average Liquid Height	16.0000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0938	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2813	ft			
R_S = Shell Radius	4.5000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.9983			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	14.6656	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	12.5000			N =	12.5000			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	8000.0000	gal						
Maximum Liquid Height	16.0000	ft						
Tank Diameter	9.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	14.7383	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-810 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

CALCULATED VALUES

Components	Losses (lbs)			Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*	*Working Loss*	*Breathing Loss*	*Total Emissions*
Tank 810 Liquid				14.66560	0.07267	14.73828
Trichloroethane (1,1,1)				0.00021	0.00000	0.00021
Trichloroethane (1,1,2)				0.00003	0.00000	0.00004
Dichloroethane (1,1)				0.00026	0.00000	0.00026
Vinylidene chloride				0.00011	0.00000	0.00011
Ethylene Dichloride				0.00020	0.00000	0.00021
Dioxane (1,4)				0.00128	0.00001	0.00129
Acetonitrile				0.00023	0.00000	0.00023
Acrylonitrile				0.00001	0.00000	0.00001
Benzene				0.00003	0.00000	0.00003
Chlorobenzene				0.00000	0.00000	0.00000
Ethyl chloride				0.00006	0.00000	0.00006
Chloroform				0.00061	0.00000	0.00061
Diethyl ether				0.00223	0.00001	0.00224
Ethylbenzene				0.00000	0.00000	0.00000
Iso-butyl alcohol				0.00009	0.00000	0.00009
Tetrachloroethylene				0.00000	0.00000	0.00000
Toluene				0.00005	0.00000	0.00005
Dichloroethylene (-trans-1,2)				0.00004	0.00000	0.00004
Xylenes (mixed isomers)				0.00000	0.00000	0.00000
Cyclohexanone				0.00000	0.00000	0.00000
Tetrachloroethane (1,1,2,2)				0.00001	0.00000	0.00001
Methyl ethyl ketone				0.01854	0.00009	0.01863
Methyl isobutyl ketone				0.00049	0.00000	0.00049
Acetone				0.07007	0.00035	0.07042
Methylene chloride				0.04108	0.00020	0.04128
Trichloroethylene				0.00033	0.00000	0.00033
Cresol (-o)				0.00000	0.00000	0.00000
Cresol (-m)				0.00000	0.00000	0.00000
Cresol (-p)				0.00000	0.00000	0.00000
Aniline				0.00000	0.00000	0.00000
Dimethyl phthalate				0.00000	0.00000	0.00000
Pyridine				0.00003	0.00000	0.00003
Methyl alcohol				0.04246	0.00021	0.04267
Butanol-(1)				0.00042	0.00000	0.00042
Water				14.48670	0.07179	14.55849

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-820
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	

Tank Dimensions

Shell Length (ft)	16.00
Diameter (ft)	9.00
Liquid Height (ft)	16.00
Avg. Liquid Height (ft)	16.00
Volume (gal)	8,000.00
Turnovers	12.50
Net Throughput (gal/yr)	100,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-820 - Vertical Fixed Roof Tank
Model City, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_u = M_i [(P X_i)/P_{VA}]$
Tank 820 Liquid	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.15	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene Dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820	0.00000082	0.000000	0.000000	0.0000
									check:	**1.0000**	**1.0000**										check:	**1.00000**

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-820 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0727	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	5.9641	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.9983				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	5.9641	cu ft			
D = Tank Diameter	9.0000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	0.0938	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	16.0000	ft							
H_L = Average Liquid Height	16.0000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0938	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.2813	ft			
R_S = Shell Radius	4.5000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.9983			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	14.6656	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	100,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	2,380.95	bbl/yr		
Annual Turnovers	12.5000			N =	12.5000			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	8000.0000	gal						
Maximum Liquid Height	16.0000	ft						
Tank Diameter	9.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	14.7383	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-820 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

CALCULATED VALUES

Components	Losses (lbs)			Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*	*Working Loss*	*Breathing Loss*	*Total Emissions*
Tank 820 Liquid				14.66560	0.07267	14.73828
Trichloroethane (1,1,1)				0.00021	0.00000	0.00021
Trichloroethane (1,1,2)				0.00003	0.00000	0.00004
Dichloroethane (1,1)				0.00026	0.00000	0.00026
Vinylidene chloride				0.00011	0.00000	0.00011
Ethylene Dichloride				0.00020	0.00000	0.00021
Dioxane (1,4)				0.00128	0.00001	0.00129
Acetonitrile				0.00023	0.00000	0.00023
Acrylonitrile				0.00001	0.00000	0.00001
Benzene				0.00003	0.00000	0.00003
Chlorobenzene				0.00000	0.00000	0.00000
Ethyl chloride				0.00006	0.00000	0.00006
Chloroform				0.00061	0.00000	0.00061
Diethyl ether				0.00223	0.00001	0.00224
Ethylbenzene				0.00000	0.00000	0.00000
Iso-butyl alcohol				0.00009	0.00000	0.00009
Tetrachloroethylene				0.00000	0.00000	0.00000
Toluene				0.00005	0.00000	0.00005
Dichloroethylene (-trans-1,2)				0.00004	0.00000	0.00004
Xylenes (mixed isomers)				0.00000	0.00000	0.00000
Cyclohexanone				0.00000	0.00000	0.00000
Tetrachloroethane (1,1,2,2)				0.00001	0.00000	0.00001
Methyl ethyl ketone				0.01854	0.00009	0.01863
Methyl isobutyl ketone				0.00049	0.00000	0.00049
Acetone				0.07007	0.00035	0.07042
Methylene chloride				0.04108	0.00020	0.04128
Trichloroethylene				0.00033	0.00000	0.00033
Cresol (-o)				0.00000	0.00000	0.00000
Cresol (-m)				0.00000	0.00000	0.00000
Cresol (-p)				0.00000	0.00000	0.00000
Aniline				0.00000	0.00000	0.00000
Dimethyl phthalate				0.00000	0.00000	0.00000
Pyridine				0.00003	0.00000	0.00003
Methyl alcohol				0.04246	0.00021	0.04267
Butanol-(1)				0.00042	0.00000	0.00042
Water				14.48670	0.07179	14.55849

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-58
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	

Tank Dimensions

Shell Length (ft)	23.50
Diameter (ft)	81.00
Liquid Height (ft)	23.50
Avg. Liquid Height (ft)	23.50
Volume (gal)	488,529.00
Turnovers	16.38
Net Throughput (gal/yr)	8,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-58 - Vertical Fixed Roof Tank
Model City, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_u = M_i [(P X_i)/P_{VA}]$
Tank 58 Liquid	All	49.26	-	-	47.70	0.3384	-	-	18.0000	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0000
Vinyl chloride						32.6452	-	-	62.4980	0.0000	0.0000	62.50		6.4971	783.400	230.01	62.498	0.15	1.5E-10	0.000000	0.000000	0.0000
Acetone						2.2051	-	-	58.0800	0.0000	0.0000	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	0.9	9E-10	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	0.155	1.55E-10	0.000000	0.000000	0.0000
Carbon tetrachloride						1.0831	-	-	98.9600	0.0000	0.0000	98.96		6.9340	1242.430	230.00	98.96	0.165	1.65E-10	0.000000	0.000000	0.0000
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	0.16	1.6E-10	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	0.145	1.45E-10	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	0.155	1.55E-10	0.000000	0.000000	0.0000
Ethylene Dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	0.18	1.8E-10	0.000000	0.000000	0.0000
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	1.1	1.1E-09	0.000000	0.000000	0.0000
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	1.2	1.2E-09	0.000000	0.000000	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	0.325	3.25E-10	0.000000	0.000000	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	0.175	1.75E-10	0.000000	0.000000	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	0.19	1.9E-10	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	0.175	1.75E-10	0.000000	0.000000	0.0000
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	0.15	1.5E-10	0.000000	0.000000	0.0000
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	0.17	1.7E-10	0.000000	0.000000	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	0.165	1.65E-10	0.000000	0.000000	0.0000
o-Dichlorobenzene						0.0090	-	-	147.0100	0.0000	0.0000	147.01		7.0703	1649.550	213.32	147.01	0.375	3.75E-10	0.000000	0.000000	0.0000
p-Dichlorobenzene						0.0116	-	-	147.0000	0.0000	0.0000	147.00		6.9980	1575.110	208.52	147.00	0.425	4.25E-10	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	1.0000	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999999993.5	0.999999994	0.055556	1.000000	18.0000
																				check:	**1.00000**	
									check:	**1.0000**	**1.0000**											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-58 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	51.6958	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	4347.8415	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.9851				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	4347.8415	cu ft			
D = Tank Diameter	81.0000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	0.8438	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	23.5000	ft							
H_L = Average Liquid Height	23.5000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.8438	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	2.5313	ft			
R_S = Shell Radius	40.5000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0000			M_V =	18.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9851			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Space Outage	7.6927	ft						

Working Losses	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	1160.2068	lbs		
M_V = Vapor Molecular Weight	18.0000			M_V =	18.0000	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Q = Annual Net Throughput	8,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	190,476.19	bbl/yr		
Annual Turnovers	16.3757			N =	16.3757			
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			
Maximum Liquid Volume	488529.0000	gal						
Maximum Liquid Height	23.5000	ft						
Tank Diameter	81.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	1211.9026	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-58 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 58 Liquid			
Vinyl chloride			
Acetone			
Benzene			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dichloroethane (1,1)			
Ethylene Dichloride			
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methylene chloride			
Tetrachloroethane (1,1,2,2)			
Tetrachloroethylene			
Toluene			
Trichloroethane (1,1,1)			
Trichloroethane (1,1,2)			
Trichloroethylene			
o-Dichlorobenzene			
p-Dichlorobenzene			
Water			

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1160.20679	51.69577	1211.90256
0.00002	0.00000	0.00002
0.00001	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
1160.20676	51.69577	1211.90253

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-125
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	

Tank Dimensions

Shell Length (ft)	12.00
Diameter (ft)	80.00
Liquid Height (ft)	12.00
Avg. Liquid Height (ft)	12.00
Volume (gal)	394,721.00
Turnovers	20.27
Net Throughput (gal/yr)	8,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-125 - Vertical Fixed Roof Tank
Model City, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_u = M_i [(P X_i)/P_{VA}]$
Tank 125 Liquid	All	49.26	-	-	47.70	0.3384	-	-	18.0000	-	-	18.00	-	-	-	-						18.0000
Vinyl chloride						32.6452	-	-	62.4980	0.0000	0.0000	62.50		6.4971	783.400	230.01	62.498	0.15	1.5E-10	0.000000	0.000000	0.0000
Acetone						2.2051	-	-	58.0800	0.0000	0.0000	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	0.9	9E-10	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	0.155	1.55E-10	0.000000	0.000000	0.0000
Carbon tetrachloride						1.0831	-	-	98.9600	0.0000	0.0000	98.96		6.9340	1242.430	230.00	98.96	0.165	1.65E-10	0.000000	0.000000	0.0000
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	0.16	1.6E-10	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	0.145	1.45E-10	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2074	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	6.9853	1171.420	228.13	98.97	0.155	1.55E-10	0.000000	0.000000	0.0000
Ethylene Dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	0.18	1.8E-10	0.000000	0.000000	0.0000
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0000	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	1.1	1.1E-09	0.000000	0.000000	0.0000
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	1.2	1.2E-09	0.000000	0.000000	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	0.325	3.25E-10	0.000000	0.000000	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	0.175	1.75E-10	0.000000	0.000000	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	0.19	1.9E-10	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	0.175	1.75E-10	0.000000	0.000000	0.0000
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	0.15	1.5E-10	0.000000	0.000000	0.0000
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	0.17	1.7E-10	0.000000	0.000000	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	0.165	1.65E-10	0.000000	0.000000	0.0000
o-Dichlorobenzene						0.0090	-	-	147.0100	0.0000	0.0000	147.01		7.0703	1649.550	213.32	147.01	0.375	3.75E-10	0.000000	0.000000	0.0000
p-Dichlorobenzene						0.0116	-	-	147.0000	0.0000	0.0000	147.00		6.9980	1575.110	208.52	147.00	0.425	4.25E-10	0.000000	0.000000	0.0000
Water						0.3384	-	-	18.0000	1.0000	1.0000	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999999993.5	0.999999994	0.055556	1.000000	18.0000
																				check:	**1.00000**	
									check:	**1.0000**	**1.0000**											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-125 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	22.1895		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	49.8138	lbs			
V_V = Vapor Space Volume (cu ft)	2067.8194			V_V =	4188.7902	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.8784			K_S =	0.9853				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2067.8194	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	4188.7902	cu ft			
D = Tank Diameter	80.0000	ft							
H_{VO} = Vapor Space Outage	7.6927	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	0.8333	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	12.0000	ft							
H_L = Average Liquid Height	12.0000	ft							
Roof Outage	0.1927	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1927	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.8333	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	2.5000	ft			
R_S = Shell Radius	40.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0000			M_V =	18.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN}) + 0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.8784		$K_S = 1/[1 + (.053*P_{VA}*H_{VO})]$	K_S =	0.9853			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						
Vapor Space Outage	7.6927	ft						

Working Losses

	73.3280	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	1160.2068	lbs		
M_V = Vapor Molecular Weight	18.0000			M_V =	18.0000	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3384	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	8,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	190,476.19	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	20.2675			N =	20.2675			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	1.0000		$K_N = (180 + N)/6N$	K_N =	1.0000			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	394721.0000	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	12.0000	ft						
Tank Diameter	80.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	95.5175	lb		L_T =	1210.0206	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-125 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 125 Liquid			
Vinyl chloride			
Acetone			
Benzene			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dichloroethane (1,1)			
Ethylene Dichloride			
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methylene chloride			
Tetrachloroethane (1,1,2,2)			
Tetrachloroethylene			
Toluene			
Trichloroethane (1,1,1)			
Trichloroethane (1,1,2)			
Trichloroethylene			
o-Dichlorobenzene			
p-Dichlorobenzene			
Water			

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
1160.20679	49.81382	1210.02061
0.00002	0.00000	0.00002
0.00001	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00001
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
1160.20676	49.81382	1210.02058

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-310
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	38.00
Diameter (ft)	12.00
Liquid Height (ft)	38.00
Avg. Liquid Height (ft)	19.00
Volume (gal)	30,457.00
Turnovers	98.50
Net Throughput (gal/yr)	3,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-310 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-310	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0130	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0009	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9999	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	MW_i (g/mol)	Detected Compounds Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
T-310	All	49.26	-	-	47.70	0.3385	-	-	18.0130	-	-	18.00	-	-	-	-			-	-	-	-	18.0130
Acetone						2.2051	-	-	58.0800	0.0001	0.0009	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66		58.08	135000	0.000135	0.000002	0.000042	0.0158
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25		72.1	41000	0.000041	0.000001	0.000010	0.0017
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90		100.2	3250	0.000003	0.000000	0.000001	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60		84.94	3980	0.000004	0.000000	0.000001	0.0009
Water						0.3384	-	-	18.0000	0.9998	0.9990	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-		18.00	999816770	0.99981677	0.055545	0.999946	17.9945
								check:		1.0000	1.0000										check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-310 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	19.4580		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	19.4582	lbs			
V_V = Vapor Space Volume (cu ft)	2162.9865			V_V =	2162.9865	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.7446			K_S =	0.7446				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2162.9865	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	2162.9865	cu ft			
D = Tank Diameter	12.0000	ft							
H_{VO} = Vapor Space Outage	19.1250	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	19.1250	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	38.0000	ft							
H_L = Average Liquid Height	19.0000	ft							
Roof Outage	0.1250	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.125	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1250	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.3750	ft			
R_S = Shell Radius	6.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0130			M_V =	18.0130	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3385	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.7446		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.7446			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Space Outage	19.1250	ft						
Working Losses	205.2242	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	205.2242	lbs		
M_V = Vapor Molecular Weight	18.0130			M_V =	18.0130	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, K_N = (180 + N)/6N
Annual Turnovers	98.4995			N =	98.4995			for turnovers <36, K_N = 1
K_N = Turnover Factor	0.4712		$K_N = (180 + N)/6N$	K_N =	0.4712			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	30457.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	38.0000	ft						
Tank Diameter	12.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	224.6822	lb		L_T =	224.6824	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-310 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-310	205.22	19.46	224.68
Acetone	0.18	0.02	0.20
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Water	205.01	19.44	224.45

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
205.22417	19.45819	224.68236
0.18039	0.01710	0.19749
0.01049	0.00099	0.01148
0.01950	0.00185	0.02135
0.00028	0.00003	0.00031
205.01352	19.43821	224.45173

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-320
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	38.00
Diameter (ft)	12.00
Liquid Height (ft)	38.00
Avg. Liquid Height (ft)	19.00
Volume (gal)	30,457.00
Turnovers	98.50
Net Throughput (gal/yr)	3,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-320 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-320	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0144	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9989	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	MW_i (g/mol)	Detected Compounds Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
T-320	All	49.26	-	-	47.70	0.3385	-	-	18.0144	-	-	18.00	-	-	-	-			-	-	-	-	18.0144
Acetone						2.2051	-	-	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66		58.08	153000	0.000153	0.000003	0.000047	0.0179
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25		72.1	40500	0.0000405	0.000001	0.000010	0.0017
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90		100.2	3200	0.0000032	0.000000	0.000001	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60		84.94	3800	0.0000038	0.000000	0.000001	0.0009
Water						0.3384	-	-	18.0000	0.9998	0.9989	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-		18.00	999799500	0.9997995	0.055544	0.999941	17.9938
								check:		**1.0000**	**1.0000**										check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-320 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	19.4601		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	19.4595	lbs			
V_V = Vapor Space Volume (cu ft)	2162.9865			V_V =	2162.9865	cu ft			
W_v = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.7445			K_S =	0.7445				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	2162.9865	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	2162.9865	cu ft			
D = Tank Diameter	12.0000	ft							
H_{VO} = Vapor Space Outage	19.1250	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	19.1250	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	38.0000	ft							
H_L = Average Liquid Height	19.0000	ft							
Roof Outage	0.1250	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1250	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1250	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.3750	ft			
R_S = Shell Radius	6.0000	ft							
Vapor Density									
W_v = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0144			M_V =	18.0144	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3385	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.7445		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.7445			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Space Outage	19.1250	ft						

Working Losses

	205.2464	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	205.2464	lbs		
M_V = Vapor Molecular Weight	18.0144			M_V =	18.0144	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	98.4995			N =	98.4995			for turnovers <36, K_N = 1
K_N = Turnover Factor	0.4712		$K_N = (180 + N)/6N$	K_N =	0.4712			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	30457.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	38.0000	ft						
Tank Diameter	12.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	224.7065	lb		L_T =	224.7060	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-320 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-320	205.25	19.46	224.71
Acetone	0.2	0.02	0.22
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Water	205.01	19.44	224.45

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
205.24640	19.45955	224.70595
0.20444	0.01938	0.22383
0.01001	0.00095	0.01096
0.01926	0.00183	0.02109
0.00028	0.00003	0.00031
205.01241	19.43736	224.44977

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-1010
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 divided by 2 - GW & Bulk Receipts

Tank Dimensions

Shell Length (ft)	9.00
Diameter (ft)	14.00
Liquid Height (ft)	9.00
Avg. Liquid Height (ft)	4.50
Volume (gal)	10,000.00
Turnovers	60.00
Net Throughput (gal/yr)	600,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-1010 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991 C=171.622	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820	0.00000082	0.000000	0.000000	0.0000
																					check:	**1.00000**
									check:	**1.0000**	**1.0000**											

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-1010 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	8.0626		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	8.0557	lbs			
V_V = Vapor Space Volume (cu ft)	715.1705			V_V =	715.1705	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9229			K_S =	0.9229				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	715.1705	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	715.1705	cu ft			
D = Tank Diameter	14.0000	ft							
H_{VO} = Vapor Space Outage	4.6458	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	4.6458	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	9.0000	ft							
H_L = Average Liquid Height	4.5000	ft							
Roof Outage	0.1458	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.1458	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1458	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.4375	ft			
R_S = Shell Radius	7.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_v = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9229		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9229			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	4.6458	ft						
Working Losses	58.6624	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	58.6624	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	600,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	14,285.71	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	60.0000			N =	60.0000			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.6667		$K_N = (180 + N)/6N$	K_N =	0.6667			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	10000.0000	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	9.0000	ft						
Tank Diameter	14.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	66.7250	lb		L_T =	66.7181	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-1010 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
SLF 1-6 Leachate (inc NAPL)	58.66	8.06	66.72
Acetone	0.28	0.04	0.32
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Butanol-(1)	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Dimethyl phthalate	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Ethyl chloride	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Methyl alcohol	0.17	0.02	0.19
Methyl ethyl ketone	0.07	0.01	0.08
Methyl isobutyl ketone	0.00	0.00	0.00
Methylene chloride	0.16	0.02	0.19
Pyridine	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Trichloroethylene	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Water	57.95	7.96	65.91
Xylenes (mixed isomers)	0.00	0.00	0.00

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
58.66241	8.05570	66.71812
0.28030	0.03849	0.31879
0.00091	0.00013	0.00104
0.00003	0.00000	0.00003
0.00000	0.00000	0.00000
0.00014	0.00002	0.00015
0.00169	0.00023	0.00192
0.00002	0.00000	0.00002
0.00243	0.00033	0.00277
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00001	0.00000	0.00002
0.00102	0.00014	0.00116
0.00082	0.00011	0.00093
0.00017	0.00002	0.00020
0.00893	0.00123	0.01016
0.00000	0.00000	0.00000
0.00512	0.00070	0.00583
0.00025	0.00003	0.00028
0.00000	0.00000	0.00000
0.00037	0.00005	0.00042
0.16986	0.02333	0.19318
0.07415	0.01018	0.08433
0.00196	0.00027	0.00223
0.16431	0.02256	0.18688
0.00012	0.00002	0.00013
0.00006	0.00001	0.00006
0.00001	0.00000	0.00001
0.00019	0.00003	0.00022
0.00082	0.00011	0.00094
0.00014	0.00002	0.00016
0.00131	0.00018	0.00149
0.00045	0.00006	0.00051
57.94680	7.95743	65.90424
0.00001	0.00000	0.00001

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-1020
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 divided by 2 - GW & Bulk Receipts

Tank Dimensions

Shell Length (ft)	10.00
Diameter (ft)	12.00
Liquid Height (ft)	10.00
Avg. Liquid Height (ft)	5.00
Volume (gal)	8,000.00
Turnovers	75.00
Net Throughput (gal/yr)	600,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-1020 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (inc NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467	-	-	18.04	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	######	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
SLF 1-6 Leachate (inc NAPL)	All	49.26	-	-	47.70	0.3394	-	-	18.1467	-	-	18.04	-	-	-	-	-	-	-	-	-	18.1467
Acetone						2.2051	-	-	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	740000	0.00074	0.000013	0.000230	0.0867
Acetonitrile						0.8304	-	-	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119 B=1314.4 C=230	7.1190	1314.400	230.00	41.05	6400	0.0000064	0.000000	0.000003	0.0003
Acrylonitrile						1.0305	-	-	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038 B=1232.53 C=222.47	7.0380	1232.530	222.47	53.06	160	0.00000016	0.000000	0.000000	0.0000
Aniline						0.0038	-	-	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32 B=1731.515 C=206.049	7.3200	1731.515	206.05	93.10	2200	0.0000022	0.000000	0.000000	0.0000
Benzene						0.8603	-	-	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905 B=1211.033 C=220.79	6.9050	1211.033	220.79	78.11	920	0.00000092	0.000000	0.000000	0.0000
Butanol-(1)						0.0339	-	-	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768 B=1362.39 C=178.77	7.4768	1362.390	178.77	74.12	290000	0.00029	0.000004	0.000071	0.0005
Chlorobenzene						0.0920	-	-	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978 B=1431.05 C=217.55	6.9780	1431.050	217.55	112.60	1000	0.000001	0.000000	0.000000	0.0000
Chloroform						1.8160	-	-	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493 B=929.44 C=196.03	6.4930	929.440	196.03	119.39	7800	0.0000078	0.000000	0.000001	0.0008
Cresol (-m)						0.0008	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508 B=1856.36 C=199.07	7.5080	1856.360	199.07	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cresol (-o)						0.0010	-	-	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911 B=1435.5 C=165.16	6.9110	1435.500	165.16	108.14	2200	0.0000022	0.000000	0.000000	0.0000
Cresol (-p)						0.0003	-	-	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035 B=1511.08 C=161.85	7.0350	1511.080	161.85	108.10	17000	0.000017	0.000000	0.000003	0.0000
Cyclohexanone						0.0377	-	-	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492 B=2137.192 C=273.16	7.8492	2137.192	273.16	98.20	2100	0.0000021	0.000000	0.000000	0.0000
Dichloroethane (1,1)						2.2012	-	-	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243	-	-	-	98.97	2700	0.0000027	0.000000	0.000000	0.0003
Ethylene dichloride						0.6899	-	-	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025 B=1272.3 C=222.9	7.0250	1272.300	222.90	98.97	6900	0.0000069	0.000000	0.000001	0.0003
Dichloroethylene (-trans-1,2)						3.3324	-	-	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965 B=1141.9 C=231.9	6.9650	1141.900	231.90	96.95	300	0.0000003	0.000000	0.000000	0.0001
Diethyl ether						5.5303	-	-	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92 B=1064.07 C=228.8	6.9200	1064.070	228.80	74.12	9400	0.0000094	0.000000	0.000002	0.0028
Dimethyl phthalate						0.0000	-	-	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522 B=700.31 C=51.42	4.5220	700.310	51.42	194.20	280	0.00000028	0.000000	0.000000	0.0000
Dioxane (1,4)						0.3139	-	-	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431 B=1554.68 C=240.34	7.4310	1554.680	240.34	88.10	95000	0.000095	0.000001	0.000019	0.0016
Ethyl chloride						13.2558	-	-	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986 B=1030.01 C=238.61	6.9860	1030.010	238.61	64.52	110	0.00000011	0.000000	0.000000	0.0001
Ethylbenzene						0.0739	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975 B=1424.255 C=213.21	6.9750	1424.255	213.21	106.17	170	0.00000017	0.000000	0.000000	0.0000
Iso-butyl alcohol						0.0584	-	-	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636 B=1236.991	7.3064	1236.991	171.62	74.12	37000	0.000037	0.000000	0.000009	0.0001
Methyl alcohol						1.0194	-	-	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897 B=1474.08 C=229.13	7.8970	1474.080	229.13	32.04	970000	0.00097	0.000030	0.000546	0.0525
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0006	0.0013	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	550000	0.00055	0.000008	0.000138	0.0229
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	79000	0.000079	0.000001	0.000014	0.0006
Methylene chloride						4.3481	-	-	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	220000	0.00022	0.000003	0.000047	0.0508
Pyridine						0.1621	-	-	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041 B=1373.8 C=214.98	7.0410	1373.800	214.98	79.10	4160	0.00000416	0.000000	0.000001	0.0000
Tetrachloroethane (1,1,2,2)						0.0273	-	-	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631 B=1228.1 C=179.9	6.6310	1228.100	179.90	167.85	12000	0.000012	0.000000	0.000001	0.0000
Tetrachloroethylene						0.1445	-	-	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98 B=1386.92 C=217.53	6.9800	1386.920	217.53	165.83	500	0.0000005	0.000000	0.000000	0.0000
Toluene						0.2342	-	-	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954 B=1344.8 C=219.48	6.9540	1344.800	219.48	92.13	4800	0.0000048	0.000000	0.000001	0.0001
Trichloroethane (1,1,1)						1.2296	-	-	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643 B=2136.6 C=302.8	8.6430	2136.600	302.80	133.42	3900	0.0000039	0.000000	0.000001	0.0003
Trichloroethane (1,1,2)						0.1697	-	-	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951 B=1314.41 C=209.2	6.9510	1314.410	209.20	133.40	4800	0.0000048	0.000000	0.000001	0.0000
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70	131.40	13000	0.000013	0.000000	0.000002	0.0004
Vinylidene chloride						6.3609	-	-	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972 B=1099.4 C=237.2	6.9720	1099.400	237.20	96.50	410	0.00000041	0.000000	0.000000	0.0001
Water						0.3384	-	-	18.0000	0.9969	0.9878	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	996897970	0.99689797	0.055383	0.998905	17.9253
Xylenes (mixed isomers)						0.0613	-	-	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009 B=1462.266 C=215.11	7.0090	1462.266	215.11	106.17	820				
																					check:	**1.00000**
										check:	**1.0000**	**1.0000**										

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-1020 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	6.4829		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	6.4768	lbs			
V_V = Vapor Space Volume (cu ft)	579.6238			V_V =	579.6238	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9156			K_S =	0.9156				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	579.6238	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	579.6238	cu ft			
D = Tank Diameter	12.0000	ft							
H_{VO} = Vapor Space Outage	5.1250	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	5.1250	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	10.0000	ft							
H_L = Average Liquid Height	5.0000	ft							
Roof Outage	0.125	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.125	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.1250	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.3750	ft			
R_S = Shell Radius	6.0000	ft							
Vapor Density									
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	delta $T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0003	psia	$R\ T_{LX}\ W_V / M_V = P_{VX}$	delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3393	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3396	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA}$ - 0.25 delta T_V	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA}$ + 0.25 delta T_V	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9156		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9156			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Vapor Space Outage	5.1250	ft						

Working Losses	49.8630	lbs	$L_W = 0.0010\ M_V\ P_{VA}\ Q\ K_N\ K_P$	L_W =	49.8630	lbs		
M_V = Vapor Molecular Weight	18.1467			M_V =	18.1467	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3394	psia						
Q = Annual Net Throughput	600,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	14,285.71	bbl/yr		
Annual Turnovers	75.0000			N =	75.0000			
K_N = Turnover Factor	0.5667		$K_N = (180 + N)/6N$	K_N =	0.5667			
Maximum Liquid Volume	8000.0000	gal						
Maximum Liquid Height	10.0000	ft						
Tank Diameter	12.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	56.3459	lb		L_T =	56.3398	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-1020 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
SLF 1-6 Leachate (inc NAPL)	49.86	6.48	56.35
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.06	0.01	0.07
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.24	0.03	0.27
Methylene chloride	0.14	0.02	0.16
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.14	0.02	0.16
Butanol-(1)	0.00	0.00	0.00
Water	49.25	6.40	55.66

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.00759	0.00099	0.00858
0.00000	0.00000	0.00000
0.00032	0.00004	0.00036
0.00001	0.00000	0.00001
49.86305	6.47679	56.33984
0.00070	0.00009	0.00079
0.00012	0.00002	0.00013
0.00087	0.00011	0.00098
0.00038	0.00005	0.00043
0.00070	0.00009	0.00079
0.00435	0.00057	0.00492
0.00078	0.00010	0.00088
0.00002	0.00000	0.00003
0.00012	0.00002	0.00013
0.00001	0.00000	0.00002
0.00021	0.00003	0.00024
0.00207	0.00027	0.00234
0.00016	0.00002	0.00019
0.00015	0.00002	0.00016
0.00000	0.00000	0.00000
0.00001	0.00000	0.00001
0.00005	0.00001	0.00005
0.06303	0.00819	0.07121
0.00167	0.00022	0.00188
0.23825	0.03095	0.26920
0.13967	0.01814	0.15781
0.00111	0.00014	0.00126
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00000	0.00000	0.00000
0.00010	0.00001	0.00011
0.14438	0.01875	0.16313
0.00144	0.00019	0.00162
49.25479	6.39778	55.65257

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-3002
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	5.66
Diameter (ft)	5.00
Liquid Height (ft)	5.66
Avg. Liquid Height (ft)	2.83
Volume (gal)	900.00
Turnovers	3333.33
Net Throughput (gal/yr)	3,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3002 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
T-100 Liquid	All	49.26	-	-	47.70	0.3386	-	-	18.0276	-	-	18.00	-	-	-	-			-	-	-	-	18.0276
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66		58.08	237000	0.000237	0.000004	0.000073	0.0278
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25		72.1	80500	0.0000805	0.000001	0.000020	0.0034
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90		100.2	9950	0.00000995	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60		84.94	31500	0.0000315	0.000000	0.000007	0.0073
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70		131.4	4160	0.00000416	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9996	0.9979	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-		18.00	999636890	0.99963689	0.055535	0.999897	17.9890
								check:	1.0000	1.0000										check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3002 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	0.6508		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.6507	lbs			
V_V = Vapor Space Volume (cu ft)	56.5896			V_V =	56.5896	cu ft			
W_v = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9508			K_S =	0.9508				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	56.5896	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	56.5896	cu ft			
D = Tank Diameter	5.0000	ft							
H_{VO} = Vapor Space Outage	2.8821	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	2.8821	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	5.6600	ft							
H_L = Average Liquid Height	2.8300	ft							
Roof Outage	0.0521	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0521	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0521	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.1563	ft			
R_S = Shell Radius	2.5000	ft							
Vapor Density									
W_v = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9508		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9508			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	2.8821	ft						

Working Losses

	76.5849	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	76.5849	lbs		
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, K_N = (180 + N)/6N
Annual Turnovers	3333.3333			N =	3,333.3333			for turnovers <36, K_N = 1
K_N = Turnover Factor	0.1757		$K_N = (180 + N)/6N$	K_N =	0.1757			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	900.0000	gal						for crude oils K_P = 0.75
Maximum Liquid Height	5.6600	ft						
Tank Diameter	5.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	77.2358	lb		L_T =	77.2357	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3002 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-100 Liquid	76.58	0.65	77.24
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	76.42	0.65	77.07

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
76.58494	0.65074	77.23568
0.11807	0.00100	0.11907
0.03094	0.00026	0.03121
0.01427	0.00012	0.01439
0.00055	0.00000	0.00056
0.00032	0.00000	0.00033
76.42078	0.64935	77.07013

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-3003
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	6.50
Diameter (ft)	5.00
Liquid Height (ft)	6.50
Avg. Liquid Height (ft)	3.25
Volume (gal)	954.72
Turnovers	3142.28
Net Throughput (gal/yr)	3,000,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3003 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.7	0.3386	0.3385	0.3386	18.0276	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
T-100 Liquid	All	49.26	-	-	47.70	0.3386	-	-	18.0276	-	-	18.00	-	-	-	-			-	-	-	-	18.0276
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66		58.08	237000	0.000237	0.000004	0.000073	0.0278
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25		72.1	80500	0.0000805	0.000001	0.000020	0.0034
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90		100.2	9950	0.00000995	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60		84.94	31500	0.0000315	0.000000	0.000007	0.0073
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70		131.4	4160	0.00000416	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9996	0.9979	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-		18.00	999636890	0.99963689	0.055535	0.999897	17.9890
								check:	1.0000	1.0000										check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3003 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	0.7404		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.7403	lbs			
V_V = Vapor Space Volume (cu ft)	64.8363			V_V =	64.8363	cu ft			
W_v = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9441			K_S =	0.9441				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	64.8363	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	64.8363	cu ft			
D = Tank Diameter	5.0000	ft							
H_{VO} = Vapor Space Outage	3.3021	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	3.3021	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	6.5000	ft							
H_L = Average Liquid Height	3.2500	ft							
Roof Outage	0.0521	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0521	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0521	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.1563	ft			
R_S = Shell Radius	2.5000	ft							
Vapor Density									
W_v = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9441		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9441			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	3.3021	ft						

Working Losses

	76.8235	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	76.8235	lbs		
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	3142.2796			N =	3,142.2796			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.1762		$K_N = (180 + N)/6N$	K_N =	0.1762			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	954.7209	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	6.5000	ft						
Tank Diameter	5.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	77.5639	lb		L_T =	77.5638	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3003 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-100 Liquid	76.82	0.74	77.56
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	76.66	0.74	77.40

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
76.82350	0.74027	77.56377
0.11844	0.00114	0.11958
0.03104	0.00030	0.03134
0.01432	0.00014	0.01446
0.00055	0.00001	0.00056
0.00033	0.00000	0.00033
76.65883	0.73868	77.39751

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-3009
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions

Shell Length (ft)	16.00
Diameter (ft)	8.00
Volume (gal)	5,000.00
Turnovers	60.00
Net Throughput (gal/yr)	300,000
Is tank heated (y/n)	N

Paint Characteristics

Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3009 - Horizontal Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Tank 3009	All	58.30	48.11	68.49	52.02	0.3385	0.3385	0.3386	18.0184	-	-	18.00	-
Acetone						2.8026	2.1379	3.6292	58.0800	0.0002	0.0013	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						1.0299	0.7577	1.3789	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1998	0.1384	0.2829	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9985	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
Tank 3009	All	58.30	-	-	52.02	0.3386	-	-	18.0349	-	-	18.00	-	-	-	-	-	-	-	-	-	18.0349
Acetone						2.8026	-	-	58.0800	0.0002	0.0020	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	237000	0.000237	0.000004	0.000073	0.0353
Methyl ethyl ketone						1.0299	-	-	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.10	80500	0.0000805	0.000001	0.000020	0.0044
Methyl isobutyl ketone						0.1998	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.20	9950	0.00000995	0.000000	0.000002	0.0001
Methylene chloride						5.4129	-	-	84.9400	0.0000	0.0005	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	31500	0.0000315	0.000000	0.000007	0.0091
Water						0.3384	-	-	18.0000	0.9996	0.9973	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999641050	0.99964105	0.055536	0.999898	17.9860
								check:	**1.0000**	**1.0000**										check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3009 - Horizontal Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**	**AP-42 EQUATIONS**		**CALCULATIONS**				
Standing Losses (lb)	14.2473	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	14.2451	lbs			
V_V = Vapor Space Volume (cu ft)	512.2597		V_V =	512.2597	cu ft			
W_V = Vapor Density (lb/cu ft)	0.0011		W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0744		K_E =	0.0744				
K_S = Vented Vapor Saturation Factor	0.9330		K_S =	0.9330				
Tank Vapor Space Volume								
V_V = Vapor Space Volume (cu ft)	512.2597	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	512.2597	cu ft			
D = Tank Diameter (ft)	16.0000							
D_E = Effective Diameter (ft)	12.7694	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	12.7694	ft			
H_{VO} = Vapor Space Outage (ft)	8.0000	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	4.0000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)	16.0000							
Vapor Density								
W_V = Vapor Density (lb/cu ft)	0.0011	$W_V = M_V\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0184		M_V =	18.0349	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3385							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	517.9736	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	47.6792	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))	10.7310							
T_B = Liquid Bulk Temperature (deg. R)	511.6892	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892	R			
Tank Paint Solar Absorptance (Shell)	0.8900			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)	1165.4120			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

								As per sources listed on page 6-5 of TANKS user manual:
KE = Vapor Space Expansion Factor	0.0744		KE = [delta TV/TLA]+ [(deltaPV-delta PB)/(PA-PVA)]	K_E =	0.0744		T_{AX} =	515.4867
delta TV = Daily Vapor Temperature Range (deg. R)	40.7601		delta TV = 0.72(TAX-TAN)+0.028*alpha*I]	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta PV = Daily Vapor Pressure Range (psia)	0.0001	psia	R T_{LX} W_V / M_V = P_{VX}	delta P_V =	0.0000	psia		
delta PB = Breather Vent Press. Setting Range (psia)	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3385							
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.3385							
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.3386							
Daily Avg. Liquid Surface Temp. (deg R)	517.9736				517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	507.7836		TLN = TLA - 0.25 delta TV	T_{LN} =	507.7836	R		
Daily Max. Liquid Surface Temp. (deg R)	528.1636		TLX = TLA + 0.25 delta TV	T_{LX} =	528.1636	R		
delta TA = Daily Ambient Temp. Range (deg. R)	16.2750			delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9330		K_S = 1/[1+ (.053*P_{VA}*H_{VO})]	K_S =	0.9330			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3385	psia						
Vapor Space Outage (ft)	8.0000	ft						
Working Losses (lb)	29.0457		L_W = 0.0010 M_V P_{VA} Q K_N K_P	L_W =	29.0811	lbs		
M_v = Vapor Molecular Weight	18.0184			M_V =	18.0349	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.3385							K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	300,000		1 bbl/yr = 42 US gal/yr	Q =	7,142.86	bbl/yr		for turnovers >36, K_N = (180 + N)/6N
Annual Turnovers	60.00			N =	60.0000			for turnovers <36, K_N = 1
K_N = Turnover Factor	0.6667		K_N = (180 + N)/6N	K_N =	0.6667			K_P = working loss product factor, dimensionless
Tank Diameter (ft)	8.0000							for crude oils K_P = 0.75
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses (lb)	43.2930			L_T =	43.3262	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3009 - Horizontal Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
Tank 3009	29.05	14.25	43.29
Acetone	0.04	0.02	0.05
Methylene chloride	0.00	0.00	0.01
Methyl ethyl ketone	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	29.00	14.23	43.23

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
29.08105	14.24513	43.32619
0.05695	0.02790	0.08484
0.01462	0.00716	0.02178
0.00711	0.00348	0.01059
0.00017	0.00008	0.00025
29.00221	14.20651	43.20872

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-3011
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	5.00	
Diameter (ft)	4.50	
Liquid Height (ft)	5.00	
Avg. Liquid Height (ft)	2.50	
Volume (gal)	594.86	
Turnovers	5043.1646	5043.1644
Net Throughput (gal/yr)	3,000,000	
Is tank heated (y/n)	N	

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3011 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-3011	All	49.26	44.94	53.57	47.7	0.3386	0.3385	0.3385	18.0144	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9989	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_V = M_i [(P X_i)/P_{VA}]$
T-3011	All	49.26	-	-	47.70	0.3385	-	-	18.0144	-	-	18.00	-	-	-	-		-	-	-	-	18.0144
Acetone						2.2051	-	-	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66	58.08	153000	0.000153	0.000003	0.000047	0.0179
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25	72.1	40500	0.0000405	0.000001	0.000010	0.0017
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90	100.2	3200	0.0000032	0.000000	0.000001	0.0000
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60	84.94	3800	0.0000038	0.000000	0.000001	0.0009
Water						0.3384	-	-	18.0000	0.9998	0.9989	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-	18.00	999799500	0.9997995	0.055544	0.999941	17.9938
									check:	1.0000	1.0000									check:	1.00000	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3011 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	FROM TANKS DETAILED PDF		AP-42 EQUATIONS	CALCULATIONS				
Standing Losses (lb)	0.4681		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.4682	lbs		
V_V = Vapor Space Volume (cu ft)	40.5063			V_V =	40.5063	cu ft		
W_V = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft		
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296			
K_S = Vented Vapor Saturation Factor	0.9563			K_S =	0.9563			
Tank Vapor Space Volume								
V_V = Vapor Space Volume	40.5063	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	40.5063	cu ft		
D = Tank Diameter	4.5000	ft						
H_{VO} = Vapor Space Outage	2.5469	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	2.5469	ft		$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	5.0000	ft						
H_L = Average Liquid Height	2.5000	ft						
Roof Outage	0.0469	ft						
Roof Outage (Cone Roof)								
Roof Outage	0.0469	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0469	ft		
Roof Height	0.0000	ft						
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.1406	ft		
R_S = Shell Radius	2.2500	ft						
Vapor Density								
W_V = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft		0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0144			M_V =	18.0144	lb/lb-mole		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)						
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R		
Tank Paint Solar Absorptance (Shell)	0.17				0.17			As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17			
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d		I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3385	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9563		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9563			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	2.5469	ft						
Working Losses	75.1826	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	75.1823	lbs		
M_V = Vapor Molecular Weight	18.0144			M_V =	18.0144	lb/lb-mole		
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		
Annual Turnovers	5043.1646			N =	5,043.1646			
K_N = Turnover Factor	0.1726		$K_N = (180 + N)/6N$	K_N =	0.1726			
Maximum Liquid Volume	594.8646	gal						
K_N = Turnover Factor	2.1726							
Maximum Liquid Height	5.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	75.6507	lb		L_T =	75.6505	lbs		

As per sources listed on page 6-5 of TANKS user manual:

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3011 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-3011	75.18	0.47	75.65
Acetone	0.07	0.00	0.08
Methylene chloride	0.00	0.00	0.00
Methyl ethyl ketone	0.01	0.00	0.01
Methyl isobutyl ketone	0.00	0.00	0.00
Water	75.10	0.47	75.56

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
75.18233	0.46820	75.65054
0.07489	0.00047	0.07535
0.00367	0.00002	0.00369
0.00706	0.00004	0.00710
0.00010	0.00000	0.00010
75.09662	0.46767	75.56429

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification	T-3012
City	Model City
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Vertical Fixed Roof Tank
Description	T-100 Processing

Tank Dimensions

Shell Length (ft)	5.00	
Diameter (ft)	4.00	
Liquid Height (ft)	5.00	
Avg. Liquid Height (ft)	2.50	
Volume (gal)	470.02	
Turnovers	6,382.7552	6,382.7546
Net Throughput (gal/yr)	3,000,000	
Is tank heated (y/n)	N	

Paint Characteristics

Shell Color/Shade	White/White
Shell Condition	Good
Roof Color/Shade	White/White
Roof Condition	Good

Roof Characteristics

Type	Cone
Height (ft)	0.00
Slope (ft/ft) Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3012 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276	-	-	18.00	-
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surface Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations	Table 7.1-3 A	B	C	CAS Number	Detected Compounds MW_i (g/mol)	Leachate Concentration [1] (ug/L)	C_i	C_i / MW_i	X_i	$M_v = M_i [(P X_i)/P_{VA}]$
T-100 Liquid	All	49.26	-	-	47.70	0.3386	-	-	18.0276	-	-	18.00	-	-	-	-								
Acetone						2.2051	-	-	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117 B=1210.595 C=229.664	7.1170	1210.595	229.66		58.08	237000	0.000237	0.000004	0.000073	0.0278
Methyl ethyl ketone						0.7848	-	-	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645 B=1150.207 C=209.246	6.8645	1150.207	209.25		72.1	80500	0.0000805	0.000001	0.000020	0.0034
Methyl isobutyl ketone						0.1444	-	-	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672 B=1168.4 C=191.9	6.6720	1168.400	191.90		100.2	9950	0.00000995	0.000000	0.000002	0.0001
Methylene chloride						4.3481	-	-	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409 B=1325.9 C=252.6	7.4090	1325.900	252.60		84.94	31500	0.0000315	0.000000	0.000007	0.0073
Trichloroethylene						0.5874	-	-	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518 B=1018.6 C=192.7	6.5180	1018.600	192.70		131.4	4160	0.00000416	0.000000	0.000001	0.0001
Water						0.3384	-	-	18.0000	0.9996	0.9979	18.00	0.3384 psia at 68 deg F via engineeringtoolbox.com	-	-	-		18.00	999636890	0.99963689	0.055535	0.999897	17.9890
								check:		**1.0000**	**1.0000**										check:	**1.00000**	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3012 - Vertical Fixed Roof Tank
Model City, New York

Annual Emission Calculations	**FROM TANKS DETAILED PDF**		**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	0.3695		$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.3695	lbs			
V_V = Vapor Space Volume (cu ft)	31.9395			V_V =	31.9395	cu ft			
W_v = Vapor Density (lb/cu ft)	0.0011			W_V =	0.0011	lb / cu ft			
K_E = Vapor Space Expansion Factor	0.0297			K_E =	0.0296				
K_S = Vented Vapor Saturation Factor	0.9564			K_S =	0.9564				
Tank Vapor Space Volume									
V_V = Vapor Space Volume	31.9395	cu ft	$V_V = [(Pi/4)\ D^2]\ H_{VO}$	V_V =	31.9395	cu ft			
D = Tank Diameter	4.0000	ft							
H_{VO} = Vapor Space Outage	2.5417	ft	$H_{VO} = H_S - H_L + H_{RO}$	H_{VO} =	2.5417	ft			$H_{VO} = H_E/2$ for horizontal tank
Hs = Tank Shell Length	5.0000	ft							
H_L = Average Liquid Height	2.5000	ft							
Roof Outage	0.0417	ft							
Roof Outage (Cone Roof)									
Roof Outage	0.0417	ft	$H_{RO} = 1/3\ H_R$	H_{RO} =	0.0417	ft			
Roof Height	0.0000	ft							
S_R = Roof Slope	0.0625	ft/ft	$H_R = S_R * R_S$	H_R =	0.1250	ft			
R_S = Shell Radius	2.0000	ft							
Vapor Density									
W_v = Vapor Density	0.0011	lb/cu-ft	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0011	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia							
T_{LA} = Daily Avg. Liquid Surface Temp	508.9255	R	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079 * alpha * I$	T_{LA} =	508.9255	R =	9.59	deg C	
T_{AA} = Daily Average Ambient Temp	47.6792	deg F	$T_{AA} = T_{AX} + T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R	10.7310	psia cuft / (lb-mol-deg R)							
T_B = Liquid Bulk Temperature	507.3692	R	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	507.3692	R			
Tank Paint Solar Absorptance (Shell)	0.17				0.17				As per Table 7.1-6: White/Good = .17
Tank Paint Solar Absorptance (Roof)	0.17				0.17				
I = Daily Total Solar Insulation Factor	1165.4120	Btu/ sqft day			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor	0.0297		$K_E = [\text{delta } T_V/T_{LA}] + [(\text{deltaP}_V\text{-delta } P_B)/(P_A\text{-}P_{VA})]$	K_E =	0.0296		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range	17.2654	R	$\text{delta } T_V = 0.72(T_{AX}\text{-}T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	17.2654	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range	0.0000	psia		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range	0.0600	psia		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Pressure at Daily Minimum Liquid Surface Temperature	0.3385	psia						
Vapor Pressure at Daily Maximum Liquid Surface Temperature	0.3386	psia						
Daily Avg. Liquid Surface Temp.	508.9255	R			508.9255	R		
Daily Min. Liquid Surface Temp	504.6092	R	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	504.6092	R		
Daily Max. Liquid Surface Temp	513.2419	R	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	513.2419	R		
delta T_A = Daily Ambient Temp. Range	16.2750	R		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	0.9564		$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9564			
Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						
Vapor Space Outage	2.5417	ft						

Working Losses

	74.7103	lbs	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	74.7103	lbs		
M_V = Vapor Molecular Weight	18.0276			M_V =	18.0276	lb/lb-mole		Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature	0.3386	psia						K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput	3,000,000	gal/yr	1 bbl/yr = 42 US gal/yr	Q =	71,428.57	bbl/yr		for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers	6382.7552			N =	6,382.7552			for turnovers <36, $K_N = 1$
K_N = Turnover Factor	0.1714		$K_N = (180 + N)/6N$	K_N =	0.1714			K_P = working loss product factor, dimensionless
Maximum Liquid Volume	470.0165	gal						for crude oils $K_P = 0.75$
Maximum Liquid Height	5.0000	ft						
Tank Diameter	4.0000	ft						
K_P = Working Loss Product Factor	1.0000			K_P =	1.00			
Total Losses	75.0798	lb		L_T =	75.0798	lbs		

As per sources listed on page 6-5 of TANKS user manual:

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3012 - Vertical Fixed Roof Tank
Model City, New York

GIVEN VALUES

Components	Losses (lbs)		
	Working Loss	*Breathing Loss*	*Total Emissions*
T-100 Liquid	74.71	0.37	75.08
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	74.55	0.37	74.92

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
74.71035	0.36948	75.07983
0.11518	0.00057	0.11575
0.03018	0.00015	0.03033
0.01392	0.00007	0.01399
0.00054	0.00000	0.00054
0.00032	0.00000	0.00032
74.55021	0.36869	74.91889

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-100
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	3 Year average + GW + Bulk Receipts

Tank Dimensions

Shell Height (ft):	23.00
Diameter (ft):	35.00
Liquid Height (ft) :	23.00
Avg. Liquid Height (ft):	12.50
Volume (gallons):	160,545.00
Turnovers:	18.69
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-100 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-100 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	105.8100
Vapor Space Volume (cu ft):	10,452.9541
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8369
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	10,452.9541
Tank Diameter (ft):	35.0000
Vapor Space Outage (ft):	10.8646
Tank Shell Height (ft):	23.0000
Average Liquid Height (ft):	12.5000
Roof Outage (ft):	0.3646
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.3646
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	17.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8369
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	10.8646
Working Losses (lb):	435.9674
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	18.6864
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	160,545.0000
Maximum Liquid Height (ft):	23.0000
Tank Diameter (ft):	35.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	541.7774

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-100 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-100 Liquid	435.97	105.81	541.78
Methyl ethyl ketone	0.08	0.02	0.10
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	435.03	105.58	540.62
Acetone	0.67	0.16	0.84
Methylene chloride	0.18	0.04	0.22

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-210
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-1111/1112 - T-1410 divided by 3

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	18.50
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	7.50
Volume (gallons):	30,000.00
Turnovers:	16.67
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-210 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-210 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	22.1895
Vapor Space Volume (cu ft):	2,067.8194
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8784
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,067.8194
Tank Diameter (ft):	18.5000
Vapor Space Outage (ft):	7.6927
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.5000
Roof Outage (ft):	0.1927
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1927
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	9.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8784
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	7.6927
Working Losses (lb):	73.3280
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	16.6667
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	30,000.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	18.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	95.5175

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-210 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-220
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-1111 + T-1112 - T-1410 divided by 3

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	18.50
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	7.50
Volume (gallons):	30,000.00
Turnovers:	16.67
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-220 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-220 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	22.1895
Vapor Space Volume (cu ft):	2,067.8194
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8784
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,067.8194
Tank Diameter (ft):	18.5000
Vapor Space Outage (ft):	7.6927
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.5000
Roof Outage (ft):	0.1927
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1927
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	9.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8784
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	7.6927
Working Losses (lb):	73.3280
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	16.6667
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	30,000.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	18.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	95.5175

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-220 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-230
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-1111/1112 - T-1410 divided by 3

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	18.50
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	7.50
Volume (gallons):	30,000.00
Turnovers:	16.67
Net Throughput(gal/yr):	500,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-230 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-230 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	22.1895
Vapor Space Volume (cu ft):	2,067.8194
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.8784
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,067.8194
Tank Diameter (ft):	18.5000
Vapor Space Outage (ft):	7.6927
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.5000
Roof Outage (ft):	0.1927
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1927
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	9.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8784
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	7.6927
Working Losses (lb):	73.3280
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	500,000.0000
Annual Turnovers:	16.6667
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	30,000.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	18.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	95.5175

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-230 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	73.33	22.19	95.52
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.35	0.11	0.46
Methylene chloride	0.21	0.06	0.27
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.09	0.03	0.12
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.21	0.06	0.28
Butanol-(1)	0.00	0.00	0.00
Water	72.43	21.92	94.35

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-1010
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 divided by 2 - GW & Bulk Receipts

Tank Dimensions

Shell Height (ft):	9.00
Diameter (ft):	14.00
Liquid Height (ft) :	9.00
Avg. Liquid Height (ft):	4.50
Volume (gallons):	10,000.00
Turnovers:	60.00
Net Throughput(gal/yr):	600,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-1010 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-1010 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	8.0626
Vapor Space Volume (cu ft):	715.1705
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9229
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	715.1705
Tank Diameter (ft):	14.0000
Vapor Space Outage (ft):	4.6458
Tank Shell Height (ft):	9.0000
Average Liquid Height (ft):	4.5000
Roof Outage (ft):	0.1458
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1458
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	7.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9229
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	4.6458
Working Losses (lb):	58.6624
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	600,000.0000
Annual Turnovers:	60.0000
Turnover Factor:	0.6667
Maximum Liquid Volume (gal):	10,000.0000
Maximum Liquid Height (ft):	9.0000
Tank Diameter (ft):	14.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	66.7250

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-1010 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 1-6 Leachate (Including NAPL)	58.66	8.06	66.72
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.01	0.00	0.01
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.07	0.01	0.08
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.28	0.04	0.32
Methylene chloride	0.16	0.02	0.19
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.17	0.02	0.19
Butanol-(1)	0.00	0.00	0.00
Water	57.95	7.96	65.91

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-1020
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 divided by 2 - GW & Bulk Receipts

Tank Dimensions

Shell Height (ft):	10.00
Diameter (ft):	12.00
Liquid Height (ft) :	10.00
Avg. Liquid Height (ft):	5.00
Volume (gallons):	8,000.00
Turnovers:	75.00
Net Throughput(gal/yr):	600,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-1020 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 1-6 Leachate (Including NAPL)	All	49.26	44.94	53.57	47.70	0.3394	0.3393	0.3396	18.1467			18.04	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0007	0.0048	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Acetonitrile						0.8304	0.7308	0.9411	41.0500	0.0000	0.0000	41.05	Option 2: A=7.119, B=1314.4, C=230
Acrylonitrile						1.0305	0.9070	1.1678	53.0600	0.0000	0.0000	53.06	Option 2: A=7.038, B=1232.53, C=222.47
Aniline						0.0038	0.0031	0.0046	93.1000	0.0000	0.0000	93.10	Option 2: A=7.32, B=1731.515, C=206.049
Benzene						0.8603	0.7574	0.9745	78.1100	0.0000	0.0000	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butanol-(1)						0.0339	0.0273	0.0418	74.1200	0.0003	0.0000	74.12	Option 2: A=7.4768, B=1362.39, C=178.77
Chlorobenzene						0.0920	0.0788	0.1071	112.6000	0.0000	0.0000	112.60	Option 2: A=6.978, B=1431.05, C=217.55
Chloroform						1.8160	1.6061	2.0475	119.3900	0.0000	0.0000	119.39	Option 2: A=6.493, B=929.44, C=196.03
Cresol (-m)						0.0008	0.0006	0.0010	108.1000	0.0000	0.0000	108.10	Option 2: A=7.508, B=1856.36, C=199.07
Cresol (-o)						0.0010	0.0007	0.0012	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Cresol (-p)						0.0003	0.0002	0.0004	108.1000	0.0000	0.0000	108.10	Option 2: A=7.035, B=1511.08, C=161.85
Cyclohexanone						0.0377	0.0325	0.0437	98.2000	0.0000	0.0000	98.20	Option 2: A=7.8492, B=2137.192, C=273.16
Dichloroethane (1,1)						2.2012	1.9591	2.4780	98.9700	0.0000	0.0000	98.97	Option 1: VP40 = 1.682 VP50 = 2.243
Dichloroethane (1,2)						0.6899	0.6050	0.7847	98.9700	0.0000	0.0000	98.97	Option 2: A=7.025, B=1272.3, C=222.9
Dichloroethylene (-trans-1,2)						3.3324	2.9876	3.7089	96.9500	0.0000	0.0000	96.95	Option 2: A=6.965, B=1141.9, C=231.9
Diethyl ether						5.5303	4.9819	6.1264	74.1200	0.0000	0.0002	74.12	Option 2: A=6.92, B=1064.07, C=228.8
Dimethyl phthalate						0.0000	0.0000	0.0000	194.2000	0.0000	0.0000	194.20	Option 2: A=4.522, B=700.31, C=51.42
Dioxane (1,4)						0.3139	0.2733	0.3597	88.1000	0.0001	0.0001	88.10	Option 2: A=7.431, B=1554.68, C=240.34
Ethyl chloride						13.2558	12.0759	14.5250	64.5200	0.0000	0.0000	64.52	Option 2: A=6.986, B=1030.01, C=238.61
Ethylbenzene						0.0739	0.0630	0.0865	106.1700	0.0000	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Iso-butyl alcohol						0.0584	0.0473	0.0717	74.1200	0.0000	0.0000	74.12	Option 2: A=7.30636, B=1236.991, C=171.622
Methyl alcohol						1.0194	0.8825	1.1743	32.0400	0.0010	0.0029	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0005	0.0013	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0001	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0028	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Pyridine						0.1621	0.1392	0.1881	79.1000	0.0000	0.0000	79.10	Option 2: A=7.041, B=1373.8, C=214.98
Tetrachloroethane (1,1,2,2)						0.0273	0.0225	0.0329	167.8500	0.0000	0.0000	167.85	Option 2: A=6.631, B=1228.1, C=179.9
Tetrachloroethylene						0.1445	0.1243	0.1673	165.8300	0.0000	0.0000	165.83	Option 2: A=6.98, B=1386.92, C=217.53
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Trichloroethane (1,1,1)						1.2296	1.0886	1.3864	133.4200	0.0000	0.0000	133.42	Option 2: A=8.643, B=2136.6, C=302.8
Trichloroethane (1,1,2)						0.1697	0.1456	0.1971	133.4000	0.0000	0.0000	133.40	Option 2: A=6.951, B=1314.41, C=209.2
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Vinylidene chloride						6.3609	5.7519	7.0209	96.5000	0.0000	0.0000	96.50	Option 2: A=6.972, B=1099.4, C=237.2
Water						0.3384	0.3384	0.3384	18.0000	0.9969	0.9878	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-1020 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	6.4829
Vapor Space Volume (cu ft):	579.6238
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9156
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	579.6238
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	5.1250
Tank Shell Height (ft):	10.0000
Average Liquid Height (ft):	5.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3393
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3396
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9156
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3394
Vapor Space Outage (ft):	5.1250
Working Losses (lb):	49.8630
Vapor Molecular Weight (lb/lb-mole):	18.1467
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3394
Annual Net Throughput (gal/yr.):	600,000.0000
Annual Turnovers:	75.0000
Turnover Factor:	0.5667
Maximum Liquid Volume (gal):	8,000.0000
Maximum Liquid Height (ft):	10.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	56.3459

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-1020 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Diethyl ether	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00
Iso-butyl alcohol	0.00	0.00	0.00
Tetrachloroethylene	0.00	0.00	0.00
SLF 1-6 Leachate (Including NAPL)	49.86	6.48	56.35
Trichloroethane (1,1,1)	0.00	0.00	0.00
Trichloroethane (1,1,2)	0.00	0.00	0.00
Dichloroethane (1,1)	0.00	0.00	0.00
Vinylidene chloride	0.00	0.00	0.00
Dichloroethane (1,2)	0.00	0.00	0.00
Dioxane (1,4)	0.00	0.00	0.00
Acetonitrile	0.00	0.00	0.00
Acrylonitrile	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Chlorobenzene	0.00	0.00	0.00
Ethyl chloride	0.00	0.00	0.00
Chloroform	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Dichloroethylene (-trans-1,2)	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Cyclohexanone	0.00	0.00	0.00
Tetrachloroethane (1,1,2,2)	0.00	0.00	0.00
Methyl ethyl ketone	0.06	0.01	0.07
Methyl isobutyl ketone	0.00	0.00	0.00
Acetone	0.24	0.03	0.27
Methylene chloride	0.14	0.02	0.16
Trichloroethylene	0.00	0.00	0.00
Cresol (-o)	0.00	0.00	0.00
Cresol (-m)	0.00	0.00	0.00
Cresol (-p)	0.00	0.00	0.00
Aniline	0.00	0.00	0.00
Dimethyl phthalate	0.00	0.00	0.00
Pyridine	0.00	0.00	0.00
Methyl alcohol	0.14	0.02	0.16
Butanol-(1)	0.00	0.00	0.00
Water	49.25	6.40	55.66

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-310
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	38.00
Diameter (ft):	12.00
Liquid Height (ft) :	38.00
Avg. Liquid Height (ft):	19.00
Volume (gallons):	30,457.00
Turnovers:	98.50
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-310 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-310	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0130			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0001	0.0009	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9990	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-310 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	19.4580
Vapor Space Volume (cu ft):	2,162.9865
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.7446
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,162.9865
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	19.1250
Tank Shell Height (ft):	38.0000
Average Liquid Height (ft):	19.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0130
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7446
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.3385
Vapor Space Outage (ft):	19.1250
Working Losses (lb):	205.2242
Vapor Molecular Weight (lb/lb-mole):	18.0130
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	98.4995
Turnover Factor:	0.4712
Maximum Liquid Volume (gal):	30,457.0000
Maximum Liquid Height (ft):	38.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	224.6822

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-310 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-310	205.22	19.46	224.68
Acetone	0.18	0.02	0.20
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Water	205.01	19.44	224.45

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-320
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	38.00
Diameter (ft):	12.00
Liquid Height (ft) :	38.00
Avg. Liquid Height (ft):	19.00
Volume (gallons):	30,457.00
Turnovers:	98.50
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-320 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-320	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0144			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0000	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9989	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-320 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	19.4601
Vapor Space Volume (cu ft):	2,162.9865
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.7445
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,162.9865
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	19.1250
Tank Shell Height (ft):	38.0000
Average Liquid Height (ft):	19.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0144
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7445
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3385
Vapor Space Outage (ft):	19.1250
Working Losses (lb):	205.2464
Vapor Molecular Weight (lb/lb-mole):	18.0144
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	98.4995
Turnover Factor:	0.4712
Maximum Liquid Volume (gal):	30,457.0000
Maximum Liquid Height (ft):	38.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	224.7065

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-320 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-320	205.25	19.46	224.71
Acetone	0.20	0.02	0.22
Methylene chloride	0.01	0.00	0.01
Methyl ethyl ketone	0.02	0.00	0.02
Methyl isobutyl ketone	0.00	0.00	0.00
Water	205.01	19.44	224.45

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3001
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	7.00
Diameter (ft):	5.50
Liquid Height (ft) :	7.00
Avg. Liquid Height (ft):	3.50
Volume (gallons):	1,255.00
Turnovers:	2,390.44
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3001 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3001 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.9609
Vapor Space Volume (cu ft):	84.5152
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9400
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	84.5152
Tank Diameter (ft):	5.5000
Vapor Space Outage (ft):	3.5573
Tank Shell Height (ft):	7.0000
Average Liquid Height (ft):	3.5000
Roof Outage (ft):	0.0573
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0573
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	2.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9400
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	3.5573
Working Losses (lb):	78.1326
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	2,390.4382
Turnover Factor:	0.1792
Maximum Liquid Volume (gal):	1,255.0000
Maximum Liquid Height (ft):	7.0000
Tank Diameter (ft):	5.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	79.0936

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3001 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-100 Liquid	78.13	0.96	79.09
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	77.97	0.96	78.92

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3002
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	5.66
Diameter (ft):	5.00
Liquid Height (ft) :	5.66
Avg. Liquid Height (ft):	2.83
Volume (gallons):	900.00
Turnovers:	3,333.33
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3002 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3002 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.6508
Vapor Space Volume (cu ft):	56.5896
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9508
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	56.5896
Tank Diameter (ft):	5.0000
Vapor Space Outage (ft):	2.8821
Tank Shell Height (ft):	5.6600
Average Liquid Height (ft):	2.8300
Roof Outage (ft):	0.0521
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0521
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	2.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9508
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	2.8821
Working Losses (lb):	76.5849
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	3,333.3333
Turnover Factor:	0.1757
Maximum Liquid Volume (gal):	900.0000
Maximum Liquid Height (ft):	5.6600
Tank Diameter (ft):	5.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	77.2358

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3002 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-100 Liquid	76.58	0.65	77.24
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	76.42	0.65	77.07

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3003
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	6.50
Diameter (ft):	5.00
Liquid Height (ft) :	6.50
Avg. Liquid Height (ft):	3.25
Volume (gallons):	954.72
Turnovers:	3,142.28
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3003 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3003 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.7404
Vapor Space Volume (cu ft):	64.8363
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9441
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	64.8363
Tank Diameter (ft):	5.0000
Vapor Space Outage (ft):	3.3021
Tank Shell Height (ft):	6.5000
Average Liquid Height (ft):	3.2500
Roof Outage (ft):	0.0521
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0521
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	2.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9441
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	3.3021
Working Losses (lb):	76.8235
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	3,142.2795
Turnover Factor:	0.1762
Maximum Liquid Volume (gal):	954.7209
Maximum Liquid Height (ft):	6.5000
Tank Diameter (ft):	5.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	77.5639

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3003 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-100 Liquid	76.82	0.74	77.56
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	76.66	0.74	77.40

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3009 rev
City:	Buffalo
State:	New York
Company:	CWM Chemical Services, LLC
Type of Tank:	Horizontal Tank
Description:	Horizontal Tank

Tank Dimensions

Shell Length (ft):	16.00
Diameter (ft):	8.00
Volume (gallons):	5,000.00
Turnovers:	60.00
Net Throughput(gal/yr):	300,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3009 rev - Horizontal Tank
Buffalo, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Tank 3009	All	58.30	48.11	68.49	52.02	0.3385	0.3385	0.3386	18.0184			18.00	
Acetone						2.8026	2.1379	3.6292	58.0800	0.0002	0.0013	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						1.0299	0.7577	1.3789	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1998	0.1384	0.2829	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						5.4129	4.2270	6.8607	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9985	18.00	Option 1: VP50 = .3383936375 VP60 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3009 rev - Horizontal Tank
Buffalo, New York

Annual Emission Calcaulations

Standing Losses (lb):	14.2473
Vapor Space Volume (cu ft):	512.2597
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0744
Vented Vapor Saturation Factor:	0.9330
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	512.2597
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	12.7694
Vapor Space Outage (ft):	4.0000
Tank Shell Length (ft):	16.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0184
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg. R):	517.9736
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	511.6892
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0744
Daily Vapor Temperature Range (deg. R):	40.7601
Daily Vapor Pressure Range (psia):	0.0001
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	517.9736
Daily Min. Liquid Surface Temp. (deg R):	507.7836
Daily Max. Liquid Surface Temp. (deg R):	528.1636
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9330
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3385
Vapor Space Outage (ft):	4.0000
Working Losses (lb):	29.0457
Vapor Molecular Weight (lb/lb-mole):	18.0184
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Annual Net Throughput (gal/yr.):	300,000.0000
Annual Turnovers:	60.0000
Turnover Factor:	0.6667
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	43.2930

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3009 rev - Horizontal Tank
Buffalo, New York

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Tank 3009	29.05	14.25	43.29
Methylene chloride	0.00	0.00	0.00
Water	29.00	14.23	43.23
Acetone	0.04	0.02	0.05
Methyl isobutyl ketone	0.00	0.00	0.00
Methyl ethyl ketone	0.00	0.00	0.01

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3011
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	4.50
Liquid Height (ft) :	5.00
Avg. Liquid Height (ft):	2.50
Volume (gallons):	594.86
Turnovers:	5,043.16
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3011 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-3011	All	49.26	44.94	53.57	47.70	0.3385	0.3385	0.3385	18.0144			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0010	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0000	0.0001	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0001	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Water						0.3384	0.3384	0.3384	18.0000	0.9998	0.9989	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3011 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.4681
Vapor Space Volume (cu ft):	40.5063
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9563
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	40.5063
Tank Diameter (ft):	4.5000
Vapor Space Outage (ft):	2.5469
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	2.5000
Roof Outage (ft):	0.0469
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0469
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	2.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0144
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3385
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9563
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3385
Vapor Space Outage (ft):	2.5469
Working Losses (lb):	75.1826
Vapor Molecular Weight (lb/lb-mole):	18.0144
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3385
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	5,043.1646
Turnover Factor:	0.1726
Maximum Liquid Volume (gal):	594.8646
Maximum Liquid Height (ft):	5.0000
Tank Diameter (ft):	4.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	75.6507

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3011 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-3011	75.18	0.47	75.65
Acetone	0.07	0.00	0.08
Methylene chloride	0.00	0.00	0.00
Methyl ethyl ketone	0.01	0.00	0.01
Methyl isobutyl ketone	0.00	0.00	0.00
Water	75.10	0.47	75.56

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-3012
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	T-100 Processing

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	4.00
Liquid Height (ft) :	5.00
Avg. Liquid Height (ft):	2.50
Volume (gallons):	470.02
Turnovers:	6,382.76
Net Throughput(gal/yr):	3,000,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-3012 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
T-100 Liquid	All	49.26	44.94	53.57	47.70	0.3386	0.3385	0.3386	18.0276			18.00	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0015	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0001	0.0002	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methyl isobutyl ketone						0.1444	0.1229	0.1689	100.2000	0.0000	0.0000	100.20	Option 2: A=6.672, B=1168.4, C=191.9
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0000	0.0004	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Trichloroethylene						0.5874	0.5111	0.6729	131.4000	0.0000	0.0000	131.40	Option 2: A=6.518, B=1018.6, C=192.7
Water						0.3384	0.3384	0.3384	18.0000	0.9996	0.9979	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-3012 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	0.3695
Vapor Space Volume (cu ft):	31.9395
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9564
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	31.9395
Tank Diameter (ft):	4.0000
Vapor Space Outage (ft):	2.5417
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	2.5000
Roof Outage (ft):	0.0417
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0417
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	2.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3385
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3386
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9564
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3386
Vapor Space Outage (ft):	2.5417
Working Losses (lb):	74.7103
Vapor Molecular Weight (lb/lb-mole):	18.0276
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3386
Annual Net Throughput (gal/yr.):	3,000,000.0000
Annual Turnovers:	6,382.7552
Turnover Factor:	0.1714
Maximum Liquid Volume (gal):	470.0165
Maximum Liquid Height (ft):	5.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	75.0798

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-3012 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
T-100 Liquid	74.71	0.37	75.08
Acetone	0.12	0.00	0.12
Methylene chloride	0.03	0.00	0.03
Methyl ethyl ketone	0.01	0.00	0.01
Trichloroethylene	0.00	0.00	0.00
Methyl isobutyl ketone	0.00	0.00	0.00
Water	74.55	0.37	74.92

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Frac Tank #3
City:	Model City
State:	NY
Company:	CWM Chemical Services, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	SLF-7 Leachate Processing

Tank Dimensions

Shell Height (ft):	11.00
Diameter (ft):	18.00
Liquid Height (ft) :	11.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	21,000.00
Turnovers:	2.38
Net Throughput(gal/yr):	50,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
SLF 7 Leachate	All	49.26	44.94	53.57	47.70	0.3387	0.3386	0.3387	18.0507			18.01	
Acetone						2.2051	1.9598	2.4754	58.0800	0.0002	0.0012	58.08	Option 2: A=7.117, B=1210.595, C=229.664
Methyl ethyl ketone						0.7848	0.6863	0.8948	72.1000	0.0002	0.0004	72.10	Option 2: A=6.8645, B=1150.207, C=209.246
Methylene chloride						4.3481	3.9050	4.8320	84.9400	0.0002	0.0021	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Toluene						0.2342	0.2030	0.2694	92.1300	0.0000	0.0000	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3384	0.3384	0.3384	18.0000	0.9995	0.9963	18.00	Option 1: VP40 = .3383936375 VP50 = .3383936375
Xylenes (mixed isomers)						0.0613	0.0522	0.0718	106.1700	0.0000	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, NY

Annual Emission Calcaulations

Standing Losses (lb):	15.4329
Vapor Space Volume (cu ft):	1,399.5795
Vapor Density (lb/cu ft):	0.0011
Vapor Space Expansion Factor:	0.0297
Vented Vapor Saturation Factor:	0.9102
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,399.5795
Tank Diameter (ft):	18.0000
Vapor Space Outage (ft):	5.5000
Tank Shell Height (ft):	11.0000
Average Liquid Height (ft):	5.5000
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	9.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0011
Vapor Molecular Weight (lb/lb-mole):	18.0507
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg. R):	508.9255
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	507.3692
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0297
Daily Vapor Temperature Range (deg. R):	17.2654
Daily Vapor Pressure Range (psia):	0.0001
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3386
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3387
Daily Avg. Liquid Surface Temp. (deg R):	508.9255
Daily Min. Liquid Surface Temp. (deg R):	504.6092
Daily Max. Liquid Surface Temp. (deg R):	513.2419
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9102
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.3387
Vapor Space Outage (ft):	5.5000
Working Losses (lb):	7.2774
Vapor Molecular Weight (lb/lb-mole):	18.0507
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3387
Annual Net Throughput (gal/yr.):	50,000.0000
Annual Turnovers:	2.3810
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	21,000.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	18.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	22.7103

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Frac Tank #3 - Vertical Fixed Roof Tank
Model City, NY

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
SLF 7 Leachate	7.28	15.43	22.71
Methyl ethyl ketone	0.00	0.01	0.01
Toluene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.00	0.00	0.00
Water	7.25	15.38	22.63
Acetone	0.01	0.02	0.03
Methylene chloride	0.02	0.03	0.05

Attachment 12
Historical Sampling Results for Tanks T-100, T-310 and T320

T-310																			
			Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	Diethyl ether	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	1,1-Dichloroethene	Methylene chloride	Carbon disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane	Vinyl acetate	2-Butanone	Ethyl acetate
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1304089-03	04/19/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304085-03	04/18/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304080-03	04/17/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304074-03	04/16/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304064-03	04/15/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304063-03	04/14/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304062-03	04/13/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304052-03	04/12/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304045-03	04/11/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304041-03	04/10/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304036-03	04/09/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304027-01	04/08/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304026-01	04/07/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3930	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304025-01	04/06/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	14000	<2500	<2500	<2500	<2500	<2500	<2500	3920	<2500
1304022-01	04/05/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	33400	<2500	3980	<2500	<2500	<2500	<2500	12800	<2500
1304018-01	04/04/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304014-03	04/03/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304011-03	04/02/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304003-01	04/01/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304002-01	03/31/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304001-01	03/30/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303133-01	03/28/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303123-03	03/27/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303119-03	03/26/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303113-01	03/25/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303112-01	03/24/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303111-01	03/23/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303105-03	03/22/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303098-03	03/21/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303089-01	03/20/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303083-01	03/19/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303072-01	03/18/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	20600	<2500	<2500	<2500	<2500	<2500	<2500	6470	<2500
1303071-01	03/17/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	14700	<2500	<2500	<2500	<2500	<2500	<2500	4910	<2500
1303070-01	03/16/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	8540	<2500	<2500	<2500	<2500	<2500	<2500	2760	<2500
1303066-01	03/15/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303061-03	03/14/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1680	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303055-03	03/13/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303052-03	03/12/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303041-01	03/11/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303040-01	03/10/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303039-01	03/09/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303037-01	03/08/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303031-01	03/07/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303025-01	03/06/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303019-03	03/05/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1650	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303011-03	03/04/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303010-03	03/03/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303009-03	03/02/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303002-01	03/01/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303002-04	03/01/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302122-03	02/28/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	17200	<1000	<1000	<1000	<1000	<1000	<1000	6850	<1000
1302129-01	02/28/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	14000	<1000	<1000	<1000	<1000	<1000	<1000	5490	<1000
1302114-03	02/27/13	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	23100	<1000	<1000	<1000	<1000	<1000	<1000	9670	<1000
1302109-01	02/26/13	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3880	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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T-310																			
			Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	Diethyl ether	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	1,1-Dichloroethene	Methylene chloride	Carbon disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane	Vinyl acetate	2-Butanone	Ethyl acetate
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-310																			
			Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	Diethyl ether	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	1,1-Dichloroethene	Methylene chloride	Carbon disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane	Vinyl acetate	2-Butanone	Ethyl acetate
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-310																			
			Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	Diethyl ether	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	1,1-Dichloroethene	Methylene chloride	Carbon disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane	Vinyl acetate	2-Butanone	Ethyl acetate
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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1207052-01	07/14/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	49600	<2500	<2500	<2500	<2500	<2500	<2500	16300	<2500
1207050-03	07/13/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1207045-03	07/12/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1207035-03	07/11/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1207030-01	07/10/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1207022-01	07/09/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1207023-01	07/08/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1207024-01	07/07/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	17400	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1207018-01	07/06/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	4970	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1207016-01	07/05/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

T-310																			
			Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	Diethyl ether	1,1,2-Trichloro-1,2,2-trifluoroethane	Acetone	1,1-Dichloroethene	Methylene chloride	Carbon disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane	Vinyl acetate	2-Butanone	Ethyl acetate
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1205138-01	05/25/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205131-01	05/24/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205124-03	05/23/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205117-03	05/22/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205105-01	05/21/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205104-01	05/20/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205103-01	05/19/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205101-01	05/18/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205097-03	05/17/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205090-03	05/16/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205084-03	05/15/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205074-03	05/14/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205073-03	05/13/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205072-03	05/12/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205067-03	05/11/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205059-03	05/10/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205049-01	05/09/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205044-01	05/08/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205036-01	05/07/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205035-01	05/06/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205034-03	05/05/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205028-03	05/04/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205022-03	05/03/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205013-03	05/02/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1205001-03	05/01/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204137-03	04/30/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204136-03	04/29/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204135-01	04/28/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1204130-01	04/27/12	T-310 EFFLUENT	<2500	<2500	49100	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	11800	<2500
1204125-01	04/26/12	T-310 EFFLUENT	<2500	<2500	80400 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	20400	<2500
1204117-03	04/25/12	T-310 EFFLUENT	<2500	<2500	77100 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	20300	<2500
1204111-01	04/24/12	T-310 EFFLUENT	<2500	<2500	89000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	22500	<2500
1204102-01	04/23/12	T-310 EFFLUENT	<2500	<2500	91800 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	24100	<2500
1204101-01	04/22/12	T-310 EFFLUENT	<2500	<2500	112000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	30200	<2500
1204100-01	04/21/12	T-310 EFFLUENT	<2500	<2500	97900 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	26000	<2500
1204096-01	04/20/12	T-310 EFFLUENT	<2500	<2500	120000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	30700	<2500
1204090-01	04/19/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	125000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	34300	<2500
1204084-01	04/18/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	135000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	41000	<2500
1204078-01	04/17/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	85000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	25200	<2500
1204064-03	04/16/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204063-03	04/15/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204062-03	04/14/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204057-03	04/13/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204049-03	04/12/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204044-01	04/11/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204039-01	04/10/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1204028-01	04/09/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1204027-01	04/08/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	34900	<2500	<2500	<2500	<2500	<2500	<2500	8020	<2500
1204026-01	04/07/12	T-310 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	42900	<2500	<2500	<2500	<2500	<2500	<2500	10000	<2500
1204023-01	04/06/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	73000 [1]	<1000	<1000	<1000	<1000	<1000	<1000	15100	<1000
1204020-01	04/05/12	T-310 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	10400	<1000	<1000	<1000	<1000	<1000	<1000	2660	<1000
1204016-03	04/04/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204013-03	04/03/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204003-01	04/02/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204002-01	04/01/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204001-01	03/31/12	T-310 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500

T-310																		
			Chloroform	1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
SAMPLE ID	DATE		ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L
1304089-03	04/19/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1304085-03	04/18/13	T-310 EFFLUENT	<1000	<1000	<1000	94.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.6%	<1000	<1000	<1000
1304080-03	04/17/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1304074-03	04/16/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1304064-03	04/15/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1304063-03	04/14/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1304062-03	04/13/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1304052-03	04/12/13	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1304045-03	04/11/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1304041-03	04/10/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1304036-03	04/09/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1304027-01	04/08/13	T-310 EFFLUENT	<2500	<2500	<2500	98.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1304026-01	04/07/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1304025-01	04/06/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1304022-01	04/05/13	T-310 EFFLUENT	<2500	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1304018-01	04/04/13	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1304014-03	04/03/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1304011-03	04/02/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1304003-01	04/01/13	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1304002-01	03/31/13	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1304001-01	03/30/13	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.4%	<2500	<2500	<2500
1303133-01	03/28/13	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500
1303123-03	03/27/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1303119-03	03/26/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1303113-01	03/25/13	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500
1303112-01	03/24/13	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500
1303111-01	03/23/13	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1303105-03	03/22/13	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1303098-03	03/21/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1303089-01	03/20/13	T-310 EFFLUENT	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
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1303072-01	03/18/13	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1303071-01	03/17/13	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1303070-01	03/16/13	T-310 EFFLUENT	<2500	<2500	<2500	99.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1303066-01	03/15/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500
1303061-03	03/14/13	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1303055-03	03/13/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1303052-03	03/12/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1303041-01	03/11/13	T-310 EFFLUENT	<2500	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1303040-01	03/10/13	T-310 EFFLUENT	<2500	<2500	<2500	117%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	109%	<2500	<2500	<2500
1303039-01	03/09/13	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1303037-01	03/08/13	T-310 EFFLUENT	<2500	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	109%	<2500	<2500	<2500
1303031-01	03/07/13	T-310 EFFLUENT	<2500	<2500	<2500	115%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500
1303025-01	03/06/13	T-310 EFFLUENT	<2500	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500
1303019-03	03/05/13	T-310 EFFLUENT	<1000	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000
1303011-03	03/04/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1303010-03	03/03/13	T-310 EFFLUENT	<1000	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1303009-03	03/02/13	T-310 EFFLUENT	<1000	<1000	<1000	113%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	109%	<1000	<1000	<1000
1303002-01	03/01/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500
1303002-04	03/01/13	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500
1302122-03	02/28/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	1310	<1000	104%	<1000	<1000	<1000
1302129-01	02/28/13	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1302114-03	02/27/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	1760	<1000	105%	<1000	<1000	<1000
1302109-01	02/26/13	T-310 EFFLUENT	<2500	<2500	<2500	93.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.5%	<2500	<2500	<2500
1302098-01	02/25/13	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500
1302099-01	02/25/13	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1302097-01	02/23/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500
1302094-01	02/22/13	T-310 EFFLUENT	<2500	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1302090-03	02/21/13	T-310 EFFLUENT	<1000	<1000	<1000	112%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1302083-03	02/20/13	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1302076-03	02/19/13	T-310 EFFLUENT	<1000	<1000	<1000	112%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1302069-01	02/18/13	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1302068-03	02/17/13	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1302067-03	02/16/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1302065-03	02/15/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1302059-03	02/14/13	T-310 EFFLUENT	<1000	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000
1302049-03	02/13/13	T-310 EFFLUENT	<1000	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1302041-03	02/12/13	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1302032-01	02/11/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1302031-01	02/10/13	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1302030-01	02/09/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1302025-01	02/08/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000

T-310																		
			Chloroform	1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
SAMPLE ID	DATE		ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L
1302023-01	02/07/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500
1302019-03	02/06/13	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1302016-03	02/05/13	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1302009-01	02/04/13	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1302008-01	02/03/13	T-310 EFFLUENT	<2500	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1302007-01	02/02/13	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1302001-03	02/01/13	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1301138-03	01/31/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1301126-03	01/30/13	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1301122-03	01/29/13	T-310 EFFLUENT	<1000	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1301116-01	01/28/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1301115-01	01/27/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1301114-01	01/26/13	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1301108-01	01/25/13	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1301105-03	01/24/13	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1301094-03	01/23/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1301090-01	01/22/13	T-310 EFFLUENT	<2500	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1301083-03	01/21/13	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1301082-03	01/20/13	T-310 EFFLUENT	<1000	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1301081-01	01/19/13	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1301072-03	01/18/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1301066-01	01/17/13	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500
1301061-03	01/16/13	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1301053-03	01/15/13	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1301043-01	01/14/13	T-310 EFFLUENT	<2500	<2500	<2500	94.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.2%	<2500	<2500	<2500
1301042-01	01/13/13	T-310 EFFLUENT	<2500	<2500	<2500	96.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500
1301041-01	01/12/13	T-310 EFFLUENT	<2500	<2500	<2500	99.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.3%	<2500	<2500	<2500
1301039-01	01/11/13	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1301035-01	01/10/13	T-310 EFFLUENT	<2500	<2500	<2500	93.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.6%	<2500	<2500	<2500
1301029-01	01/09/13	T-310 EFFLUENT	<2500	<2500	<2500	96.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1301025-03	01/08/13	T-310 EFFLUENT	<1000	<1000	<1000	99.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.6%	<1000	<1000	<1000
1301018-03	01/07/13	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1301017-01	01/06/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1301016-01	01/05/13	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1301015-01	01/04/13	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.3%	<2500	<2500	<2500
1301007-01	01/03/13	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1301002-03	01/02/13	T-310 EFFLUENT	<1000	<1000	<1000	98.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.2%	<1000	<1000	<1000
1301001-03	01/01/13	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000
1212125-01	12/31/12	T-310 EFFLUENT	<1000	<1000	<1000	98.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.9%	<1000	<1000	<1000
1212124-01	12/30/12	T-310 EFFLUENT	<1000	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1212123-01	12/29/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1212121-01	12/28/12	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	109%	<1000	<1000	<1000
1212118-01	12/27/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1212108-01	12/26/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000
1212107-03	12/25/12	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1212102-01	12/24/12	T-310 EFFLUENT	<1000	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	110%	<1000	<1000	<1000
1212101-01	12/23/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1212100-01	12/22/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1212097-03	12/21/12	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1212092-03	12/20/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1212085-03	12/19/12	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1212075-01	12/18/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1212067-01	12/17/12	T-310 EFFLUENT	<2500	<2500	<2500	99.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.1%	<2500	<2500	<2500
1212068-01	12/16/12	T-310 EFFLUENT	<2500	<2500	<2500	97.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.8%	<2500	<2500	<2500
1212069-01	12/15/12	T-310 EFFLUENT	<2500	<2500	<2500	95.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.5%	<2500	<2500	<2500
1212060-01	12/14/12	T-310 EFFLUENT	<2500	<2500	<2500	92.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.7%	<2500	<2500	<2500
1212053-01	12/13/12	T-310 EFFLUENT	<2500	<2500	<2500	97.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500
1212044-01	12/12/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500
1212040-03	12/11/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.6%	<1000	<1000	<1000
1212033-03	12/10/12	T-310 EFFLUENT	<1000	<1000	<1000	98.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.7%	<1000	<1000	<1000
1212032-01	12/09/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.0%	<1000	<1000	<1000
1212031-01	12/08/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.1%	<1000	<1000	<1000
1212026-01	12/07/12	T-310 EFFLUENT	<2500	<2500	<2500	98.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.5%	<2500	<2500	<2500
1212022-01	12/06/12	T-310 EFFLUENT	<2500	<2500	<2500	94.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.5%	<2500	<2500	<2500
1212015-03	12/05/12	T-310 EFFLUENT	<1000	<1000	<1000	99.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.1%	<1000	<1000	<1000
1212009-01	12/04/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.4%	<2500	<2500	<2500
1212003-01	12/03/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500
1212002-01	12/02/12	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1212001-01	12/01/12	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1211118-01	11/30/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1211111-01	11/29/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1211108-01	11/28/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500

T-310																		
			Chloroform	1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
SAMPLE ID	DATE		ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L
1211101-01	11/27/12	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1211095-03	11/26/12	T-310 EFFLUENT	<1000	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1211097-03	11/25/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1211096-01	11/24/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1211088-01	11/23/12	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1211087-01	11/22/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1211084-03	11/21/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1211079-03	11/20/12	T-310 EFFLUENT	<1000	<1000	<1000	96.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.6%	<1000	<1000	<1000
1211072-01	11/19/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.5%	<2500	<2500	<2500
1211071-01	11/18/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500
1211070-01	11/17/12	T-310 EFFLUENT	<2500	<2500	<2500	99.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.0%	<2500	<2500	<2500
1211066-01	11/16/12	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1211062-01	11/15/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1211056-01	11/14/12	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500
1211048-01	11/13/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1211039-03	11/12/12	T-310 EFFLUENT	<500	<500	<500	103%	<500	<500	<500	<500	<500	<500	<500	<500	104%	<500	<500	<500
1211038-03	11/11/12	T-310 EFFLUENT	<500	<500	<500	101%	<500	<500	<500	<500	<500	<500	<500	<500	98.9%	<500	<500	<500
1211037-03	11/10/12	T-310 EFFLUENT	<500	<500	<500	101%	<500	<500	<500	<500	<500	<500	<500	<500	102%	<500	<500	<500
1211033-03	11/09/12	T-310 EFFLUENT	<500	<500	<500	107%	<500	<500	<500	<500	<500	<500	<500	<500	108%	<500	<500	<500
1211030-01	11/08/12	T-310 EFFLUENT	<500	<500	<500	108%	<500	<500	<500	<500	<500	<500	<500	<500	110%	<500	<500	<500
1211023-01	11/07/12	T-310 EFFLUENT	<500	<500	<500	99.9%	<500	<500	<500	<500	<500	<500	<500	<500	101%	<500	<500	<500
1211020-01	11/06/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1211015-03	11/05/12	T-310 EFFLUENT	<1000	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000
1211014-03	11/04/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000
1211013-03	11/03/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000
1211009-03	11/02/12	T-310 EFFLUENT	<1000	<1000	<1000	97.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1211004-03	11/01/12	T-310 EFFLUENT	<1000	<1000	<1000	89.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	92.1%	<1000	<1000	<1000
1210148-03	10/31/12	T-310 EFFLUENT	<1000	<1000	<1000	95.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.5%	<1000	<1000	<1000
1210142-03	10/30/12	T-310 EFFLUENT	<1000	<1000	<1000	96.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.5%	<1000	<1000	<1000
1210132-03	10/29/12	T-310 EFFLUENT	<1000	<1000	<1000	92.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.5%	<1000	<1000	<1000
1210131-03	10/28/12	T-310 EFFLUENT	<1000	<1000	<1000	94.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.4%	<1000	<1000	<1000
1210130-03	10/27/12	T-310 EFFLUENT	<1000	<1000	<1000	93.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.2%	<1000	<1000	<1000
1210126-03	10/26/12	T-310 EFFLUENT	<1000	<1000	<1000	96.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.9%	<1000	<1000	<1000
1210120-03	10/25/12	T-310 EFFLUENT	<1000	<1000	<1000	94.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.8%	<1000	<1000	<1000
1210113-03	10/24/12	T-310 EFFLUENT	<1000	<1000	<1000	92.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	92.3%	<1000	<1000	<1000
1210109-03	10/23/12	T-310 EFFLUENT	<1000	<1000	<1000	94.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.7%	<1000	<1000	<1000
1210099-01	10/22/12	T-310 EFFLUENT	<2500	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1210098-01	10/21/12	T-310 EFFLUENT	<2500	<2500	<2500	115%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500
1210097-01	10/20/12	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500
1210092-01	10/19/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1210087-01	10/18/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1210082-01	10/17/12	T-310 EFFLUENT	<2500	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1210079-03	10/16/12	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.8%	<1000	<1000	<1000
1210071-01	10/15/12	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500
1210070-01	10/14/12	T-310 EFFLUENT	<2500	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1210069-01	10/13/12	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.1%	<2500	<2500	<2500
1210067-03	10/12/12	T-310 EFFLUENT	<1000	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.7%	<1000	<1000	<1000
1210062-03	10/11/12	T-310 EFFLUENT	<1000	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1210056-01	10/10/12	T-310 EFFLUENT	<1000	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1210050-01	10/09/12	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500
1210041-01	10/08/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500
1210040-01	10/07/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.3%	<2500	<2500	<2500
1210039-01	10/06/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.3%	<2500	<2500	<2500
1210032-03	10/05/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.2%	<1000	<1000	<1000
1210025-01	10/04/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.3%	<2500	<2500	<2500
1210020-01	10/03/12	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1210015-03	10/02/12	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000
1210003-01	10/01/12	T-310 EFFLUENT	<1000	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.3%	<1000	<1000	<1000
1210002-01	09/30/12	T-310 EFFLUENT	<1000	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1210001-01	09/29/12	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500
1209126-03	09/28/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1209123-03	09/27/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.1%	<1000	<1000	<1000
1209116-01	09/26/12	T-310 EFFLUENT	<2500	<2500	<2500	93.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.0%	<2500	<2500	<2500
1209112-01	09/25/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.0%	<2500	<2500	<2500
1209105-01	09/24/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.4%	<2500	<2500	<2500
1209104-01	09/23/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1209103-01	09/22/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1209099-01	09/21/12	T-310 EFFLUENT	<2500	<2500	<2500	99.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.4%	<2500	<2500	<2500
1209094-03	09/20/12	T-310 EFFLUENT	<1000	<1000	<1000	98.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.2%	<1000	<1000	<1000
1209088-01	09/19/12	T-310 EFFLUENT	<2500	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1209083-01	09/18/12	T-310 EFFLUENT	<2500	<2500	<2500	94.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.3%	<2500	<2500	<2500
1209075-01	09/17/12	T-310 EFFLUENT	<2500	<2500	<2500	93.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500

T-310																		
			Chloroform	1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
SAMPLE ID	DATE		ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L
1209071-03	09/14/12	T-310 EFFLUENT	<1000	<1000	<1000	90.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.0%	<1000	<1000	<1000
1209063-03	09/13/12	T-310 EFFLUENT	<1000	<1000	<1000	86.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.0%	<1000	<1000	<1000
1209052-03	09/12/12	T-310 EFFLUENT	<1000	<1000	<1000	88.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	91.9%	<1000	<1000	<1000
1209044-03	09/11/12	T-310 EFFLUENT	<1000	<1000	<1000	96.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000
1209035-03	09/10/12	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.8%	<1000	<1000	<1000
1209034-03	09/09/12	T-310 EFFLUENT	<1000	<1000	<1000	91.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.1%	<1000	<1000	<1000
1209033-03	09/08/12	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.6%	<1000	<1000	<1000
1209027-01	09/07/12	T-310 EFFLUENT	<1000	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.5%	<1000	<1000	<1000
1209018-01	09/06/12	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.9%	<1000	<1000	<1000
1209013-03	09/05/12	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.9%	<1000	<1000	<1000
1209004-01	09/04/12	T-310 EFFLUENT	<1000	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.9%	<1000	<1000	<1000
1209003-01	09/03/12	T-310 EFFLUENT	<1000	<1000	<1000	98.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.0%	<1000	<1000	<1000
1209002-01	09/02/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.0%	<1000	<1000	<1000
1209001-01	09/01/12	T-310 EFFLUENT	<1000	<1000	<1000	99.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.9%	<1000	<1000	<1000
1208113-03	08/31/12	T-310 EFFLUENT	<1000	<1000	<1000	98.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.6%	<1000	<1000	<1000
1208108-03	08/30/12	T-310 EFFLUENT	<1000	<1000	<1000	93.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	91.9%	<1000	<1000	<1000
1208104-03	08/29/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.9%	<1000	<1000	<1000
1208097-03	08/28/12	T-310 EFFLUENT	<1000	<1000	<1000	91.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	91.1%	<1000	<1000	<1000
1208089-01	08/27/12	T-310 EFFLUENT	<2500	<2500	<2500	94.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1208088-01	08/26/12	T-310 EFFLUENT	<2500	<2500	<2500	95.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1208087-01	08/25/12	T-310 EFFLUENT	<2500	<2500	<2500	87.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.3%	<2500	<2500	<2500
1208081-01	08/24/12	T-310 EFFLUENT	<2500	<2500	<2500	92.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1208079-03	08/23/12	T-310 EFFLUENT	<1000	<1000	<1000	95.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1208075-03	08/22/12	T-310 EFFLUENT	<1000	<1000	<1000	90.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1208070-01	08/21/12	T-310 EFFLUENT	<1000	<1000	<1000	97.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.8%	<1000	<1000	<1000
1208065-01	08/20/12	T-310 EFFLUENT	<2500	<2500	<2500	97.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1208064-01	08/19/12	T-310 EFFLUENT	<2500	<2500	<2500	99.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1208063-01	08/18/12	T-310 EFFLUENT	<2500	<2500	<2500	93.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500
1208061-01	08/17/12	T-310 EFFLUENT	<2500	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500
1208057-03	08/16/12	T-310 EFFLUENT	<1000	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1208053-03	08/15/12	T-310 EFFLUENT	<1000	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1208050-01	08/14/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.5%	<2500	<2500	<2500
1208046-01	08/13/12	T-310 EFFLUENT	<2500	<2500	<2500	98.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500
1208045-01	08/12/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1208044-01	08/11/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1208040-03	08/10/12	T-310 EFFLUENT	<1000	<1000	<1000	99.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1208027-01	08/09/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500
1208022-03	08/08/12	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1208016-03	08/07/12	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1208013-01	08/06/12	T-310 EFFLUENT	<2500	<2500	<2500	98.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.4%	<2500	<2500	<2500
1208012-01	08/05/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500
1208011-01	08/04/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1208009-01	08/03/12	T-310 EFFLUENT	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1208004-01	08/02/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500
1208001-01	08/01/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1207110-01	07/31/12	T-310 EFFLUENT	<2500	<2500	<2500	85.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.6%	<2500	<2500	<2500
1207106-01	07/30/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500
1207105-01	07/29/12	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1207104-01	07/28/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500
1207102-03	07/27/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1207100-03	07/26/12	T-310 EFFLUENT	<2500	<2500	<2500	99.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.5%	<2500	<2500	<2500
1207095-01	07/25/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	89.7%	<2500	<2500	<2500
1207091-01	07/24/12	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.7%	<2500	<2500	<2500
1207085-01	07/23/12	T-310 EFFLUENT	<2500	<2500	<2500	115% [3]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.3%	<2500	<2500	<2500
1207086-01	07/22/12	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.8%	<2500	<2500	<2500
1207087-01	07/21/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	90.3%	<2500	<2500	<2500
1207078-01	07/20/12	T-310 EFFLUENT	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.2%	<2500	<2500	<2500
1207071-03	07/19/12	T-310 EFFLUENT	<1000	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.9%	<1000	<1000	<1000
1207067-03	07/18/12	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.7%	<1000	<1000	<1000
1207061-01	07/17/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.2%	<2500	<2500	<2500
1207054-01	07/16/12	T-310 EFFLUENT	<2500	<2500	<2500	91.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.3%	<2500	<2500	<2500
1207053-01	07/15/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.4%	<2500	<2500	<2500
1207052-01	07/14/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500
1207050-03	07/13/12	T-310 EFFLUENT	<1000	<1000	<1000	95.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.4%	<1000	<1000	<1000
1207045-03	07/12/12	T-310 EFFLUENT	<1000	<1000	<1000	94.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.3%	<1000	<1000	<1000
1207035-03	07/11/12	T-310 EFFLUENT	<1000	<1000	<1000	89.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	92.9%	<1000	<1000	<1000
1207030-01	07/10/12	T-310 EFFLUENT	<2500	<2500	<2500	91.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.1%	<2500	<2500	<2500
1207022-01	07/09/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.8%	<2500	<2500	<2500
1207023-01	07/08/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500
1207024-01	07/07/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.6%	<2500	<2500	<2500
1207018-01	07/06/12	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.0%	<1000	<1000	<1000
1207016-01	07/05/12	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.6%	<1000	<1000	<1000

T-310																		
			Chloroform	1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
SAMPLE ID	DATE		ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L
1205138-01	05/25/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.2%	<2500	<2500	<2500
1205131-01	05/24/12	T-310 EFFLUENT	<1000	<1000	<1000	98.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.3%	<1000	<1000	<1000
1205124-03	05/23/12	T-310 EFFLUENT	<1000	<1000	<1000	98.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.1%	<1000	<1000	<1000
1205117-03	05/22/12	T-310 EFFLUENT	<1000	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.2%	<1000	<1000	<1000
1205105-01	05/21/12	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1205104-01	05/20/12	T-310 EFFLUENT	<2500	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.5%	<2500	<2500	<2500
1205103-01	05/19/12	T-310 EFFLUENT	<2500	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500
1205101-01	05/18/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500
1205097-03	05/17/12	T-310 EFFLUENT	<1000	<1000	<1000	86.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.9%	<1000	<1000	<1000
1205090-03	05/16/12	T-310 EFFLUENT	<1000	<1000	<1000	91.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.8%	<1000	<1000	<1000
1205084-03	05/15/12	T-310 EFFLUENT	<1000	<1000	<1000	91.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000
1205074-03	05/14/12	T-310 EFFLUENT	<1000	<1000	<1000	90.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.6%	<1000	<1000	<1000
1205073-03	05/13/12	T-310 EFFLUENT	<1000	<1000	<1000	88.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.4%	<1000	<1000	<1000
1205072-03	05/12/12	T-310 EFFLUENT	<1000	<1000	<1000	89.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.3%	<1000	<1000	<1000
1205067-03	05/11/12	T-310 EFFLUENT	<1000	<1000	<1000	92.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.0%	<1000	<1000	<1000
1205059-03	05/10/12	T-310 EFFLUENT	<1000	<1000	<1000	95.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.6%	<1000	<1000	<1000
1205049-01	05/09/12	T-310 EFFLUENT	<1000	<1000	<1000	92.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.1%	<1000	<1000	<1000
1205044-01	05/08/12	T-310 EFFLUENT	<1000	<1000	<1000	96.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.7%	<1000	<1000	<1000
1205036-01	05/07/12	T-310 EFFLUENT	<2500	<2500	<2500	93.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1205035-01	05/06/12	T-310 EFFLUENT	<1000	<1000	<1000	96.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.7%	<1000	<1000	<1000
1205034-03	05/05/12	T-310 EFFLUENT	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.3%	<2500	<2500	<2500
1205028-03	05/04/12	T-310 EFFLUENT	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500
1205022-03	05/03/12	T-310 EFFLUENT	<1000	<1000	<1000	94.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.8%	<1000	<1000	<1000
1205013-03	05/02/12	T-310 EFFLUENT	<1000	<1000	<1000	99.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000
1205001-03	05/01/12	T-310 EFFLUENT	<1000	<1000	<1000	91.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.3%	<1000	<1000	<1000
1204137-03	04/30/12	T-310 EFFLUENT	<1000	<1000	<1000	97.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000
1204136-03	04/29/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000
1204135-01	04/28/12	T-310 EFFLUENT	<2500	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1204130-01	04/27/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1204125-01	04/26/12	T-310 EFFLUENT	<2500	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500
1204117-03	04/25/12	T-310 EFFLUENT	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.2%	<2500	<2500	<2500
1204111-01	04/24/12	T-310 EFFLUENT	<2500	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1204102-01	04/23/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500
1204101-01	04/22/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1204100-01	04/21/12	T-310 EFFLUENT	<2500	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1204096-01	04/20/12	T-310 EFFLUENT	<2500	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500
1204090-01	04/19/12	T-310 EFFLUENT	<2500	<2500	<2500	97.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500
1204084-01	04/18/12	T-310 EFFLUENT	<2500	<2500	<2500	98.1%	<2500	<2500	<2500	<2500	<2500	<2500	3250	<2500	98.6%	<2500	<2500	<2500
1204078-01	04/17/12	T-310 EFFLUENT	<2500	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500
1204064-03	04/16/12	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1204063-03	04/15/12	T-310 EFFLUENT	<1000	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000
1204062-03	04/14/12	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000
1204057-03	04/13/12	T-310 EFFLUENT	<500	<500	<500	103%	<500	<500	<500	<500	<500	<500	<500	<500	104%	<500	<500	<500
1204049-03	04/12/12	T-310 EFFLUENT	<500	<500	<500	99.2%	<500	<500	<500	<500	<500	<500	<500	<500	101%	<500	<500	<500
1204044-01	04/11/12	T-310 EFFLUENT	<1000	<1000	<1000	96.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.8%	<1000	<1000	<1000
1204039-01	04/10/12	T-310 EFFLUENT	<1000	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1204028-01	04/09/12	T-310 EFFLUENT	<2500	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500
1204027-01	04/08/12	T-310 EFFLUENT	<2500	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1204026-01	04/07/12	T-310 EFFLUENT	<2500	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500
1204023-01	04/06/12	T-310 EFFLUENT	<1000	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	1470	<1000	98.6%	<1000	<1000	<1000
1204020-01	04/05/12	T-310 EFFLUENT	<1000	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000
1204016-03	04/04/12	T-310 EFFLUENT	<500	<500	<500	108%	<500	<500	<500	<500	<500	<500	<500	<500	104%	<500	<500	<500
1204013-03	04/03/12	T-310 EFFLUENT	<500	<500	<500	103%	<500	<500	<500	<500	<500	<500	<500	<500	99.3%	<500	<500	<500
1204003-01	04/02/12	T-310 EFFLUENT	<500	<500	<500	101%	<500	<500	<500	<500	<500	<500	<500	<500	101%	<500	<500	<500
1204002-01	04/01/12	T-310 EFFLUENT	<500	<500	<500	100%	<500	<500	<500	<500	<500	<500	<500	<500	98.7%	<500	<500	<500
1204001-01	03/31/12	T-310 EFFLUENT	<500	<500	<500	106%	<500	<500	<500	<500	<500	<500	<500	<500	102%	<500	<500	<500

T-310															
			4-Bromofluorobenzene	2-Hexanone	Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1304089-03	04/19/13	T-310 EFFLUENT	97.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304085-03	04/18/13	T-310 EFFLUENT	95.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304080-03	04/17/13	T-310 EFFLUENT	96.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304074-03	04/16/13	T-310 EFFLUENT	95.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304064-03	04/15/13	T-310 EFFLUENT	99.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304063-03	04/14/13	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304062-03	04/13/13	T-310 EFFLUENT	98.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304052-03	04/12/13	T-310 EFFLUENT	96.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304045-03	04/11/13	T-310 EFFLUENT	99.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304041-03	04/10/13	T-310 EFFLUENT	104%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304036-03	04/09/13	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304027-01	04/08/13	T-310 EFFLUENT	97.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304026-01	04/07/13	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304025-01	04/06/13	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304022-01	04/05/13	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304018-01	04/04/13	T-310 EFFLUENT	99.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304014-03	04/03/13	T-310 EFFLUENT	99.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304011-03	04/02/13	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304003-01	04/01/13	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304002-01	03/31/13	T-310 EFFLUENT	96.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304001-01	03/30/13	T-310 EFFLUENT	96.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303133-01	03/28/13	T-310 EFFLUENT	103%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303123-03	03/27/13	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303119-03	03/26/13	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303113-01	03/25/13	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303112-01	03/24/13	T-310 EFFLUENT	104%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303111-01	03/23/13	T-310 EFFLUENT	99.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303105-03	03/22/13	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303098-03	03/21/13	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303089-01	03/20/13	T-310 EFFLUENT	96.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303083-01	03/19/13	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303072-01	03/18/13	T-310 EFFLUENT	98.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303071-01	03/17/13	T-310 EFFLUENT	98.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303070-01	03/16/13	T-310 EFFLUENT	97.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303066-01	03/15/13	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303061-03	03/14/13	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303055-03	03/13/13	T-310 EFFLUENT	107%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303052-03	03/12/13	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303041-01	03/11/13	T-310 EFFLUENT	97.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303040-01	03/10/13	T-310 EFFLUENT	103%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303039-01	03/09/13	T-310 EFFLUENT	98.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303037-01	03/08/13	T-310 EFFLUENT	104%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303031-01	03/07/13	T-310 EFFLUENT	103%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303025-01	03/06/13	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303019-03	03/05/13	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303011-03	03/04/13	T-310 EFFLUENT	99.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303010-03	03/03/13	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303009-03	03/02/13	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303002-01	03/01/13	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303002-04	03/01/13	T-310 EFFLUENT	103%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302122-03	02/28/13	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302129-01	02/28/13	T-310 EFFLUENT	99.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302114-03	02/27/13	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302109-01	02/26/13	T-310 EFFLUENT	96.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302098-01	02/25/13	T-310 EFFLUENT	95.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302099-01	02/25/13	T-310 EFFLUENT	97.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302097-01	02/23/13	T-310 EFFLUENT	96.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302094-01	02/22/13	T-310 EFFLUENT	96.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302090-03	02/21/13	T-310 EFFLUENT	98.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302083-03	02/20/13	T-310 EFFLUENT	97.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302076-03	02/19/13	T-310 EFFLUENT	98.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302069-01	02/18/13	T-310 EFFLUENT	92.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302068-03	02/17/13	T-310 EFFLUENT	96.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302067-03	02/16/13	T-310 EFFLUENT	93.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302065-03	02/15/13	T-310 EFFLUENT	98.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302059-03	02/14/13	T-310 EFFLUENT	95.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302049-03	02/13/13	T-310 EFFLUENT	97.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302041-03	02/12/13	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302032-01	02/11/13	T-310 EFFLUENT	92.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302031-01	02/10/13	T-310 EFFLUENT	91.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302030-01	02/09/13	T-310 EFFLUENT	94.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302025-01	02/08/13	T-310 EFFLUENT	98.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000

T-310															
			4-Bromofluorobenzene	2-Hexanone	Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1302023-01	02/07/13	T-310 EFFLUENT	97.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302019-03	02/06/13	T-310 EFFLUENT	98.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302016-03	02/05/13	T-310 EFFLUENT	95.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302009-01	02/04/13	T-310 EFFLUENT	97.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302008-01	02/03/13	T-310 EFFLUENT	96.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302007-01	02/02/13	T-310 EFFLUENT	95.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302001-03	02/01/13	T-310 EFFLUENT	95.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301138-03	01/31/13	T-310 EFFLUENT	96.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301126-03	01/30/13	T-310 EFFLUENT	96.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301122-03	01/29/13	T-310 EFFLUENT	95.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301116-01	01/28/13	T-310 EFFLUENT	95.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301115-01	01/27/13	T-310 EFFLUENT	96.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301114-01	01/26/13	T-310 EFFLUENT	95.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301108-01	01/25/13	T-310 EFFLUENT	94.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301105-03	01/24/13	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301094-03	01/23/13	T-310 EFFLUENT	96.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301090-01	01/22/13	T-310 EFFLUENT	95.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301083-03	01/21/13	T-310 EFFLUENT	95.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301082-03	01/20/13	T-310 EFFLUENT	95.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301081-01	01/19/13	T-310 EFFLUENT	97.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301072-03	01/18/13	T-310 EFFLUENT	95.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301066-01	01/17/13	T-310 EFFLUENT	95.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301061-03	01/16/13	T-310 EFFLUENT	94.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301053-03	01/15/13	T-310 EFFLUENT	95.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301043-01	01/14/13	T-310 EFFLUENT	93.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301042-01	01/13/13	T-310 EFFLUENT	92.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301041-01	01/12/13	T-310 EFFLUENT	94.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301039-01	01/11/13	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301035-01	01/10/13	T-310 EFFLUENT	94.7%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301029-01	01/09/13	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301025-03	01/08/13	T-310 EFFLUENT	97.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301018-03	01/07/13	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301017-01	01/06/13	T-310 EFFLUENT	97.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301016-01	01/05/13	T-310 EFFLUENT	98.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301015-01	01/04/13	T-310 EFFLUENT	95.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301007-01	01/03/13	T-310 EFFLUENT	96.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301002-03	01/02/13	T-310 EFFLUENT	93.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301001-03	01/01/13	T-310 EFFLUENT	95.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212125-01	12/31/12	T-310 EFFLUENT	95.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212124-01	12/30/12	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212123-01	12/29/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212121-01	12/28/12	T-310 EFFLUENT	106%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212118-01	12/27/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212108-01	12/26/12	T-310 EFFLUENT	97.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212107-03	12/25/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212102-01	12/24/12	T-310 EFFLUENT	108%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212101-01	12/23/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212100-01	12/22/12	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212097-03	12/21/12	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212092-03	12/20/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212085-03	12/19/12	T-310 EFFLUENT	104%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212075-01	12/18/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212067-01	12/17/12	T-310 EFFLUENT	92.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212068-01	12/16/12	T-310 EFFLUENT	90.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212069-01	12/15/12	T-310 EFFLUENT	87.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212060-01	12/14/12	T-310 EFFLUENT	87.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212053-01	12/13/12	T-310 EFFLUENT	90.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212044-01	12/12/12	T-310 EFFLUENT	92.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212040-03	12/11/12	T-310 EFFLUENT	88.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212033-03	12/10/12	T-310 EFFLUENT	88.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212032-01	12/09/12	T-310 EFFLUENT	89.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212031-01	12/08/12	T-310 EFFLUENT	92.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212026-01	12/07/12	T-310 EFFLUENT	90.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212022-01	12/06/12	T-310 EFFLUENT	90.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212015-03	12/05/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212009-01	12/04/12	T-310 EFFLUENT	93.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212003-01	12/03/12	T-310 EFFLUENT	95.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212002-01	12/02/12	T-310 EFFLUENT	97.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212001-01	12/01/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211118-01	11/30/12	T-310 EFFLUENT	98.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211111-01	11/29/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211108-01	11/28/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500

T-310															
			4-Bromofluorobenzene	2-Hexanone	Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1211101-01	11/27/12	T-310 EFFLUENT	97.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211095-03	11/26/12	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211097-03	11/25/12	T-310 EFFLUENT	98.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211096-01	11/24/12	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211088-01	11/23/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211087-01	11/22/12	T-310 EFFLUENT	97.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211084-03	11/21/12	T-310 EFFLUENT	97.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211079-03	11/20/12	T-310 EFFLUENT	92.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211072-01	11/19/12	T-310 EFFLUENT	92.7%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211071-01	11/18/12	T-310 EFFLUENT	95.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211070-01	11/17/12	T-310 EFFLUENT	92.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211066-01	11/16/12	T-310 EFFLUENT	99.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211062-01	11/15/12	T-310 EFFLUENT	97.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211056-01	11/14/12	T-310 EFFLUENT	105%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211048-01	11/13/12	T-310 EFFLUENT	98.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211039-03	11/12/12	T-310 EFFLUENT	97.7%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211038-03	11/11/12	T-310 EFFLUENT	93.5%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211037-03	11/10/12	T-310 EFFLUENT	96.5%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211033-03	11/09/12	T-310 EFFLUENT	102%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211030-01	11/08/12	T-310 EFFLUENT	103%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211023-01	11/07/12	T-310 EFFLUENT	96.7%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211020-01	11/06/12	T-310 EFFLUENT	99.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211015-03	11/05/12	T-310 EFFLUENT	103%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211014-03	11/04/12	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211013-03	11/03/12	T-310 EFFLUENT	99.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211009-03	11/02/12	T-310 EFFLUENT	96.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211004-03	11/01/12	T-310 EFFLUENT	87.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210148-03	10/31/12	T-310 EFFLUENT	94.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210142-03	10/30/12	T-310 EFFLUENT	92.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210132-03	10/29/12	T-310 EFFLUENT	94.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210131-03	10/28/12	T-310 EFFLUENT	91.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210130-03	10/27/12	T-310 EFFLUENT	96.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210126-03	10/26/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210120-03	10/25/12	T-310 EFFLUENT	92.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210113-03	10/24/12	T-310 EFFLUENT	90.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210109-03	10/23/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210099-01	10/22/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210098-01	10/21/12	T-310 EFFLUENT	104%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210097-01	10/20/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210092-01	10/19/12	T-310 EFFLUENT	99.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210087-01	10/18/12	T-310 EFFLUENT	99.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210082-01	10/17/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210079-03	10/16/12	T-310 EFFLUENT	96.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210071-01	10/15/12	T-310 EFFLUENT	96.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210070-01	10/14/12	T-310 EFFLUENT	96.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210069-01	10/13/12	T-310 EFFLUENT	96.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210067-03	10/12/12	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210062-03	10/11/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210056-01	10/10/12	T-310 EFFLUENT	99.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210050-01	10/09/12	T-310 EFFLUENT	99.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210041-01	10/08/12	T-310 EFFLUENT	95.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210040-01	10/07/12	T-310 EFFLUENT	96.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210039-01	10/06/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210032-03	10/05/12	T-310 EFFLUENT	97.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210025-01	10/04/12	T-310 EFFLUENT	91.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210020-01	10/03/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210015-03	10/02/12	T-310 EFFLUENT	96.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210003-01	10/01/12	T-310 EFFLUENT	100%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210002-01	09/30/12	T-310 EFFLUENT	99.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210001-01	09/29/12	T-310 EFFLUENT	97.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209126-03	09/28/12	T-310 EFFLUENT	102%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209123-03	09/27/12	T-310 EFFLUENT	96.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209116-01	09/26/12	T-310 EFFLUENT	91.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209112-01	09/25/12	T-310 EFFLUENT	94.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209105-01	09/24/12	T-310 EFFLUENT	98.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209104-01	09/23/12	T-310 EFFLUENT	99.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209103-01	09/22/12	T-310 EFFLUENT	97.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209099-01	09/21/12	T-310 EFFLUENT	97.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209094-03	09/20/12	T-310 EFFLUENT	95.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209088-01	09/19/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209083-01	09/18/12	T-310 EFFLUENT	94.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209075-01	09/17/12	T-310 EFFLUENT	97.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500

T-310															
			4-Bromofluorobenzene	2-Hexanone	Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1209071-03	09/14/12	T-310 EFFLUENT	95.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209063-03	09/13/12	T-310 EFFLUENT	94.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209052-03	09/12/12	T-310 EFFLUENT	89.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209044-03	09/11/12	T-310 EFFLUENT	99.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209035-03	09/10/12	T-310 EFFLUENT	97.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209034-03	09/09/12	T-310 EFFLUENT	95.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209033-03	09/08/12	T-310 EFFLUENT	95.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209027-01	09/07/12	T-310 EFFLUENT	98.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209018-01	09/06/12	T-310 EFFLUENT	96.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209013-03	09/05/12	T-310 EFFLUENT	94.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209004-01	09/04/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209003-01	09/03/12	T-310 EFFLUENT	93.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209002-01	09/02/12	T-310 EFFLUENT	95.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209001-01	09/01/12	T-310 EFFLUENT	94.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208113-03	08/31/12	T-310 EFFLUENT	97.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208108-03	08/30/12	T-310 EFFLUENT	90.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208104-03	08/29/12	T-310 EFFLUENT	97.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208097-03	08/28/12	T-310 EFFLUENT	88.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208089-01	08/27/12	T-310 EFFLUENT	93.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208088-01	08/26/12	T-310 EFFLUENT	93.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208087-01	08/25/12	T-310 EFFLUENT	85.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208081-01	08/24/12	T-310 EFFLUENT	93.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208079-03	08/23/12	T-310 EFFLUENT	94.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208075-03	08/22/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208070-01	08/21/12	T-310 EFFLUENT	93.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208065-01	08/20/12	T-310 EFFLUENT	95.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208064-01	08/19/12	T-310 EFFLUENT	95.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208063-01	08/18/12	T-310 EFFLUENT	92.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208061-01	08/17/12	T-310 EFFLUENT	99.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208057-03	08/16/12	T-310 EFFLUENT	97.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208053-03	08/15/12	T-310 EFFLUENT	99.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208050-01	08/14/12	T-310 EFFLUENT	93.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208046-01	08/13/12	T-310 EFFLUENT	94.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208045-01	08/12/12	T-310 EFFLUENT	94.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208044-01	08/11/12	T-310 EFFLUENT	94.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208040-03	08/10/12	T-310 EFFLUENT	96.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208027-01	08/09/12	T-310 EFFLUENT	94.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208022-03	08/08/12	T-310 EFFLUENT	96.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208016-03	08/07/12	T-310 EFFLUENT	97.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208013-01	08/06/12	T-310 EFFLUENT	93.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208012-01	08/05/12	T-310 EFFLUENT	96.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208011-01	08/04/12	T-310 EFFLUENT	99.7%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208009-01	08/03/12	T-310 EFFLUENT	97.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208004-01	08/02/12	T-310 EFFLUENT	97.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208001-01	08/01/12	T-310 EFFLUENT	98.5%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207110-01	07/31/12	T-310 EFFLUENT	95.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207106-01	07/30/12	T-310 EFFLUENT	96.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207105-01	07/29/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207104-01	07/28/12	T-310 EFFLUENT	98.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207102-03	07/27/12	T-310 EFFLUENT	96.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207100-03	07/26/12	T-310 EFFLUENT	95.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207095-01	07/25/12	T-310 EFFLUENT	90.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207091-01	07/24/12	T-310 EFFLUENT	95.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207085-01	07/23/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207086-01	07/22/12	T-310 EFFLUENT	94.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207087-01	07/21/12	T-310 EFFLUENT	90.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207078-01	07/20/12	T-310 EFFLUENT	93.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207071-03	07/19/12	T-310 EFFLUENT	96.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207067-03	07/18/12	T-310 EFFLUENT	94.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207061-01	07/17/12	T-310 EFFLUENT	95.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207054-01	07/16/12	T-310 EFFLUENT	94.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207053-01	07/15/12	T-310 EFFLUENT	96.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207052-01	07/14/12	T-310 EFFLUENT	99.1%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207050-03	07/13/12	T-310 EFFLUENT	94.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207045-03	07/12/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207035-03	07/11/12	T-310 EFFLUENT	93.4%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207030-01	07/10/12	T-310 EFFLUENT	93.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207022-01	07/09/12	T-310 EFFLUENT	96.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207023-01	07/08/12	T-310 EFFLUENT	96.7%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207024-01	07/07/12	T-310 EFFLUENT	95.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207018-01	07/06/12	T-310 EFFLUENT	98.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207016-01	07/05/12	T-310 EFFLUENT	97.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000

T-310															
			4-Bromofluorobenzene	2-Hexanone	Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1205138-01	05/25/12	T-310 EFFLUENT	94.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205131-01	05/24/12	T-310 EFFLUENT	94.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205124-03	05/23/12	T-310 EFFLUENT	93.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205117-03	05/22/12	T-310 EFFLUENT	94.7%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205105-01	05/21/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205104-01	05/20/12	T-310 EFFLUENT	96.4%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205103-01	05/19/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205101-01	05/18/12	T-310 EFFLUENT	96.8%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205097-03	05/17/12	T-310 EFFLUENT	90.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205090-03	05/16/12	T-310 EFFLUENT	94.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205084-03	05/15/12	T-310 EFFLUENT	93.8%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205074-03	05/14/12	T-310 EFFLUENT	93.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205073-03	05/13/12	T-310 EFFLUENT	90.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205072-03	05/12/12	T-310 EFFLUENT	94.2%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205067-03	05/11/12	T-310 EFFLUENT	93.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205059-03	05/10/12	T-310 EFFLUENT	94.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205049-01	05/09/12	T-310 EFFLUENT	94.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205044-01	05/08/12	T-310 EFFLUENT	95.5%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205036-01	05/07/12	T-310 EFFLUENT	91.9%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205035-01	05/06/12	T-310 EFFLUENT	97.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205034-03	05/05/12	T-310 EFFLUENT	97.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205028-03	05/04/12	T-310 EFFLUENT	98.0%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1205022-03	05/03/12	T-310 EFFLUENT	96.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205013-03	05/02/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1205001-03	05/01/12	T-310 EFFLUENT	92.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204137-03	04/30/12	T-310 EFFLUENT	98.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204136-03	04/29/12	T-310 EFFLUENT	101%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204135-01	04/28/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204130-01	04/27/12	T-310 EFFLUENT	103%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204125-01	04/26/12	T-310 EFFLUENT	104%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204117-03	04/25/12	T-310 EFFLUENT	97.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204111-01	04/24/12	T-310 EFFLUENT	101%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204102-01	04/23/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204101-01	04/22/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204100-01	04/21/12	T-310 EFFLUENT	99.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204096-01	04/20/12	T-310 EFFLUENT	98.3%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204090-01	04/19/12	T-310 EFFLUENT	94.7%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204084-01	04/18/12	T-310 EFFLUENT	98.6%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204078-01	04/17/12	T-310 EFFLUENT	99.2%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204064-03	04/16/12	T-310 EFFLUENT	99.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204063-03	04/15/12	T-310 EFFLUENT	97.1%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204062-03	04/14/12	T-310 EFFLUENT	105%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204057-03	04/13/12	T-310 EFFLUENT	102%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204049-03	04/12/12	T-310 EFFLUENT	97.8%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204044-01	04/11/12	T-310 EFFLUENT	95.6%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204039-01	04/10/12	T-310 EFFLUENT	98.9%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204028-01	04/09/12	T-310 EFFLUENT	107%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204027-01	04/08/12	T-310 EFFLUENT	102%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204026-01	04/07/12	T-310 EFFLUENT	100%	<2500	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1204023-01	04/06/12	T-310 EFFLUENT	96.0%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204020-01	04/05/12	T-310 EFFLUENT	97.3%	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1204016-03	04/04/12	T-310 EFFLUENT	102%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204013-03	04/03/12	T-310 EFFLUENT	96.4%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204003-01	04/02/12	T-310 EFFLUENT	97.2%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204002-01	04/01/12	T-310 EFFLUENT	93.8%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1204001-01	03/31/12	T-310 EFFLUENT	100%	<500	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500

T-320

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1304089-04	04/19/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304085-04	04/18/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304080-04	04/17/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304074-04	04/16/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304064-04	04/15/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304063-04	04/14/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	4000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304062-04	04/13/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304052-04	04/12/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304045-04	04/11/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304041-04	04/10/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304036-04	04/09/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304027-02	04/08/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304026-02	04/07/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304025-02	04/06/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	28400	<2500	<2500	<2500	<2500	<2500	<2500	8510	<2500	<2500
1304022-02	04/05/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	16900	<2500	<2500	<2500	<2500	<2500	<2500	4590	<2500	<2500
1304018-02	04/04/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304014-04	04/03/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304011-04	04/02/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1304003-02	04/01/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304002-02	03/31/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1304001-02	03/30/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	15200	<2500	<2500	<2500	<2500	<2500	<2500	3750	<2500	<2500
1303135-01	03/29/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	4560	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303133-02	03/28/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303123-04	03/27/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303119-04	03/26/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303113-02	03/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303112-02	03/24/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	2510	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303111-02	03/23/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303105-04	03/22/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303098-04	03/21/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303089-02	03/20/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303083-02	03/19/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303072-02	03/18/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	22900	<2500	<2500	<2500	<2500	<2500	<2500	7150	<2500	<2500
1303071-02	03/17/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	14200	<2500	<2500	<2500	<2500	<2500	<2500	4830	<2500	<2500
1303070-02	03/16/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	13700	<2500	<2500	<2500	<2500	<2500	<2500	4910	<2500	<2500
1303066-02	03/15/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303061-04	03/14/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	2330	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303055-04	03/13/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1510	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303052-04	03/12/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303041-02	03/11/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303040-02	03/10/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303039-02	03/09/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303037-02	03/08/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303031-02	03/07/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303025-02	03/06/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1303019-04	03/05/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	2010	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303011-04	03/04/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1550	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303010-04	03/03/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303009-04	03/02/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1303002-02	03/01/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302122-04	02/28/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	19800	<1000	<1000	<1000	<1000	<1000	<1000	7530	<1000	<1000
1302129-02	02/28/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	15400	<1000	<1000	<1000	<1000	<1000	<1000	5460	<1000	<1000
1302114-04	02/27/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	24900	<1000	<1000	<1000	<1000	<1000	<1000	9880	<1000	<1000
1302109-02	02/26/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3760	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302098-02	02/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3850	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302099-02	02/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	4590	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302097-02	02/23/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3280	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1302094-02	02/22/13	T-320 EFFLUENT	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	16.6	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
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1302008-02	02/03/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	14600	<2500	<2500	<2500	<2500	<2500	<2500	3480	<2500	<2500
1302007-02	02/02/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500

T-320

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1302001-04	02/01/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1301138-04	01/31/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1301126-04	01/30/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1301108-02	01/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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1212107-04	12/25/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1212101-02	12/23/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1212100-02	12/22/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1212097-04	12/21/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1212092-04	12/20/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1212085-04	12/19/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1212067-02	12/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1212068-02	12/16/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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1211108-02	11/28/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1211101-02	11/27/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1211095-04	11/26/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1211096-02	11/24/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1211088-02	11/23/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1211087-02	11/22/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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T-320

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1211062-02	11/15/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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T-320

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1208089-02	08/27/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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1207095-02	07/25/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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T-320

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1206037-02	06/09/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	20400	<2500	<2500	<2500	<2500	<2500	<2500	6370	<2500	<2500
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1205084-04	05/15/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1205044-02	05/08/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	29100 [1]	<1000	<1000	<1000	<1000	<1000	<1000	7380	<1000	<1000
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1204062-04	04/14/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1204044-02	04/11/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
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1204027-02	04/08/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	74100 [1]	<2500	<2500	<2500	<2500	<2500	<2500	19200	<2500	<2500
1204026-02	04/07/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99000 [1]	<2500	<2500	<2500	<2500	<2500	<2500	29300	<2500	<2500
1204023-02	04/06/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107000 [1]	<1000	1780	<1000	<1000	<1000	<1000	33500 [1]	<1000	<1000
1204020-02	04/05/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<1000	<1000	<1000	48600 [1]	<1000	3590	<1000	<1000	<1000	<1000	16600	<1000	<1000
1204016-04	04/04/12	T-320 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204013-04	04/03/12	T-320 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204003-02	04/02/12	T-320 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
1204002-02	04/01/12	T-320 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	904	<500	554	<500	<500	<500	<500	<500	<500	<500
1204001-02	03/31/12	T-320 EFFLUENT	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500

T-320

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1304089-04	04/19/13	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	96.8%	<1000
1304085-04	04/18/13	T-320 EFFLUENT	<1000	<1000	94.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.2%	<1000	<1000	<1000	93.1%	<1000
1304080-04	04/17/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	102%	<1000
1304074-04	04/16/13	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	100%	<1000
1304064-04	04/15/13	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	102%	<1000
1304063-04	04/14/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	98.2%	<1000
1304062-04	04/13/13	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	100%	<1000
1304052-04	04/12/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	99.6%	<1000
1304045-04	04/11/13	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	103%	<1000
1304041-04	04/10/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	99.1%	<1000
1304036-04	04/09/13	T-320 EFFLUENT	<1000	<1000	99.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000	96.6%	<1000
1304027-02	04/08/13	T-320 EFFLUENT	<2500	<2500	98.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	99.0%	<2500
1304026-02	04/07/13	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	99.9%	<2500
1304025-02	04/06/13	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	106%	<2500
1304022-02	04/05/13	T-320 EFFLUENT	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	101%	<2500
1304018-02	04/04/13	T-320 EFFLUENT	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1304014-04	04/03/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	101%	<1000
1304011-04	04/02/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	98.9%	<1000
1304003-02	04/01/13	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.5%	<2500
1304002-02	03/31/13	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	101%	<2500
1304001-02	03/30/13	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.5%	<2500
1303135-01	03/29/13	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	101%	<2500
1303133-02	03/28/13	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	102%	<2500
1303123-04	03/27/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	102%	<1000
1303119-04	03/26/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	102%	<1000
1303113-02	03/25/13	T-320 EFFLUENT	<2500	<2500	98.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	96.7%	<2500
1303112-02	03/24/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.2%	<2500
1303111-02	03/23/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	101%	<2500
1303105-04	03/22/13	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	100%	<1000
1303098-04	03/21/13	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	99.6%	<1000
1303089-02	03/20/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	101%	<2500
1303083-02	03/19/13	T-320 EFFLUENT	<2500	<2500	99.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.3%	<2500
1303072-02	03/18/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	99.7%	<2500
1303071-02	03/17/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1303070-02	03/16/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	98.5%	<2500
1303066-02	03/15/13	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	102%	<2500
1303061-04	03/14/13	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	102%	<1000
1303055-04	03/13/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	101%	<1000
1303052-04	03/12/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	102%	<1000
1303041-02	03/11/13	T-320 EFFLUENT	<2500	<2500	116%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	101%	<2500
1303040-02	03/10/13	T-320 EFFLUENT	<2500	<2500	117%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	102%	<2500
1303039-02	03/09/13	T-320 EFFLUENT	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	97.7%	<2500
1303037-02	03/08/13	T-320 EFFLUENT	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	101%	<2500
1303031-02	03/07/13	T-320 EFFLUENT	<2500	<2500	117%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	110%	<2500	<2500	<2500	106%	<2500
1303025-02	03/06/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	99.2%	<2500
1303019-04	03/05/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	98.2%	<1000
1303011-04	03/04/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	100%	<1000
1303010-04	03/03/13	T-320 EFFLUENT	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	98.5%	<1000
1303009-04	03/02/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	96.4%	<1000
1303002-02	03/01/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	101%	<2500
1302122-04	02/28/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1490	101%	<1000	<1000	<1000	98.3%	<1000
1302129-02	02/28/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1090	106%	<1000	<1000	<1000	103%	<1000
1302114-04	02/27/13	T-320 EFFLUENT	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1880	108%	<1000	<1000	<1000	105%	<1000
1302109-02	02/26/13	T-320 EFFLUENT	<2500	<2500	95.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.7%	<2500
1302098-02	02/25/13	T-320 EFFLUENT	<2500	<2500	99.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	99.8%	<2500
1302099-02	02/25/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	95.5%	<2500
1302097-02	02/23/13	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.0%	<2500
1302094-02	02/22/13	T-320 EFFLUENT	<10.0	<10.0	112%	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	104%	<10.0	<10.0	<10.0	101%	<10.0
1302090-04	02/21/13	T-320 EFFLUENT	<1000	<1000	113%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	96.2%	<1000
1302083-04	02/20/13	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.8%	<1000	<1000	<1000	88.3%	<1000
1302076-04	02/19/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	95.5%	<1000
1302069-02	02/18/13	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	96.9%	<2500
1302068-04	02/17/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	94.6%	<1000
1302067-04	02/16/13	T-320 EFFLUENT	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000	97.9%	<1000
1302065-04	02/15/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	96.4%	<1000
1302059-04	02/14/13	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	97.4%	<1000
1302049-04	02/13/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	95.8%	<1000
1302041-04	02/12/13	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	98.0%	<1000
1302032-02	02/11/13	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	96.2%	<2500
1302031-02	02/10/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	96.5%	<2500
1302030-02	02/09/13	T-320 EFFLUENT	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	99.2%	<2500
1302025-02	02/08/13	T-320 EFFLUENT	<1000	<1000	112%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	101%	<1000
1302023-02	02/07/13	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	98.8%	<2500
1302019-04	02/06/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	97.7%	<1000
1302016-04	02/05/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	94.3%	<1000
1302009-02	02/04/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	94.7%	<2500
1302008-02	02/03/13	T-320 EFFLUENT	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	97.6%	<2500
1302007-02	02/02/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	95.7%	<2500

T-320

			1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Bromofluorobenzene	2-Hexanone
SAMPLE ID	DATE		ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	[surr]	ug/L
1302001-04	02/01/13	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.6%	<1000	<1000	<1000	92.9%	<1000
1301138-04	01/31/13	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.9%	<1000	<1000	<1000	95.2%	<1000
1301126-04	01/30/13	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	97.0%	<1000
1301122-04	01/29/13	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	94.6%	<1000
1301116-02	01/28/13	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	95.0%	<2500
1301115-02	01/27/13	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	101%	<2500
1301114-02	01/26/13	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	94.9%	<2500
1301108-02	01/25/13	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	92.3%	<2500
1301105-04	01/24/13	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	96.3%	<1000
1301094-04	01/23/13	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	95.7%	<1000
1301090-02	01/22/13	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	96.8%	<2500
1301083-04	01/21/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	96.0%	<1000
1301082-04	01/20/13	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	99.2%	<1000
1301081-02	01/19/13	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	94.2%	<2500
1301072-04	01/18/13	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	93.8%	<1000
1301066-02	01/17/13	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	94.9%	<2500
1301061-04	01/16/13	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	92.0%	<1000
1301053-04	01/15/13	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	94.7%	<1000
1301043-02	01/14/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	98.3%	<2500
1301042-02	01/13/13	T-320 EFFLUENT	<2500	<2500	92.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.5%	<2500	<2500	<2500	88.5%	<2500
1301041-02	01/12/13	T-320 EFFLUENT	<2500	<2500	98.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500	93.4%	<2500
1301039-02	01/11/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	98.9%	<2500
1301035-02	01/10/13	T-320 EFFLUENT	<2500	<2500	98.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500	97.5%	<2500
1301029-02	01/09/13	T-320 EFFLUENT	<2500	<2500	94.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	97.1%	<2500
1301025-04	01/08/13	T-320 EFFLUENT	<1000	<1000	98.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.6%	<1000	<1000	<1000	94.1%	<1000
1301018-04	01/07/13	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	96.2%	<1000
1301017-02	01/06/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	95.6%	<2500
1301016-02	01/05/13	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	97.9%	<2500
1301015-02	01/04/13	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	95.4%	<2500
1301007-02	01/03/13	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.4%	<2500	<2500	<2500	94.9%	<2500
1301002-04	01/02/13	T-320 EFFLUENT	<1000	<1000	94.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.0%	<1000	<1000	<1000	90.8%	<1000
1301001-04	01/01/13	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	95.5%	<1000
1212125-02	12/31/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	96.2%	<1000
1212124-02	12/30/12	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	102%	<1000
1212123-02	12/29/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	99.1%	<1000
1212121-02	12/28/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	99.6%	<1000
1212118-02	12/27/12	T-320 EFFLUENT	<1000	<1000	112%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	104%	<1000
1212108-02	12/26/12	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	106%	<1000
1212107-04	12/25/12	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	100%	<1000
1212102-02	12/24/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	98.8%	<1000
1212101-02	12/23/12	T-320 EFFLUENT	<1000	<1000	115%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	112%	<1000	<1000	<1000	108%	<1000
1212100-02	12/22/12	T-320 EFFLUENT	<1000	<1000	116%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	112%	<1000	<1000	<1000	109%	<1000
1212097-04	12/21/12	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	104%	<1000
1212092-04	12/20/12	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	104%	<1000
1212085-04	12/19/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000	101%	<1000
1212075-02	12/18/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	103%	<2500
1212067-02	12/17/12	T-320 EFFLUENT	<2500	<2500	93.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.1%	<2500	<2500	<2500	85.4%	<2500
1212068-02	12/16/12	T-320 EFFLUENT	<2500	<2500	96.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.6%	<2500	<2500	<2500	88.4%	<2500
1212069-02	12/15/12	T-320 EFFLUENT	<2500	<2500	96.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.5%	<2500	<2500	<2500	88.0%	<2500
1212060-02	12/14/12	T-320 EFFLUENT	<2500	<2500	98.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.7%	<2500	<2500	<2500	91.5%	<2500
1212053-02	12/13/12	T-320 EFFLUENT	<2500	<2500	97.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	89.6%	<2500
1212044-02	12/12/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	90.0%	<2500
1212040-04	12/11/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.1%	<1000	<1000	<1000	90.4%	<1000
1212033-04	12/10/12	T-320 EFFLUENT	<1000	<1000	99.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.3%	<1000	<1000	<1000	87.9%	<1000
1212032-02	12/09/12	T-320 EFFLUENT	<1000	<1000	99.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.6%	<1000	<1000	<1000	87.6%	<1000
1212031-02	12/08/12	T-320 EFFLUENT	<1000	<1000	91.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	86.1%	<1000	<1000	<1000	82.4% [3]	<1000
1212026-02	12/07/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	95.4%	<2500
1212022-02	12/06/12	T-320 EFFLUENT	<2500	<2500	94.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	89.8%	<2500	<2500	<2500	89.2%	<2500
1212015-04	12/05/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.3%	<1000	<1000	<1000	94.2%	<1000
1212009-02	12/04/12	T-320 EFFLUENT	<2500	<2500	97.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500	92.6%	<2500
1212003-02	12/03/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.8%	<2500	<2500	<2500	94.3%	<2500
1212002-02	12/02/12	T-320 EFFLUENT	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	102%	<2500
1212001-02	12/01/12	T-320 EFFLUENT	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1211118-02	11/30/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	100%	<2500
1211111-02	11/29/12	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1211108-02	11/28/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	98.9%	<2500
1211101-02	11/27/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.0%	<2500	<2500	<2500	95.4%	<2500
1211095-04	11/26/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	99.0%	<1000
1211097-04	11/25/12	T-320 EFFLUENT	<1000	<1000	112%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	102%	<1000
1211096-02	11/24/12	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	97.8%	<1000
1211088-02	11/23/12	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	103%	<2500
1211087-02	11/22/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	98.9%	<2500
1211084-04	11/21/12	T-320 EFFLUENT	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	103%	<1000
1211079-04	11/20/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.4%	<1000	<1000	<1000	93.3%	<1000
1211072-02	11/19/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.1%	<2500	<2500	<2500	95.4%	<2500
1211071-02	11/18/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.0%	<2500
1211070-02	11/17/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	96.3%	<2500
1211066-02	11/16/12	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	100%	<2500

T-320

			1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Bromofluorobenzene	2-Hexanone
SAMPLE ID	DATE		ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	[surr]	ug/L
1211062-02	11/15/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.8%	<2500	<2500	<2500	96.8%	<2500
1211056-02	11/14/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	102%	<2500
1211048-02	11/13/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	96.4%	<2500
1211039-04	11/12/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	103%	<500	<500	<500	97.5%	<500
1211038-04	11/11/12	T-320 EFFLUENT	<500	<500	105%	<500	<500	<500	<500	<500	<500	<500	<500	103%	<500	<500	<500	96.0%	<500
1211037-04	11/10/12	T-320 EFFLUENT	<500	<500	105%	<500	<500	<500	<500	<500	<500	<500	<500	102%	<500	<500	<500	96.7%	<500
1211033-04	11/09/12	T-320 EFFLUENT	<500	<500	106%	<500	<500	<500	<500	<500	<500	<500	<500	106%	<500	<500	<500	102%	<500
1211030-02	11/08/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	105%	<500	<500	<500	101%	<500
1211023-02	11/07/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	105%	<500	<500	<500	99.8%	<500
1211020-02	11/06/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	95.4%	<1000
1211015-04	11/05/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	106%	<1000	<1000	<1000	99.5%	<1000
1211014-04	11/04/12	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	99.5%	<1000
1211013-04	11/03/12	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000	102%	<1000
1211009-04	11/02/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	97.2%	<1000
1211004-04	11/01/12	T-320 EFFLUENT	<1000	<1000	87.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	90.3%	<1000	<1000	<1000	85.2%	<1000
1210148-04	10/31/12	T-320 EFFLUENT	<1000	<1000	93.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.4%	<1000	<1000	<1000	89.3%	<1000
1210142-04	10/30/12	T-320 EFFLUENT	<1000	<1000	95.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000	92.9%	<1000
1210132-04	10/29/12	T-320 EFFLUENT	<1000	<1000	93.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.1%	<1000	<1000	<1000	91.6%	<1000
1210131-04	10/28/12	T-320 EFFLUENT	<1000	<1000	94.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.7%	<1000	<1000	<1000	92.0%	<1000
1210130-04	10/27/12	T-320 EFFLUENT	<1000	<1000	91.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.1%	<1000	<1000	<1000	89.7%	<1000
1210126-04	10/26/12	T-320 EFFLUENT	<1000	<1000	94.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.5%	<1000	<1000	<1000	91.5%	<1000
1210120-04	10/25/12	T-320 EFFLUENT	<1000	<1000	90.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	91.7%	<1000	<1000	<1000	91.0%	<1000
1210113-04	10/24/12	T-320 EFFLUENT	<1000	<1000	94.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.5%	<1000	<1000	<1000	92.9%	<1000
1210109-04	10/23/12	T-320 EFFLUENT	<1000	<1000	92.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.6%	<1000	<1000	<1000	92.6%	<1000
1210099-02	10/22/12	T-320 EFFLUENT	<2500	<2500	120% [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	111%	<2500	<2500	<2500	106%	<2500
1210098-02	10/21/12	T-320 EFFLUENT	<2500	<2500	115%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	107%	<2500
1210097-02	10/20/12	T-320 EFFLUENT	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	102%	<2500
1210092-02	10/19/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	102%	<2500
1210087-02	10/18/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	99.7%	<2500
1210082-02	10/17/12	T-320 EFFLUENT	<2500	<2500	116%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	101%	<2500
1210079-04	10/16/12	T-320 EFFLUENT	<1000	<1000	113%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000	98.2%	<1000
1210071-02	10/15/12	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	96.8%	<2500
1210070-02	10/14/12	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	96.8%	<2500
1210069-02	10/13/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.2%	<2500	<2500	<2500	95.5%	<2500
1210067-04	10/12/12	T-320 EFFLUENT	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.3%	<1000	<1000	<1000	97.0%	<1000
1210062-04	10/11/12	T-320 EFFLUENT	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	101%	<1000
1210056-02	10/10/12	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.3%	<1000	<1000	<1000	96.3%	<1000
1210050-02	10/09/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	99.5%	<2500
1210041-02	10/08/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.4%	<2500	<2500	<2500	97.5%	<2500
1210040-02	10/07/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	96.9%	<2500
1210039-02	10/06/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.5%	<2500	<2500	<2500	97.0%	<2500
1210032-04	10/05/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.4%	<1000	<1000	<1000	97.9%	<1000
1210025-02	10/04/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.2%	<2500	<2500	<2500	93.5%	<2500
1210020-02	10/03/12	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	100%	<2500
1210015-04	10/02/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.3%	<1000	<1000	<1000	94.7%	<1000
1210003-02	10/01/12	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	100%	<1000	<1000	<1000	99.9%	<1000
1210002-02	09/30/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.4%	<1000	<1000	<1000	96.1%	<1000
1210001-02	09/29/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	98.3%	<2500
1209126-04	09/28/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.7%	<1000	<1000	<1000	97.0%	<1000
1209123-04	09/27/12	T-320 EFFLUENT	<1000	<1000	107%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.6%	<1000	<1000	<1000	98.1%	<1000
1209116-02	09/26/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	95.0%	<2500
1209112-02	09/25/12	T-320 EFFLUENT	<2500	<2500	99.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.7%	<2500	<2500	<2500	93.5%	<2500
1209103-02	09/24/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.5%	<2500
1209105-02	09/24/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	101%	<2500
1209104-02	09/23/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	97.8%	<2500
1209099-02	09/21/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.7%	<2500
1209094-04	09/20/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	99.7%	<1000
1209088-02	09/19/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	97.4%	<2500
1209083-02	09/18/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	101%	<2500
1209075-02	09/17/12	T-320 EFFLUENT	<2500	<2500	95.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	98.9%	<2500
1209071-04	09/14/12	T-320 EFFLUENT	<1000	<1000	91.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.1%	<1000	<1000	<1000	95.2%	<1000
1209063-04	09/13/12	T-320 EFFLUENT	<1000	<1000	86.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.7%	<1000	<1000	<1000	94.2%	<1000
1209052-04	09/12/12	T-320 EFFLUENT	<1000	<1000	95.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.8%	<1000	<1000	<1000	97.2%	<1000
1209044-04	09/11/12	T-320 EFFLUENT	<1000	<1000	93.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.0%	<1000	<1000	<1000	95.8%	<1000
1209035-04	09/10/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.9%	<1000	<1000	<1000	95.0%	<1000
1209034-04	09/09/12	T-320 EFFLUENT	<1000	<1000	90.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.4%	<1000	<1000	<1000	94.4%	<1000
1209033-04	09/08/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.5%	<1000	<1000	<1000	95.2%	<1000
1209027-02	09/07/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000	95.3%	<1000
1209018-02	09/06/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.1%	<1000	<1000	<1000	93.4%	<1000
1209013-04	09/05/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.3%	<1000	<1000	<1000	94.6%	<1000
1209004-02	09/04/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	98.4%	<1000
1209003-02	09/03/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.8%	<1000	<1000	<1000	96.1%	<1000
1209002-02	09/02/12	T-320 EFFLUENT	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.3%	<1000	<1000	<1000	94.3%	<1000
1209001-02	09/01/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	97.1%	<1000
1208113-04	08/31/12	T-320 EFFLUENT	<1000	<1000	95.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.5%	<1000	<1000	<1000	91.4%	<1000
1208108-04	08/30/12	T-320 EFFLUENT	<1000	<1000	97.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.8%	<1000	<1000	<1000	93.1%	<1000
1208104-04	08/29/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000	97.2%	<1000
1208097-04	08/28/12	T-320 EFFLUENT	<1000	<1000	97.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.2%	<1000	<1000	<1000	93.2%	<1000

T-320

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1208089-02	08/27/12	T-320 EFFLUENT	<2500	<2500	90.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	88.9%	<2500
1208088-02	08/26/12	T-320 EFFLUENT	<2500	<2500	94.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	91.7%	<2500
1208087-02	08/25/12	T-320 EFFLUENT	<2500	<2500	90.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	89.7%	<2500
1208081-02	08/24/12	T-320 EFFLUENT	<2500	<2500	92.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	94.0%	<2500
1208079-04	08/23/12	T-320 EFFLUENT	<1000	<1000	93.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	92.5%	<1000
1208075-04	08/22/12	T-320 EFFLUENT	<1000	<1000	88.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	92.3%	<1000
1208070-02	08/21/12	T-320 EFFLUENT	<1000	<1000	97.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000	95.3%	<1000
1208065-02	08/20/12	T-320 EFFLUENT	<2500	<2500	96.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	94.6%	<2500
1208064-02	08/19/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	97.9%	<2500
1208063-02	08/18/12	T-320 EFFLUENT	<2500	<2500	94.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	93.0%	<2500
1208061-02	08/17/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	97.9%	<2500
1208057-04	08/16/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.5%	<1000	<1000	<1000	93.4%	<1000
1208053-04	08/15/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	99.4%	<1000
1208050-02	08/14/12	T-320 EFFLUENT	<2500	<2500	99.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	91.5%	<2500
1208046-02	08/13/12	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	100%	<2500
1208045-02	08/12/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	96.0%	<2500
1208044-02	08/11/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	95.0%	<2500
1208040-04	08/10/12	T-320 EFFLUENT	<1000	<1000	98.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	95.5%	<1000
1208027-02	08/09/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	98.2%	<2500
1208022-04	08/08/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	98.9%	<1000
1208016-04	08/07/12	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	97.7%	<1000
1208013-02	08/06/12	T-320 EFFLUENT	<2500	<2500	98.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	91.9%	<2500
1208012-02	08/05/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	98.4%	<2500
1208011-02	08/04/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	97.4%	<2500
1208009-02	08/03/12	T-320 EFFLUENT	<2500	<2500	97.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	96.0%	<2500
1208004-02	08/02/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.3%	<2500
1208001-02	08/01/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	97.0%	<2500
1207110-02	07/31/12	T-320 EFFLUENT	<2500	<2500	90.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	96.4%	<2500
1207106-02	07/30/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	96.8%	<2500
1207105-02	07/29/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.5%	<2500
1207104-02	07/28/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.2%	<2500
1207102-04	07/27/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	96.1%	<1000
1207100-04	07/26/12	T-320 EFFLUENT	<2500	<2500	99.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	95.5%	<2500
1207095-02	07/25/12	T-320 EFFLUENT	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.3%	<2500	<2500	<2500	95.7%	<2500
1207091-02	07/24/12	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	90.9%	<2500	<2500	<2500	94.2%	<2500
1207085-02	07/23/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.9%	<2500	<2500	<2500	95.7%	<2500
1207086-02	07/22/12	T-320 EFFLUENT	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.1%	<2500	<2500	<2500	95.5%	<2500
1207087-02	07/21/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.1%	<2500	<2500	<2500	92.4%	<2500
1207078-02	07/20/12	T-320 EFFLUENT	<2500	<2500	99.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.7%	<2500	<2500	<2500	92.9%	<2500
1207071-04	07/19/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.8%	<1000	<1000	<1000	97.1%	<1000
1207067-04	07/18/12	T-320 EFFLUENT	<1000	<1000	93.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	87.4%	<1000	<1000	<1000	86.8%	<1000
1207061-02	07/17/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.6%	<2500	<2500	<2500	92.3%	<2500
1207054-02	07/16/12	T-320 EFFLUENT	<2500	<2500	92.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.2%	<2500	<2500	<2500	94.2%	<2500
1207053-02	07/15/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.4%	<2500	<2500	<2500	94.2%	<2500
1207052-02	07/14/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	2720	98.8%	<2500	<2500	<2500	98.8%	<2500
1207050-04	07/13/12	T-320 EFFLUENT	<1000	<1000	92.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.2%	<1000	<1000	<1000	92.4%	<1000
1207045-04	07/12/12	T-320 EFFLUENT	<1000	<1000	94.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.9%	<1000	<1000	<1000	93.0%	<1000
1207035-04	07/11/12	T-320 EFFLUENT	<1000	<1000	90.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.4%	<1000	<1000	<1000	93.1%	<1000
1207030-02	07/10/12	T-320 EFFLUENT	<2500	<2500	90.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.9%	<2500	<2500	<2500	91.5%	<2500
1207022-02	07/09/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.5%	<2500	<2500	<2500	94.7%	<2500
1207023-02	07/08/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	97.9%	<2500
1207024-02	07/07/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	94.5%	<2500
1207018-02	07/06/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.6%	<1000	<1000	<1000	97.6%	<1000
1207016-02	07/05/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	93.9%	<1000	<1000	<1000	95.3%	<1000
1207009-04	07/03/12	T-320 EFFLUENT	<1000	<1000	99.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.7%	<1000	<1000	<1000	95.7%	<1000
1207002-02	07/02/12	T-320 EFFLUENT	<2500	<2500	96.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500	95.2%	<2500
1207003-02	07/01/12	T-320 EFFLUENT	<2500	<2500	97.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.2%	<2500	<2500	<2500	95.7%	<2500
1207004-02	06/30/12	T-320 EFFLUENT	<2500	<2500	98.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	97.7%	<2500
1206112-02	06/29/12	T-320 EFFLUENT	<2500	<2500	97.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	95.4%	<2500
1206109-04	06/28/12	T-320 EFFLUENT	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.7%	<1000	<1000	<1000	100%	<1000
1206105-04	06/27/12	T-320 EFFLUENT	<1000	<1000	109%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.6%	<1000	<1000	<1000	98.5%	<1000
1206099-04	06/26/12	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.5%	<1000	<1000	<1000	97.1%	<1000
1206093-02	06/25/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500	100%	<2500
1206092-02	06/24/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500	98.5%	<2500
1206091-02	06/23/12	T-320 EFFLUENT	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	101%	<2500
1206087-02	06/22/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.1%	<2500	<2500	<2500	98.3%	<2500
1206086-02	06/21/12	T-320 EFFLUENT	<1000	<1000	108%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	103%	<1000
1206082-04	06/20/12	T-320 EFFLUENT	<1000	<1000	98.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.9%	<1000	<1000	<1000	96.3%	<1000
1206077-04	06/19/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.6%	<1000	<1000	<1000	95.9%	<1000
1206072-02	06/18/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	101%	<2500
1206071-02	06/17/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	98.4%	<2500
1206070-02	06/16/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	99.2%	<2500
1206063-02	06/15/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	104%	<2500
1206061-04	06/14/12	T-320 EFFLUENT	<1000	<1000	89.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	88.9%	<1000	<1000	<1000	87.2%	<1000
1206056-04	06/13/12	T-320 EFFLUENT	<1000	<1000	99.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.4%	<1000	<1000	<1000	96.1%	<1000
1206046-02	06/12/12	T-320 EFFLUENT	<1000	<1000	94.8%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	92.6%	<1000	<1000	<1000	92.0%	<1000
1206039-02	06/11/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.3%	<2500	<2500	<2500	96.5%	<2500
1206038-02	06/10/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.5%	<2500

T-320

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1206037-02	06/09/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	97.8%	<2500
1206033-02	06/08/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	98.2%	<2500
1206024-02	06/07/12	T-320 EFFLUENT	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	104%	<1000
1206017-04	06/06/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	99.2%	<1000
1206013-04	06/05/12	T-320 EFFLUENT	<500	<500	105%	<500	<500	<500	<500	<500	<500	<500	<500	104%	<500	<500	<500	101%	<500
1206006-02	06/04/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.5%	<2500
1206005-02	06/03/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	100%	<2500
1206004-02	06/02/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	103%	<2500
1206001-04	06/01/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	96.6%	<1000
1205166-02	05/31/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	102%	<1000
1205160-04	05/30/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.7%	<1000	<1000	<1000	98.2%	<1000
1205147-02	05/29/12	T-320 EFFLUENT	<1000	<1000	98.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.6%	<1000	<1000	<1000	93.6%	<1000
1205138-02	05/25/12	T-320 EFFLUENT	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	97.3%	<2500
1205131-02	05/24/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000	95.7%	<1000
1205124-04	05/23/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.2%	<1000	<1000	<1000	94.3%	<1000
1205117-04	05/22/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.4%	<1000	<1000	<1000	95.3%	<1000
1205105-02	05/21/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	102%	<2500
1205104-02	05/20/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.4%	<2500	<2500	<2500	94.5%	<2500
1205103-02	05/19/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.2%	<2500	<2500	<2500	101%	<2500
1205101-02	05/18/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	100%	<2500
1205097-04	05/17/12	T-320 EFFLUENT	<1000	<1000	87.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.5%	<1000	<1000	<1000	93.6%	<1000
1205090-04	05/16/12	T-320 EFFLUENT	<1000	<1000	87.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.9%	<1000	<1000	<1000	93.9%	<1000
1205084-04	05/15/12	T-320 EFFLUENT	<1000	<1000	89.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.1%	<1000	<1000	<1000	92.0%	<1000
1205074-04	05/14/12	T-320 EFFLUENT	<1000	<1000	88.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.5%	<1000	<1000	<1000	92.4%	<1000
1205073-04	05/13/12	T-320 EFFLUENT	<1000	<1000	87.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.7%	<1000	<1000	<1000	91.7%	<1000
1205072-04	05/12/12	T-320 EFFLUENT	<1000	<1000	87.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	94.4%	<1000	<1000	<1000	91.2%	<1000
1205067-04	05/11/12	T-320 EFFLUENT	<1000	<1000	94.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.2%	<1000	<1000	<1000	96.0%	<1000
1205059-04	05/10/12	T-320 EFFLUENT	<1000	<1000	94.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.4%	<1000	<1000	<1000	96.1%	<1000
1205049-02	05/09/12	T-320 EFFLUENT	<1000	<1000	94.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.6%	<1000	<1000	<1000	95.8%	<1000
1205044-02	05/08/12	T-320 EFFLUENT	<1000	<1000	96.9%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	99.8%	<1000
1205036-02	05/07/12	T-320 EFFLUENT	<2500	<2500	92.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	104%	<2500
1205035-02	05/06/12	T-320 EFFLUENT	<1000	<1000	95.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	96.2%	<1000	<1000	<1000	95.8%	<1000
1205034-04	05/05/12	T-320 EFFLUENT	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	99.8%	<2500
1205028-04	05/04/12	T-320 EFFLUENT	<2500	<2500	96.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.8%	<2500	<2500	<2500	97.1%	<2500
1205022-04	05/03/12	T-320 EFFLUENT	<1000	<1000	96.4%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	102%	<1000
1205013-04	05/02/12	T-320 EFFLUENT	<1000	<1000	98.7%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	102%	<1000
1205001-04	05/01/12	T-320 EFFLUENT	<1000	<1000	99.0%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	98.5%	<1000
1204137-04	04/30/12	T-320 EFFLUENT	<1000	<1000	99.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	98.4%	<1000
1204136-04	04/29/12	T-320 EFFLUENT	<1000	<1000	98.1%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	98.9%	<1000
1204135-02	04/28/12	T-320 EFFLUENT	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1204130-02	04/27/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	103%	<2500
1204125-02	04/26/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.5%	<2500	<2500	<2500	100%	<2500
1204117-04	04/25/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	100%	<2500
1204111-02	04/24/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	103%	<2500
1204102-02	04/23/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.8%	<2500	<2500	<2500	98.5%	<2500
1204101-02	04/22/12	T-320 EFFLUENT	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	101%	<2500
1204100-02	04/21/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	104%	<2500
1204096-02	04/20/12	T-320 EFFLUENT	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.7%	<2500
1204090-02	04/19/12	T-320 EFFLUENT	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	98.9%	<2500
1204084-02	04/18/12	T-320 EFFLUENT	<2500	<2500	99.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	3200	98.7%	<2500	<2500	<2500	97.1%	<2500
1204078-02	04/17/12	T-320 EFFLUENT	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	101%	<2500
1204064-04	04/16/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	100%	<1000
1204063-04	04/15/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	103%	<1000
1204062-04	04/14/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	99.8%	<1000
1204057-04	04/13/12	T-320 EFFLUENT	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.6%	<1000	<1000	<1000	98.4%	<1000
1204049-04	04/12/12	T-320 EFFLUENT	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	98.5%	<1000
1204044-02	04/11/12	T-320 EFFLUENT	<1000	<1000	101%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	101%	<1000
1204039-02	04/10/12	T-320 EFFLUENT	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	102%	<1000
1204028-02	04/09/12	T-320 EFFLUENT	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	101%	<2500
1204027-02	04/08/12	T-320 EFFLUENT	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	102%	<2500
1204026-02	04/07/12	T-320 EFFLUENT	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	106%	<2500
1204023-02	04/06/12	T-320 EFFLUENT	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	2940	<1000	101%	<1000	<1000	<1000	97.8%	<1000
1204020-02	04/05/12	T-320 EFFLUENT	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	1560	<1000	102%	<1000	<1000	<1000	98.2%	<1000
1204016-04	04/04/12	T-320 EFFLUENT	<500	<500	108%	<500	<500	<500	<500	<500	<500	<500	<500	105%	<500	<500	<500	101%	<500
1204013-04	04/03/12	T-320 EFFLUENT	<500	<500	101%	<500	<500	<500	<500	<500	<500	<500	<500	98.1%	<500	<500	<500	95.6%	<500
1204003-02	04/02/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	102%	<500	<500	<500	100%	<500
1204002-02	04/01/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	104%	<500	<500	<500	98.1%	<500
1204001-02	03/31/12	T-320 EFFLUENT	<500	<500	104%	<500	<500	<500	<500	<500	<500	<500	<500	102%	<500	<500	<500	99.6%	<500

T-320

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1304089-04	04/19/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304085-04	04/18/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304080-04	04/17/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304074-04	04/16/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304064-04	04/15/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304063-04	04/14/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304062-04	04/13/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304052-04	04/12/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304045-04	04/11/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304041-04	04/10/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304036-04	04/09/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304027-02	04/08/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304026-02	04/07/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304025-02	04/06/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304022-02	04/05/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304018-02	04/04/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304014-04	04/03/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304011-04	04/02/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1304003-02	04/01/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304002-02	03/31/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1304001-02	03/30/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303135-01	03/29/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303133-02	03/28/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303123-04	03/27/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303119-04	03/26/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303113-02	03/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303112-02	03/24/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303111-02	03/23/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303105-04	03/22/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303098-04	03/21/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303089-02	03/20/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303083-02	03/19/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303072-02	03/18/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303071-02	03/17/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303070-02	03/16/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303066-02	03/15/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303061-04	03/14/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303055-04	03/13/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303052-04	03/12/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303041-02	03/11/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303040-02	03/10/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303039-02	03/09/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303037-02	03/08/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303031-02	03/07/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303025-02	03/06/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1303019-04	03/05/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303011-04	03/04/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303010-04	03/03/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303009-04	03/02/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1303002-02	03/01/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302122-04	02/28/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302129-02	02/28/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302114-04	02/27/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302109-02	02/26/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302098-02	02/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302099-02	02/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302097-02	02/23/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302094-02	02/22/13	T-320 EFFLUENT	<10.0	<10.0	<10.0	<10.0	<30.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
1302090-04	02/21/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302083-04	02/20/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302076-04	02/19/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302069-02	02/18/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302068-04	02/17/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302067-04	02/16/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302065-04	02/15/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302059-04	02/14/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302049-04	02/13/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302041-04	02/12/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302032-02	02/11/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302031-02	02/10/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302030-02	02/09/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302025-02	02/08/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302023-02	02/07/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302019-04	02/06/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302016-04	02/05/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1302009-02	02/04/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302008-02	02/03/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1302007-02	02/02/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500

T-320

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1302001-04	02/01/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301138-04	01/31/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301126-04	01/30/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301122-04	01/29/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301116-02	01/28/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301115-02	01/27/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301114-02	01/26/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301108-02	01/25/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301105-04	01/24/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301094-04	01/23/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301090-02	01/22/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301083-04	01/21/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301082-04	01/20/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1301072-04	01/18/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301066-02	01/17/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301061-04	01/16/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301053-04	01/15/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1301043-02	01/14/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301042-02	01/13/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301041-02	01/12/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301039-02	01/11/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1301029-02	01/09/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1301025-04	01/08/13	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1301015-02	01/04/13	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1212121-02	12/28/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1212108-02	12/26/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212107-04	12/25/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212102-02	12/24/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212101-02	12/23/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212100-02	12/22/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212097-04	12/21/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212092-04	12/20/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212085-04	12/19/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212075-02	12/18/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212067-02	12/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212068-02	12/16/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212069-02	12/15/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212060-02	12/14/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212053-02	12/13/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212044-02	12/12/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212040-04	12/11/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212033-04	12/10/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212032-02	12/09/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212031-02	12/08/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212026-02	12/07/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212022-02	12/06/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212015-04	12/05/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1212009-02	12/04/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212003-02	12/03/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212002-02	12/02/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1212001-02	12/01/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1211111-02	11/29/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211108-02	11/28/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211101-02	11/27/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211095-04	11/26/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211097-04	11/25/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211096-02	11/24/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211088-02	11/23/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211087-02	11/22/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211084-04	11/21/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211079-04	11/20/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1211072-02	11/19/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1211070-02	11/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211066-02	11/16/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500

T-320

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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1211056-02	11/14/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211048-02	11/13/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1211039-04	11/12/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211038-04	11/11/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211037-04	11/10/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211033-04	11/09/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211030-02	11/08/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211023-02	11/07/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1211020-02	11/06/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1210131-04	10/28/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1210120-04	10/25/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1210109-04	10/23/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210099-02	10/22/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210098-02	10/21/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210097-02	10/20/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210092-02	10/19/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210087-02	10/18/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210082-02	10/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210079-04	10/16/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210071-02	10/15/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210070-02	10/14/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210069-02	10/13/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210067-04	10/12/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210062-04	10/11/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210056-02	10/10/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210050-02	10/09/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210041-02	10/08/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210040-02	10/07/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210039-02	10/06/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210032-04	10/05/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210025-02	10/04/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210020-02	10/03/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1210015-04	10/02/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210003-02	10/01/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210002-02	09/30/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1210001-02	09/29/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209126-04	09/28/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209123-04	09/27/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209116-02	09/26/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209112-02	09/25/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209103-02	09/24/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209105-02	09/24/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209104-02	09/23/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209099-02	09/21/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209094-04	09/20/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209088-02	09/19/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209083-02	09/18/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209075-02	09/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1209071-04	09/14/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209063-04	09/13/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209052-04	09/12/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209044-04	09/11/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209035-04	09/10/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1209027-02	09/07/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209018-02	09/06/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209013-04	09/05/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209004-02	09/04/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209003-02	09/03/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209002-02	09/02/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1209001-02	09/01/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208113-04	08/31/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208108-04	08/30/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208104-04	08/29/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208097-04	08/28/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000

T-320

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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1208088-02	08/26/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208087-02	08/25/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208081-02	08/24/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208079-04	08/23/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208075-04	08/22/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208070-02	08/21/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208065-02	08/20/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208064-02	08/19/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208063-02	08/18/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208061-02	08/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208057-04	08/16/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1208050-02	08/14/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208046-02	08/13/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208045-02	08/12/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208044-02	08/11/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208040-04	08/10/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208027-02	08/09/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208022-04	08/08/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208016-04	08/07/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1208013-02	08/06/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1208011-02	08/04/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208009-02	08/03/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1208004-02	08/02/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1207104-02	07/28/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
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1207091-02	07/24/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207085-02	07/23/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207086-02	07/22/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207087-02	07/21/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207078-02	07/20/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207071-04	07/19/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207067-04	07/18/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207061-02	07/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207054-02	07/16/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207053-02	07/15/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207052-02	07/14/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207050-04	07/13/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207045-04	07/12/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207035-04	07/11/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207030-02	07/10/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207022-02	07/09/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207023-02	07/08/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207024-02	07/07/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207018-02	07/06/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207016-02	07/05/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207009-04	07/03/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1207002-02	07/02/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207003-02	07/01/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1207004-02	06/30/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206112-02	06/29/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206109-04	06/28/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206105-04	06/27/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206099-04	06/26/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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1206091-02	06/23/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206087-02	06/22/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206086-02	06/21/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206082-04	06/20/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206077-04	06/19/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206072-02	06/18/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206071-02	06/17/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206070-02	06/16/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206063-02	06/15/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206061-04	06/14/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206056-04	06/13/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206046-02	06/12/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206039-02	06/11/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206038-02	06/10/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500

T-320

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1206037-02	06/09/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206033-02	06/08/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206024-02	06/07/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206017-04	06/06/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
1206013-04	06/05/12	T-320 EFFLUENT	<500	<500	<500	<500	<1500	<500	<500	<500	<500	<500	<500
1206006-02	06/04/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206005-02	06/03/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206004-02	06/02/12	T-320 EFFLUENT	<2500	<2500	<2500	<2500	<7500	<2500	<2500	<2500	<2500	<2500	<2500
1206001-04	06/01/12	T-320 EFFLUENT	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000
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T-100

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
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T-100

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
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T-100

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
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T-100

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
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T-100

SAMPLE ID	DATE		Chloromethane ug/L	Vinyl chloride ug/L	Bromomethane ug/L	Chloroethane ug/L	Trichlorofluoromethane ug/L	Diethyl ether ug/L	1,1,2-Trichloro-1,2,2-trifluoroethane ug/L	Acetone ug/L	1,1-Dichloroethene ug/L	Methylene chloride ug/L	Carbon disulfide ug/L	trans-1,2-Dichloroethene ug/L	1,1-Dichloroethane ug/L	Vinyl acetate ug/L	2-Butanone ug/L	Ethyl acetate ug/L	Chloroform ug/L
1206037-03	06/09/12	T-100	<2500	<2500	<2500	<2500	<2500	<2500	<2500	15800	<2500	<2500	<2500	<2500	<2500	<2500	5130	<2500	<2500
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1205013-05	05/02/12	T-100	<2500	<2500	<2500	<2500	<2500	<2500	<2500	6820	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
1205001-05	05/01/12	T-100	<2500	<2500	<2500	<2500	<2500	<2500	<2500	15800	<2500	<2500	<2500	<2500	<2500	<2500	3650	<2500	<2500
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1204063-05	04/15/12	T-100	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500
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T-100

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1304089-05	04/19/13	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	97.9%	<2500
1304085-05	04/18/13	T-100	<2500	<2500	94.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500	93.7%	<2500
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1303083-03	03/19/13	T-100	<2500	<2500	99.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.4%	<2500
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1302090-05	02/21/13	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	96.6%	<2500
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1302076-05	02/19/13	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	96.1%	<2500
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T-100

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1302001-05	02/01/13	T-100	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	96.1%	<2500
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1301082-05	01/20/13	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	95.8%	<2500
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1301061-05	01/16/13	T-100	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	96.3%	<2500
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1301041-03	01/12/13	T-100	<2500	<2500	92.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.3%	<2500	<2500	<2500	87.4%	<2500
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1212100-03	12/22/12	T-100	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	108%	<1000	<1000	<1000	103%	<1000
1212097-05	12/21/12	T-100	<1000	<1000	110%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	107%	<1000	<1000	<1000	105%	<1000
1212092-05	12/20/12	T-100	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	105%	<2500
1212085-05	12/19/12	T-100	<2500	<2500	99.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	96.5%	<2500
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1212069-03	12/15/12	T-100	<2500	<2500	96.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.6%	<2500	<2500	<2500	87.5%	<2500
1212060-03	12/14/12	T-100	<2500	<2500	98.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.4%	<2500	<2500	<2500	91.1%	<2500
1212053-03	12/13/12	T-100	<2500	<2500	89.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	89.3%	<2500	<2500	<2500	83.8% [3]	<2500
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1212031-03	12/08/12	T-100	<2500	<2500	95.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	89.9%	<2500	<2500	<2500	83.6% [3]	<2500
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1212003-03	12/03/12	T-100	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.3%	<2500
1212002-03	12/02/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	94.7%	<2500
1212001-03	12/01/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	95.4%	<2500
1211118-03	11/30/12	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	103%	<2500
1211111-03	11/29/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.1%	<2500
1211108-03	11/28/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	99.7%	<2500
1211101-03	11/27/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	94.1%	<2500
1211095-05	11/26/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	99.8%	<2500
1211097-05	11/25/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.7%	<2500
1211096-03	11/24/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	99.9%	<2500
1211088-03	11/23/12	T-100	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	101%	<2500
1211087-03	11/22/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	98.6%	<2500
1211084-05	11/21/12	T-100	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	104%	<2500
1211079-05	11/20/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.8%	<2500	<2500	<2500	94.3%	<2500
1211072-03	11/19/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.9%	<2500	<2500	<2500	93.4%	<2500
1211071-03	11/18/12	T-100	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.6%	<2500	<2500	<2500	93.7%	<2500
1211070-03	11/17/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.3%	<2500	<2500	<2500	94.0%	<2500
1211066-03	11/16/12	T-100	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	102%	<2500

T-100

			1,1,1-Trichloroethane	Carbon tetrachloride	1,2-Dichloroethane d4	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethylvinyl ether	4-Methyl-2-pentanone	cis-1,3-Dichloropropene	Toluene-d8	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Bromofluorobenzene	2-Hexanone
SAMPLE ID	DATE		ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	[surr]	ug/L	ug/L	ug/L	[surr]	ug/L
1211062-03	11/15/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	98.8%	<2500
1211056-03	11/14/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	96.0%	<2500
1211048-03	11/13/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	101%	<2500
1211039-05	11/12/12	T-100	<1000	<1000	106%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	105%	<1000	<1000	<1000	99.6%	<1000
1211038-05	11/11/12	T-100	<1000	<1000	103%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	96.2%	<1000
1211037-05	11/10/12	T-100	<1000	<1000	98.6%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.7%	<1000	<1000	<1000	93.3%	<1000
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1211020-03	11/06/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	96.8%	<2500
1211015-05	11/05/12	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	112%	<2500	<2500	<2500	105%	<2500
1211014-05	11/04/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	106%	<2500	<2500	<2500	100%	<2500
1211013-05	11/03/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	107%	<2500	<2500	<2500	103%	<2500
1211009-05	11/02/12	T-100	<2500	<2500	97.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	94.1%	<2500
1211004-05	11/01/12	T-100	<2500	<2500	91.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.1%	<2500	<2500	<2500	88.9%	<2500
1210148-05	10/31/12	T-100	<2500	<2500	94.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.0%	<2500	<2500	<2500	89.6%	<2500
1210142-05	10/30/12	T-100	<2500	<2500	91.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.0%	<2500	<2500	<2500	89.4%	<2500
1210132-05	10/29/12	T-100	<2500	<2500	94.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.1%	<2500	<2500	<2500	91.7%	<2500
1210131-05	10/28/12	T-100	<2500	<2500	93.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	90.8%	<2500
1210130-05	10/27/12	T-100	<2500	<2500	95.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.5%	<2500	<2500	<2500	93.1%	<2500
1210126-05	10/26/12	T-100	<2500	<2500	95.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	92.5%	<2500
1210120-05	10/25/12	T-100	<2500	<2500	92.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.0%	<2500	<2500	<2500	90.0%	<2500
1210113-05	10/24/12	T-100	<2500	<2500	95.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.0%	<2500	<2500	<2500	94.4%	<2500
1210109-05	10/23/12	T-100	<2500	<2500	95.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.6%	<2500	<2500	<2500	94.5%	<2500
1210099-03	10/22/12	T-100	<2500	<2500	116%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	108%	<2500	<2500	<2500	105%	<2500
1210098-03	10/21/12	T-100	<2500	<2500	95.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	94.0%	<2500
1210097-03	10/20/12	T-100	<2500	<2500	121% [1]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	112%	<2500	<2500	<2500	109%	<2500
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1210087-03	10/18/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	100%	<2500
1210082-03	10/17/12	T-100	<2500	<2500	115%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.8%	<2500
1210079-05	10/16/12	T-100	<2500	<2500	114%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	99.9%	<2500
1210071-03	10/15/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.2%	<2500	<2500	<2500	93.4%	<2500
1210070-03	10/14/12	T-100	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.3%	<2500
1210069-03	10/13/12	T-100	<2500	<2500	113%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	101%	<2500
1210067-05	10/12/12	T-100	<2500	<2500	112%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.4%	<2500	<2500	<2500	98.7%	<2500
1210062-05	10/11/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500	96.1%	<2500
1210056-03	10/10/12	T-100	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	103%	<1000
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1210041-03	10/08/12	T-100	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	96.3%	<2500
1210040-03	10/07/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	98.9%	<2500
1210039-03	10/06/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	97.8%	<2500
1210032-05	10/05/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	98.7%	<2500
1210025-03	10/04/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.4%	<2500	<2500	<2500	91.4%	<2500
1210020-03	10/03/12	T-100	<2500	<2500	109%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500	99.1%	<2500
1210015-05	10/02/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.6%	<2500	<2500	<2500	93.1%	<2500
1210003-03	10/01/12	T-100	<1000	<1000	114%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	103%	<1000	<1000	<1000	102%	<1000
1210002-03	09/30/12	T-100	<1000	<1000	111%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	99.0%	<1000
1210001-03	09/29/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	99.8%	<2500
1209126-05	09/28/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	100%	<2500
1209123-05	09/27/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	97.5%	<2500
1209116-03	09/26/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	95.1%	<2500
1209112-03	09/25/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	98.6%	<2500
1209103-03	09/24/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	97.8%	<2500
1209105-03	09/24/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	98.2%	<2500
1209104-03	09/23/12	T-100	<2500	<2500	99.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.3%	<2500	<2500	<2500	92.3%	<2500
1209099-03	09/21/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.4%	<2500
1209094-05	09/20/12	T-100	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.3%	<2500	<2500	<2500	96.8%	<2500
1209088-03	09/19/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.5%	<2500	<2500	<2500	98.4%	<2500
1209083-03	09/18/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.6%	<2500	<2500	<2500	97.3%	<2500
1209075-03	09/17/12	T-100	<2500	<2500	94.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.0%	<2500	<2500	<2500	95.3%	<2500
1209071-05	09/14/12	T-100	<2500	<2500	91.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.1%	<2500	<2500	<2500	96.3%	<2500
1209063-05	09/13/12	T-100	<2500	<2500	85.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.9%	<2500	<2500	<2500	93.2%	<2500
1209052-05	09/12/12	T-100	<2500	<2500	94.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.9%	<2500	<2500	<2500	94.7%	<2500
1209044-05	09/11/12	T-100	<2500	<2500	91.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.3%	<2500	<2500	<2500	94.0%	<2500
1209035-05	09/10/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.2%	<2500	<2500	<2500	95.0%	<2500
1209034-05	09/09/12	T-100	<2500	<2500	90.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.7%	<2500	<2500	<2500	95.6%	<2500
1209033-05	09/08/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.8%	<2500	<2500	<2500	95.0%	<2500
1209027-03	09/07/12	T-100	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	99.6%	<1000	<1000	<1000	97.6%	<1000
1209018-03	09/06/12	T-100	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	98.1%	<1000
1209013-05	09/05/12	T-100	<1000	<1000	100%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	97.1%	<1000	<1000	<1000	95.3%	<1000
1209004-03	09/04/12	T-100	<1000	<1000	97.3%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	95.7%	<1000	<1000	<1000	93.6%	<1000
1209003-03	09/03/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	97.9%	<2500
1209002-03	09/02/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500	96.1%	<2500
1209001-03	09/01/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.8%	<2500	<2500	<2500	95.5%	<2500
1208113-05	08/31/12	T-100	<2500	<2500	97.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	94.5%	<2500
1208108-05	08/30/12	T-100	<2500	<2500	99.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.8%	<2500	<2500	<2500	95.2%	<2500
1208104-05	08/29/12	T-100	<2500	<2500	99.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.9%	<2500	<2500	<2500	94.2%	<2500
1208097-05	08/28/12	T-100	<2500	<2500	98.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	94.9%	<2500

T-100

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1208089-03	08/27/12	T-100	<2500	<2500	92.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	90.5%	<2500
1208088-03	08/26/12	T-100	<2500	<2500	90.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.7%	<2500	<2500	<2500	89.2%	<2500
1208087-03	08/25/12	T-100	<2500	<2500	88.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.6%	<2500	<2500	<2500	86.4%	<2500
1208081-03	08/24/12	T-100	<2500	<2500	92.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	92.7%	<2500
1208079-05	08/23/12	T-100	<2500	<2500	95.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	92.5%	<2500
1208075-05	08/22/12	T-100	<2500	<2500	92.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	94.7%	<2500
1208070-03	08/21/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	96.7%	<2500
1208065-03	08/20/12	T-100	<2500	<2500	97.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	94.7%	<2500
1208064-03	08/19/12	T-100	<2500	<2500	97.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	94.4%	<2500
1208063-03	08/18/12	T-100	<2500	<2500	95.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	94.3%	<2500
1208061-03	08/17/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	100%	<2500
1208057-05	08/16/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	96.7%	<2500
1208053-05	08/15/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	93.7%	<2500
1208050-03	08/14/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	97.3%	<2500
1208046-03	08/13/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	97.9%	<2500
1208045-03	08/12/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	95.4%	<2500
1208044-03	08/11/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	99.0%	<2500
1208040-05	08/10/12	T-100	<2500	<2500	95.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.2%	<2500	<2500	<2500	92.1%	<2500
1208027-03	08/09/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	96.7%	<2500
1208022-05	08/08/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	97.7%	<2500
1208016-05	08/07/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	97.2%	<2500
1208013-03	08/06/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.5%	<2500
1208012-03	08/05/12	T-100	<2500	<2500	98.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.8%	<2500	<2500	<2500	96.3%	<2500
1208011-03	08/04/12	T-100	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	97.0%	<2500
1208009-03	08/03/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	100%	<2500
1208004-03	08/02/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	97.2%	<2500
1208001-03	08/01/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.3%	<2500
1207110-03	07/31/12	T-100	<2500	<2500	89.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	96.4%	<2500
1207106-03	07/30/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	96.3%	<2500
1207105-03	07/29/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	98.5%	<2500
1207104-03	07/28/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.3%	<2500	<2500	<2500	95.9%	<2500
1207102-05	07/27/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	97.9%	<2500
1207100-05	07/26/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	95.1%	<2500
1207095-03	07/25/12	T-100	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	100%	<2500
1207091-03	07/24/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	90.6%	<2500	<2500	<2500	94.0%	<2500
1207085-03	07/23/12	T-100	<2500	<2500	96.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	90.3%	<2500	<2500	<2500	89.4%	<2500
1207086-03	07/22/12	T-100	<2500	<2500	118% [3]	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	103%	<2500
1207087-03	07/21/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	89.9%	<2500	<2500	<2500	91.5%	<2500
1207078-03	07/20/12	T-100	<2500	<2500	98.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.4%	<2500	<2500	<2500	92.1%	<2500
1207071-05	07/19/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.7%	<2500	<2500	<2500	95.5%	<2500
1207067-05	07/18/12	T-100	<2500	<2500	100%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	92.4%	<2500	<2500	<2500	92.9%	<2500
1207061-03	07/17/12	T-100	<2500	<2500	95.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	90.4%	<2500	<2500	<2500	89.8%	<2500
1207054-03	07/16/12	T-100	<2500	<2500	86.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	87.2%	<2500	<2500	<2500	85.7%	<2500
1207053-03	07/15/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.7%	<2500	<2500	<2500	97.9%	<2500
1207052-03	07/14/12	T-100	<2500	<2500	99.7%	<2500	<2500	<2500	<2500	<2500	<2500	3620	<2500	96.0%	<2500	<2500	<2500	95.9%	<2500
1207050-05	07/13/12	T-100	<2500	<2500	92.8%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.2%	<2500	<2500	<2500	92.3%	<2500
1207045-05	07/12/12	T-100	<2500	<2500	94.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.2%	<2500	<2500	<2500	94.1%	<2500
1207035-05	07/11/12	T-100	<2500	<2500	89.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.5%	<2500	<2500	<2500	91.9%	<2500
1207030-03	07/10/12	T-100	<2500	<2500	91.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	93.8%	<2500	<2500	<2500	92.5%	<2500
1207022-03	07/09/12	T-100	<2500	<2500	98.7%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.9%	<2500	<2500	<2500	94.9%	<2500
1207023-03	07/08/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.6%	<2500	<2500	<2500	97.8%	<2500
1207024-03	07/07/12	T-100	<2500	<2500	99.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.6%	<2500	<2500	<2500	94.2%	<2500
1207018-03	07/06/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.1%	<2500	<2500	<2500	99.1%	<2500
1207016-03	07/05/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.3%	<2500	<2500	<2500	95.4%	<2500
1207009-05	07/03/12	T-100	<2500	<2500	98.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.2%	<2500	<2500	<2500	92.9%	<2500
1207002-03	07/02/12	T-100	<2500	<2500	98.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.7%	<2500	<2500	<2500	96.2%	<2500
1207003-03	07/01/12	T-100	<2500	<2500	97.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.2%	<2500	<2500	<2500	95.4%	<2500
1207004-03	06/30/12	T-100	<2500	<2500	99.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.0%	<2500	<2500	<2500	94.3%	<2500
1206112-03	06/29/12	T-100	<2500	<2500	99.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.0%	<2500
1206109-05	06/28/12	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	100%	<2500
1206105-05	06/27/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.0%	<2500	<2500	<2500	97.7%	<2500
1206099-05	06/26/12	T-100	<2500	<2500	111%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	101%	<2500
1206093-03	06/25/12	T-100	<2500	<2500	108%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	103%	<2500
1206092-03	06/24/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.8%	<2500	<2500	<2500	97.0%	<2500
1206091-03	06/23/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.0%	<2500	<2500	<2500	99.8%	<2500
1206087-03	06/22/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.3%	<2500	<2500	<2500	99.1%	<2500
1206086-03	06/21/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	102%	<2500
1206082-05	06/20/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	100%	<2500
1206077-05	06/19/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	101%	<2500
1206072-03	06/18/12	T-100	<2500	<2500	98.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500	97.2%	<2500
1206071-03	06/17/12	T-100	<2500	<2500	107%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	102%	<2500
1206070-03	06/16/12	T-100	<2500	<2500	110%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	104%	<2500
1206063-03	06/15/12	T-100	<5000	<5000	106%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	103%	<5000	<5000	<5000	102%	<5000
1206061-05	06/14/12	T-100	<2500	<2500	92.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.8%	<2500	<2500	<2500	90.5%	<2500
1206056-05	06/13/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.0%	<2500
1206046-03	06/12/12	T-100	<2500	<2500	94.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	91.5%	<2500	<2500	<2500	90.2%	<2500
1206039-03	06/11/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	98.6%	<2500
1206038-03	06/10/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.9%	<2500	<2500	<2500	98.5%	<2500

T-100

SAMPLE ID	DATE		1,1,1-Trichloroethane ug/L	Carbon tetrachloride ug/L	1,2-Dichloroethane d4 [surr]	1,2-Dichloroethane ug/L	Benzene ug/L	Trichloroethene ug/L	1,2-Dichloropropane ug/L	Bromodichloromethane ug/L	2-Chloroethylvinyl ether ug/L	4-Methyl-2-pentanone ug/L	cis-1,3-Dichloropropene ug/L	Toluene-d8 [surr]	Toluene ug/L	trans-1,3-Dichloropropene ug/L	1,1,2-Trichloroethane ug/L	4-Bromofluorobenzene [surr]	2-Hexanone ug/L
1206037-03	06/09/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	102%	<2500
1206033-03	06/08/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	99.4%	<2500
1206024-03	06/07/12	T-100	<2500	<2500	105%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	103%	<2500
1206017-05	06/06/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	104%	<2500	<2500	<2500	102%	<2500
1206013-05	06/05/12	T-100	<1000	<1000	102%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	102%	<1000	<1000	<1000	99.3%	<1000
1206006-03	06/04/12	T-100	<2500	<2500	102%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	99.1%	<2500
1206005-03	06/03/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	100%	<2500
1206004-03	06/02/12	T-100	<2500	<2500	104%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	102%	<2500	<2500	<2500	98.4%	<2500
1206001-05	06/01/12	T-100	<1000	<1000	99.2%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.2%	<1000	<1000	<1000	95.1%	<1000
1205166-03	05/31/12	T-100	<1000	<1000	105%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	104%	<1000	<1000	<1000	101%	<1000
1205160-05	05/30/12	T-100	<1000	<1000	99.5%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	98.2%	<1000	<1000	<1000	96.0%	<1000
1205147-03	05/29/12	T-100	<1000	<1000	104%	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	101%	<1000	<1000	<1000	98.2%	<1000
1205138-03	05/25/12	T-100	<5000	<5000	99.1%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	96.5%	<5000	<5000	<5000	93.3%	<5000
1205131-03	05/24/12	T-100	<2500	<2500	103%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	95.8%	<2500
1205124-05	05/23/12	T-100	<2500	<2500	97.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	94.2%	<2500	<2500	<2500	92.6%	<2500
1205117-05	05/22/12	T-100	<2500	<2500	99.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.5%	<2500	<2500	<2500	94.1%	<2500
1205105-03	05/21/12	T-100	<5000	<5000	122% [2]	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	114%	<5000	<5000	<5000	112%	<5000
1205104-03	05/20/12	T-100	<5000	<5000	104%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	96.8%	<5000	<5000	<5000	95.0%	<5000
1205103-03	05/19/12	T-100	<5000	<5000	107%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	98.5%	<5000	<5000	<5000	99.0%	<5000
1205101-03	05/18/12	T-100	<5000	<5000	111%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	104%	<5000	<5000	<5000	102%	<5000
1205097-05	05/17/12	T-100	<2500	<2500	86.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.4%	<2500	<2500	<2500	91.8%	<2500
1205090-05	05/16/12	T-100	<2500	<2500	90.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.7%	<2500	<2500	<2500	92.8%	<2500
1205084-05	05/15/12	T-100	<2500	<2500	93.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.9%	<2500	<2500	<2500	95.9%	<2500
1205074-05	05/14/12	T-100	<2500	<2500	91.5%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	94.4%	<2500
1205073-05	05/13/12	T-100	<2500	<2500	89.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	97.4%	<2500	<2500	<2500	93.9%	<2500
1205072-05	05/12/12	T-100	<2500	<2500	88.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	95.8%	<2500	<2500	<2500	91.9%	<2500
1205067-05	05/11/12	T-100	<2500	<2500	92.1%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.4%	<2500	<2500	<2500	94.2%	<2500
1205059-05	05/10/12	T-100	<2500	<2500	97.6%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	100%	<2500	<2500	<2500	99.5%	<2500
1205049-03	05/09/12	T-100	<2500	<2500	96.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	99.2%	<2500	<2500	<2500	97.8%	<2500
1205044-03	05/08/12	T-100	<2500	<2500	94.4%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	96.1%	<2500	<2500	<2500	95.0%	<2500
1205036-03	05/07/12	T-100	<5000	<5000	94.2%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	101%	<5000	<5000	<5000	96.0%	<5000
1205035-03	05/06/12	T-100	<2500	<2500	99.9%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	101%	<2500
1205034-05	05/05/12	T-100	<5000	<5000	98.0%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	98.8%	<5000	<5000	<5000	97.4%	<5000
1205028-05	05/04/12	T-100	<5000	<5000	98.1%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	98.8%	<5000	<5000	<5000	97.1%	<5000
1205022-05	05/03/12	T-100	<2500	<2500	96.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	98.6%	<2500	<2500	<2500	98.2%	<2500
1205013-05	05/02/12	T-100	<2500	<2500	97.2%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	98.9%	<2500
1205001-05	05/01/12	T-100	<2500	<2500	94.0%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	94.8%	<2500
1204137-05	04/30/12	T-100	<2500	<2500	97.3%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	103%	<2500	<2500	<2500	97.7%	<2500
1204136-05	04/29/12	T-100	<2500	<2500	101%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	105%	<2500	<2500	<2500	100%	<2500
1204135-03	04/28/12	T-100	<2500	<2500	106%	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500	101%	<2500	<2500	<2500	110%	<2500
1204130-03	04/27/12	T-100	<5000	<5000	102%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	100%	<5000	<5000	<5000	100%	<5000
1204125-03	04/26/12	T-100	<5000	<5000	104%	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	102%	<5000	<5000	<5000	104%	<5000
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T-100

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-100

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-100

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-100

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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T-100

			Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Ethylbenzene	Xylenes, total	Styrene	Bromoform	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
SAMPLE ID	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
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Attachment 13
Analytical Report for Biotower Exhaust

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-34695-1
Client Project/Site: Model City Landfill

For:
CWM Chemical Services Inc
1550 Balmer Road
Model City, New York 14107

Attn: Jonathan Rizzo

Authorized for release by:
3/29/2013 12:41:26 PM
Lisa Shaffer
Project Manager I
lisa.shaffer@testamericainc.com

Designee for

Candace Fox
Project Manager II
candace.fox@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Method Summary 26
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Sample Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-34695-1	AWT-INFLUENT	Air	03/16/13 11:17	03/20/13 10:20
480-34695-2	AWT-MIDPOINT	Air	03/16/13 11:17	03/20/13 10:20
480-34695-3	AWT-EFFLUENT	Air	03/16/13 11:17	03/20/13 10:20

Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Air - GC/MS VOA TICs

Qualifier	Qualifier Description
*	LCS or LCSD exceeds the control limits
*	RPD of the LCS and LCSD exceeds the control limits
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-34695-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-34695-1

Comments
No additional comments.

Receipt
The samples were received on 3/20/2013 10:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

Air - GC/MS VOA
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-INFLUENT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**33**	**J**	56	28	ppb v/v			03/25/13 15:08	188
1,1,2,2-Tetrachloroethane	**57**	**J**	75	19	ppb v/v			03/25/13 15:08	188
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		75	38	ppb v/v			03/25/13 15:08	188
1,1,2-Trichloroethane	**100**		75	28	ppb v/v			03/25/13 15:08	188
1,1-Dichloroethane	**130**		56	28	ppb v/v			03/25/13 15:08	188
1,1-Dichloroethene	ND		150	38	ppb v/v			03/25/13 15:08	188
1,2,4-Trichlorobenzene	ND		470	130	ppb v/v			03/25/13 15:08	188
1,2,4-Trimethylbenzene	ND		150	38	ppb v/v			03/25/13 15:08	188
1,2-Dibromoethane (EDB)	ND		150	38	ppb v/v			03/25/13 15:08	188
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		75	28	ppb v/v			03/25/13 15:08	188
1,2-Dichlorobenzene	ND		75	28	ppb v/v			03/25/13 15:08	188
1,2-Dichloroethane	**330**		150	38	ppb v/v			03/25/13 15:08	188
1,2-Dichloropropane	ND		75	28	ppb v/v			03/25/13 15:08	188
1,3,5-Trimethylbenzene	ND		75	28	ppb v/v			03/25/13 15:08	188
1,3-Dichlorobenzene	ND		75	28	ppb v/v			03/25/13 15:08	188
1,4-Dichlorobenzene	ND		75	28	ppb v/v			03/25/13 15:08	188
2-Butanone (MEK)	**4500**		150	75	ppb v/v			03/25/13 15:08	188
2-Hexanone	ND		150	38	ppb v/v			03/25/13 15:08	188
4-Ethyltoluene	ND		75	28	ppb v/v			03/25/13 15:08	188
4-Methyl-2-pentanone (MIBK)	**950**		75	28	ppb v/v			03/25/13 15:08	188
Acetone	**8500**		450	230	ppb v/v			03/26/13 18:34	376
Benzene	**40**	**J**	75	38	ppb v/v			03/25/13 15:08	188
Benzyl chloride	ND		150	38	ppb v/v			03/25/13 15:08	188
Bromodichloromethane	ND		56	28	ppb v/v			03/25/13 15:08	188
Bromoform	ND		150	38	ppb v/v			03/25/13 15:08	188
Bromomethane	**38**	**J**	150	38	ppb v/v			03/25/13 15:08	188
Carbon disulfide	**200**		150	38	ppb v/v			03/25/13 15:08	188
Carbon tetrachloride	ND		150	38	ppb v/v			03/25/13 15:08	188
Chlorobenzene	**20**	**J**	56	19	ppb v/v			03/25/13 15:08	188
Chloroethane	ND		280	130	ppb v/v			03/25/13 15:08	188
Chloroform	**270**		56	19	ppb v/v			03/25/13 15:08	188
Chloromethane	ND		150	75	ppb v/v			03/25/13 15:08	188
cis-1,2-Dichloroethene	**200**		75	38	ppb v/v			03/25/13 15:08	188
cis-1,3-Dichloropropene	ND		75	28	ppb v/v			03/25/13 15:08	188
Dibromochloromethane	ND		75	19	ppb v/v			03/25/13 15:08	188
Dichlorodifluoromethane	ND		75	28	ppb v/v			03/25/13 15:08	188
Ethylbenzene	ND		75	28	ppb v/v			03/25/13 15:08	188
Hexachlorobutadiene	ND		150	38	ppb v/v			03/25/13 15:08	188
m,p-Xylene	**75**	**J**	150	38	ppb v/v			03/25/13 15:08	188
Methylene chloride	**13000**		150	75	ppb v/v			03/26/13 18:34	376
o-Xylene	**42**	**J**	75	28	ppb v/v			03/25/13 15:08	188
Styrene	ND		75	28	ppb v/v			03/25/13 15:08	188
Tetrachloroethene	ND		75	28	ppb v/v			03/25/13 15:08	188
Toluene	**140**		75	28	ppb v/v			03/25/13 15:08	188
trans-1,2-Dichloroethene	ND		75	38	ppb v/v			03/25/13 15:08	188
trans-1,3-Dichloropropene	ND		75	28	ppb v/v			03/25/13 15:08	188
Trichloroethene	**270**		75	28	ppb v/v			03/25/13 15:08	188
Trichlorofluoromethane	ND		75	28	ppb v/v			03/25/13 15:08	188

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-INFLUENT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl acetate	ND		150	38	ppb v/v			03/25/13 15:08	188
Vinyl chloride	**63**	**J**	75	28	ppb v/v			03/25/13 15:08	188

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Propene	*220*	*	*ppb v/v*		*4.02*	*115-07-1*		*03/25/13 15:08*	*188*
Tetrahydrofuran	*1700*		*ppb v/v*		*11.28*	*109-99-9*		*03/25/13 15:08*	*188*
Octane, 4-methyl-	*570*	*T J N*	*ppb v/v*		*16.15*	*2216-34-4*		*03/26/13 18:34*	*376*
Acetamide, N,N-dimethyl-	*1700*	*T J N*	*ppb v/v*		*17.58*	*127-19-5*		*03/26/13 18:34*	*376*
Decane, 3,6-dimethyl-	*490*	*T J N*	*ppb v/v*		*19.65*	*17312-53-7*		*03/26/13 18:34*	*376*
Decane, 3,7-dimethyl-	*840*	*T J N*	*ppb v/v*		*20.38*	*17312-54-8*		*03/26/13 18:34*	*376*
Dodecane	*350*	*T J N*	*ppb v/v*		*21.99*	*112-40-3*		*03/26/13 18:34*	*376*
Tentatively Identified Compound	*None*		*ppb v/v*					*03/25/13 15:08*	*188*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 130*		*03/25/13 15:08*	*188*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 130*		*03/26/13 18:34*	*376*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*03/25/13 15:08*	*188*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*03/26/13 18:34*	*376*
Toluene-d8 (Surr)	*96*		*70 - 130*		*03/25/13 15:08*	*188*
Toluene-d8 (Surr)	*95*		*70 - 130*		*03/26/13 18:34*	*376*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-MIDPOINT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-2
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30	0.15	ppb v/v			03/25/13 04:12	1
1,1,2,2-Tetrachloroethane	ND		0.40	0.10	ppb v/v			03/25/13 04:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.20	ppb v/v			03/25/13 04:12	1
1,1,2-Trichloroethane	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,1-Dichloroethane	**0.16**	**J**	0.30	0.15	ppb v/v			03/25/13 04:12	1
1,1-Dichloroethene	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
1,2,4-Trichlorobenzene	ND		2.5	0.70	ppb v/v			03/25/13 04:12	1
1,2,4-Trimethylbenzene	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
1,2-Dibromoethane (EDB)	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,2-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,2-Dichloroethane	**0.34**	**J**	0.80	0.20	ppb v/v			03/25/13 04:12	1
1,2-Dichloropropane	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,3,5-Trimethylbenzene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,3-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
1,4-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
2-Butanone (MEK)	**7.4**		0.80	0.40	ppb v/v			03/25/13 04:12	1
2-Hexanone	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
4-Ethyltoluene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
4-Methyl-2-pentanone (MIBK)	**0.57**		0.40	0.15	ppb v/v			03/25/13 04:12	1
Acetone	**32**		1.2	0.60	ppb v/v			03/25/13 04:12	1
Benzene	ND		0.40	0.20	ppb v/v			03/25/13 04:12	1
Benzyl chloride	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
Bromodichloromethane	ND		0.30	0.15	ppb v/v			03/25/13 04:12	1
Bromoform	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
Bromomethane	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
Carbon disulfide	**0.45**	**J**	0.80	0.20	ppb v/v			03/25/13 04:12	1
Carbon tetrachloride	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
Chlorobenzene	ND		0.30	0.10	ppb v/v			03/25/13 04:12	1
Chloroethane	ND		1.5	0.70	ppb v/v			03/25/13 04:12	1
Chloroform	**0.33**		0.30	0.10	ppb v/v			03/25/13 04:12	1
Chloromethane	**1.2**		0.80	0.40	ppb v/v			03/25/13 04:12	1
cis-1,2-Dichloroethene	**0.35**	**J**	0.40	0.20	ppb v/v			03/25/13 04:12	1
cis-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
Dibromochloromethane	ND		0.40	0.10	ppb v/v			03/25/13 04:12	1
Dichlorodifluoromethane	**0.50**		0.40	0.15	ppb v/v			03/25/13 04:12	1
Ethylbenzene	**0.16**	**J**	0.40	0.15	ppb v/v			03/25/13 04:12	1
Hexachlorobutadiene	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
m,p-Xylene	**0.66**	**J**	0.80	0.20	ppb v/v			03/25/13 04:12	1
Methylene chloride	**15**		0.40	0.20	ppb v/v			03/25/13 04:12	1
o-Xylene	**0.22**	**J**	0.40	0.15	ppb v/v			03/25/13 04:12	1
Styrene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
Tetrachloroethene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
Toluene	**0.42**		0.40	0.15	ppb v/v			03/25/13 04:12	1
trans-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/25/13 04:12	1
trans-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 04:12	1
Trichloroethene	**0.31**	**J**	0.40	0.15	ppb v/v			03/25/13 04:12	1
Trichlorofluoromethane	**0.22**	**J**	0.40	0.15	ppb v/v			03/25/13 04:12	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-MIDPOINT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-2
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl acetate	ND		0.80	0.20	ppb v/v			03/25/13 04:12	1
Vinyl chloride	**0.15**	**J**	0.40	0.15	ppb v/v			03/25/13 04:12	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Propene	*6.1*	*	*ppb v/v*		*4.02*	*115-07-1*		*03/25/13 04:12*	*1*
Chlorodifluoromethane	*0.67*	*J*	*ppb v/v*		*4.04*	*75-45-6*		*03/25/13 04:12*	*1*
Butane	*1.5*		*ppb v/v*		*4.75*	*106-97-8*		*03/25/13 04:12*	*1*
Acetaldehyde	*7.6*	*T J N*	*ppb v/v*		*4.98*	*75-7-0*		*03/25/13 04:12*	*1*
Acrolein	*2.0*	*J*	*ppb v/v*		*7.20*	*107-02-8*		*03/25/13 04:12*	*1*
Tetrahydrofuran	*1.3*	*J*	*ppb v/v*		*11.28*	*109-99-9*		*03/25/13 04:12*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*		*03/25/13 04:12*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*03/25/13 04:12*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*03/25/13 04:12*	*1*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-EFFLUENT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-3
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30	0.15	ppb v/v			03/25/13 05:01	1
1,1,2,2-Tetrachloroethane	ND		0.40	0.10	ppb v/v			03/25/13 05:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.20	ppb v/v			03/25/13 05:01	1
1,1,2-Trichloroethane	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,1-Dichloroethane	ND		0.30	0.15	ppb v/v			03/25/13 05:01	1
1,1-Dichloroethene	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
1,2,4-Trichlorobenzene	ND		2.5	0.70	ppb v/v			03/25/13 05:01	1
1,2,4-Trimethylbenzene	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
1,2-Dibromoethane (EDB)	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,2-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,2-Dichloroethane	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
1,2-Dichloropropane	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,3,5-Trimethylbenzene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,3-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
1,4-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
2-Butanone (MEK)	ND		0.80	0.40	ppb v/v			03/25/13 05:01	1
2-Hexanone	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
4-Ethyltoluene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
4-Methyl-2-pentanone (MIBK)	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Acetone	**1.9**		1.2	0.60	ppb v/v			03/25/13 05:01	1
Benzene	ND		0.40	0.20	ppb v/v			03/25/13 05:01	1
Benzyl chloride	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Bromodichloromethane	ND		0.30	0.15	ppb v/v			03/25/13 05:01	1
Bromoform	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Bromomethane	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Carbon disulfide	**0.31**	**J**	0.80	0.20	ppb v/v			03/25/13 05:01	1
Carbon tetrachloride	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Chlorobenzene	ND		0.30	0.10	ppb v/v			03/25/13 05:01	1
Chloroethane	ND		1.5	0.70	ppb v/v			03/25/13 05:01	1
Chloroform	ND		0.30	0.10	ppb v/v			03/25/13 05:01	1
Chloromethane	ND		0.80	0.40	ppb v/v			03/25/13 05:01	1
cis-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/25/13 05:01	1
cis-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Dibromochloromethane	ND		0.40	0.10	ppb v/v			03/25/13 05:01	1
Dichlorodifluoromethane	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Ethylbenzene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Hexachlorobutadiene	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
m,p-Xylene	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Methylene chloride	**0.27**	**J**	0.40	0.20	ppb v/v			03/25/13 05:01	1
o-Xylene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Styrene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Tetrachloroethene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Toluene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
trans-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/25/13 05:01	1
trans-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Trichloroethene	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1
Trichlorofluoromethane	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-EFFLUENT
Date Collected: 03/16/13 11:17
Date Received: 03/20/13 10:20
Sample Container: Summa Canister 1L

Lab Sample ID: 480-34695-3
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl acetate	ND		0.80	0.20	ppb v/v			03/25/13 05:01	1
Vinyl chloride	ND		0.40	0.15	ppb v/v			03/25/13 05:01	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Propene	*1.2*	*	*ppb v/v*		*4.02*	*115-07-1*		*03/25/13 05:01*	*1*
Butane	*1.2*		*ppb v/v*		*4.97*	*106-97-8*		*03/25/13 05:01*	*1*
Cyclotetrasiloxane, octamethyl-	*3.8*	*T J N*	*ppb v/v*		*17.93*	*556-67-2*		*03/25/13 05:01*	*1*
Benzeneethanamine, N-[(pentafluorophenyl	*1.4*	*T J N*	*ppb v/v*		*20.37*	*55429-85-1*		*03/25/13 05:01*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*		*03/25/13 05:01*	*1*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*03/25/13 05:01*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*		*03/25/13 05:01*	*1*

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 340-4388/5
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30	0.15	ppb v/v			03/24/13 12:49	1
1,1,2,2-Tetrachloroethane	ND		0.40	0.10	ppb v/v			03/24/13 12:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.20	ppb v/v			03/24/13 12:49	1
1,1,2-Trichloroethane	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,1-Dichloroethane	ND		0.30	0.15	ppb v/v			03/24/13 12:49	1
1,1-Dichloroethene	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
1,2,4-Trichlorobenzene	ND		2.5	0.70	ppb v/v			03/24/13 12:49	1
1,2,4-Trimethylbenzene	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
1,2-Dibromoethane (EDB)	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,2-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,2-Dichloroethane	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
1,2-Dichloropropane	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,3,5-Trimethylbenzene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,3-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
1,4-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
2-Butanone (MEK)	ND		0.80	0.40	ppb v/v			03/24/13 12:49	1
2-Hexanone	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
4-Ethyltoluene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
4-Methyl-2-pentanone (MIBK)	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Acetone	ND		1.2	0.60	ppb v/v			03/24/13 12:49	1
Benzene	ND		0.40	0.20	ppb v/v			03/24/13 12:49	1
Benzyl chloride	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Bromodichloromethane	ND		0.30	0.15	ppb v/v			03/24/13 12:49	1
Bromoform	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Bromomethane	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Carbon disulfide	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Carbon tetrachloride	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Chlorobenzene	ND		0.30	0.10	ppb v/v			03/24/13 12:49	1
Chloroethane	ND		1.5	0.70	ppb v/v			03/24/13 12:49	1
Chloroform	ND		0.30	0.10	ppb v/v			03/24/13 12:49	1
Chloromethane	ND		0.80	0.40	ppb v/v			03/24/13 12:49	1
cis-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/24/13 12:49	1
cis-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Dibromochloromethane	ND		0.40	0.10	ppb v/v			03/24/13 12:49	1
Dichlorodifluoromethane	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Ethylbenzene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Hexachlorobutadiene	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
m,p-Xylene	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Methylene chloride	ND		0.40	0.20	ppb v/v			03/24/13 12:49	1
o-Xylene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Styrene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Tetrachloroethene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Toluene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
trans-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/24/13 12:49	1
trans-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Trichloroethene	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1
Trichlorofluoromethane	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 340-4388/5
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl acetate	ND		0.80	0.20	ppb v/v			03/24/13 12:49	1
Vinyl chloride	ND		0.40	0.15	ppb v/v			03/24/13 12:49	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
1,2,3-Trichlorobenzene	*0.235*	*J*	*ppb v/v*		*24.55*	*87-61-6*		*03/24/13 12:49*	*1*
Tentatively Identified Compound	*None*		*ppb v/v*					*03/24/13 12:49*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 130*		*03/24/13 12:49*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*03/24/13 12:49*	*1*
Toluene-d8 (Surr)	*91*		*70 - 130*		*03/24/13 12:49*	*1*

Lab Sample ID: LCS 340-4388/3
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.85		ppb v/v		99	70 - 130
1,1,2,2-Tetrachloroethane	11.0	11.6		ppb v/v		105	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.92		ppb v/v		89	70 - 130
1,1,2-Trichloroethane	10.9	10.5		ppb v/v		96	70 - 130
1,1-Dichloroethane	10.0	9.66		ppb v/v		97	70 - 130
1,1-Dichloroethene	10.0	9.25		ppb v/v		93	70 - 130
1,2,4-Trichlorobenzene	11.0	12.1		ppb v/v		110	70 - 130
1,2,4-Trimethylbenzene	10.8	11.6		ppb v/v		108	70 - 130
1,2-Dibromoethane (EDB)	10.8	10.9		ppb v/v		101	70 - 130
1,2-Dichloro-1,1,2,2-tetrafluoroethane	10.0	11.9		ppb v/v		119	70 - 130
1,2-Dichlorobenzene	10.9	11.5		ppb v/v		106	70 - 130
1,2-Dichloroethane	10.8	11.7		ppb v/v		108	70 - 130
1,2-Dichloropropane	10.8	11.3		ppb v/v		105	70 - 130
1,3,5-Trimethylbenzene	11.0	11.5		ppb v/v		104	70 - 130
1,3-Dichlorobenzene	11.0	11.6		ppb v/v		106	70 - 130
1,4-Dichlorobenzene	10.9	11.8		ppb v/v		109	70 - 130
2-Butanone (MEK)	10.8	10.2		ppb v/v		95	70 - 130
2-Hexanone	11.0	11.5		ppb v/v		105	70 - 130
4-Ethyltoluene	10.8	11.5		ppb v/v		106	70 - 130
4-Methyl-2-pentanone (MIBK)	10.8	13.1		ppb v/v		122	70 - 130
Acetone	10.0	8.71		ppb v/v		87	70 - 130
Benzene	10.6	10.9		ppb v/v		103	70 - 130
Benzyl chloride	11.0	12.6		ppb v/v		114	70 - 130
Bromodichloromethane	10.9	12.5		ppb v/v		114	70 - 130
Bromoform	10.8	11.7		ppb v/v		109	70 - 130
Bromomethane	10.0	10.6		ppb v/v		106	70 - 130
Carbon disulfide	10.0	10.1		ppb v/v		101	70 - 130
Carbon tetrachloride	10.8	11.7		ppb v/v		109	70 - 130
Chlorobenzene	11.0	10.3		ppb v/v		94	70 - 130

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 340-4388/3
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	10.0	11.1		ppb v/v		111	70 - 130
Chloroform	10.0	9.73		ppb v/v		97	70 - 130
Chloromethane	10.0	11.3		ppb v/v		113	70 - 130
cis-1,2-Dichloroethene	10.6	10.5		ppb v/v		99	70 - 130
cis-1,3-Dichloropropene	10.0	12.6		ppb v/v		126	70 - 130
Dibromochloromethane	11.0	11.5		ppb v/v		104	70 - 130
Dichlorodifluoromethane	10.0	11.2		ppb v/v		112	70 - 130
Ethylbenzene	10.9	11.2		ppb v/v		103	70 - 130
Hexachlorobutadiene	11.0	11.4		ppb v/v		103	70 - 130
m,p-Xylene	21.6	21.9		ppb v/v		101	70 - 130
Methylene chloride	11.0	10.4		ppb v/v		94	70 - 130
o-Xylene	11.0	11.7		ppb v/v		107	70 - 130
Styrene	11.0	12.0		ppb v/v		109	70 - 130
Tetrachloroethene	10.0	9.37		ppb v/v		94	70 - 130
Toluene	10.9	11.9		ppb v/v		109	70 - 130
trans-1,2-Dichloroethene	10.0	9.80		ppb v/v		98	70 - 130
trans-1,3-Dichloropropene	11.0	11.1		ppb v/v		101	70 - 130
Trichloroethene	10.9	12.0		ppb v/v		110	70 - 130
Trichlorofluoromethane	10.0	9.77		ppb v/v		98	70 - 130
Vinyl acetate	11.0	12.3		ppb v/v		112	70 - 130
Vinyl chloride	10.0	11.5		ppb v/v		115	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Toluene-d8 (Surr)	*112*		*70 - 130*

Lab Sample ID: LCSD 340-4388/4
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	10.0	9.53		ppb v/v		95	70 - 130	3	25
1,1,2,2-Tetrachloroethane	11.0	11.6		ppb v/v		106	70 - 130	0	25
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.56		ppb v/v		86	70 - 130	4	25
1,1,2-Trichloroethane	10.9	10.7		ppb v/v		98	70 - 130	2	25
1,1-Dichloroethane	10.0	9.39		ppb v/v		94	70 - 130	3	25
1,1-Dichloroethene	10.0	9.00		ppb v/v		90	70 - 130	3	25
1,2,4-Trichlorobenzene	11.0	12.0		ppb v/v		109	70 - 130	1	25
1,2,4-Trimethylbenzene	10.8	11.7		ppb v/v		108	70 - 130	1	25
1,2-Dibromoethane (EDB)	10.8	11.2		ppb v/v		104	70 - 130	3	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	10.0	10.7		ppb v/v		107	70 - 130	11	25
1,2-Dichlorobenzene	10.9	11.7		ppb v/v		107	70 - 130	1	25
1,2-Dichloroethane	10.8	11.5		ppb v/v		107	70 - 130	1	25
1,2-Dichloropropane	10.8	11.6		ppb v/v		107	70 - 130	2	25
1,3,5-Trimethylbenzene	11.0	11.8		ppb v/v		107	70 - 130	2	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 340-4388/4
Matrix: Air
Analysis Batch: 4388

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichlorobenzene	11.0	11.8		ppb v/v		107	70 - 130	1	25
1,4-Dichlorobenzene	10.9	12.1		ppb v/v		111	70 - 130	2	25
2-Butanone (MEK)	10.8	10.2		ppb v/v		95	70 - 130	0	25
2-Hexanone	11.0	11.4		ppb v/v		104	70 - 130	1	25
4-Ethyltoluene	10.8	11.6		ppb v/v		108	70 - 130	1	25
4-Methyl-2-pentanone (MIBK)	10.8	12.9		ppb v/v		120	70 - 130	2	25
Acetone	10.0	8.46		ppb v/v		85	70 - 130	3	25
Benzene	10.6	10.9		ppb v/v		103	70 - 130	0	25
Benzyl chloride	11.0	12.6		ppb v/v		115	70 - 130	0	25
Bromodichloromethane	10.9	12.1		ppb v/v		111	70 - 130	3	25
Bromoform	10.8	11.9		ppb v/v		111	70 - 130	2	25
Bromomethane	10.0	9.64		ppb v/v		96	70 - 130	10	25
Carbon disulfide	10.0	9.83		ppb v/v		98	70 - 130	3	25
Carbon tetrachloride	10.8	11.3		ppb v/v		105	70 - 130	4	25
Chlorobenzene	11.0	10.4		ppb v/v		95	70 - 130	1	25
Chloroethane	10.0	9.82		ppb v/v		98	70 - 130	12	25
Chloroform	10.0	9.41		ppb v/v		94	70 - 130	3	25
Chloromethane	10.0	10.5		ppb v/v		105	70 - 130	8	25
cis-1,2-Dichloroethene	10.6	10.2		ppb v/v		96	70 - 130	3	25
cis-1,3-Dichloropropene	10.0	12.2		ppb v/v		122	70 - 130	3	25
Dibromochloromethane	11.0	11.8		ppb v/v		107	70 - 130	3	25
Dichlorodifluoromethane	10.0	9.90		ppb v/v		99	70 - 130	12	25
Ethylbenzene	10.9	11.5		ppb v/v		105	70 - 130	2	25
Hexachlorobutadiene	11.0	11.3		ppb v/v		103	70 - 130	1	25
m,p-Xylene	21.6	22.6		ppb v/v		104	70 - 130	3	25
Methylene chloride	11.0	10.1		ppb v/v		92	70 - 130	3	25
o-Xylene	11.0	11.9		ppb v/v		108	70 - 130	2	25
Styrene	11.0	12.2		ppb v/v		111	70 - 130	2	25
Tetrachloroethene	10.0	9.68		ppb v/v		97	70 - 130	3	25
Toluene	10.9	11.7		ppb v/v		107	70 - 130	1	25
trans-1,2-Dichloroethene	10.0	9.55		ppb v/v		96	70 - 130	3	25
trans-1,3-Dichloropropene	11.0	11.3		ppb v/v		103	70 - 130	2	25
Trichloroethene	10.9	11.8		ppb v/v		108	70 - 130	2	25
Trichlorofluoromethane	10.0	9.26		ppb v/v		93	70 - 130	5	25
Vinyl acetate	11.0	12.0		ppb v/v		109	70 - 130	2	25
Vinyl chloride	10.0	10.6		ppb v/v		106	70 - 130	8	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
Toluene-d8 (Surr)	*106*		*70 - 130*

Lab Sample ID: MB 340-4392/5
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30	0.15	ppb v/v			03/25/13 12:46	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 340-4392/5
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		0.40	0.10	ppb v/v			03/25/13 12:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.20	ppb v/v			03/25/13 12:46	1
1,1,2-Trichloroethane	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,1-Dichloroethane	ND		0.30	0.15	ppb v/v			03/25/13 12:46	1
1,1-Dichloroethene	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
1,2,4-Trichlorobenzene	ND		2.5	0.70	ppb v/v			03/25/13 12:46	1
1,2,4-Trimethylbenzene	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
1,2-Dibromoethane (EDB)	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,2-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,2-Dichloroethane	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
1,2-Dichloropropane	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,3,5-Trimethylbenzene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,3-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
1,4-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
2-Butanone (MEK)	ND		0.80	0.40	ppb v/v			03/25/13 12:46	1
2-Hexanone	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
4-Ethyltoluene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
4-Methyl-2-pentanone (MIBK)	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Acetone	ND		1.2	0.60	ppb v/v			03/25/13 12:46	1
Benzene	ND		0.40	0.20	ppb v/v			03/25/13 12:46	1
Benzyl chloride	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Bromodichloromethane	ND		0.30	0.15	ppb v/v			03/25/13 12:46	1
Bromoform	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Bromomethane	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Carbon disulfide	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Carbon tetrachloride	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Chlorobenzene	ND		0.30	0.10	ppb v/v			03/25/13 12:46	1
Chloroethane	ND		1.5	0.70	ppb v/v			03/25/13 12:46	1
Chloroform	ND		0.30	0.10	ppb v/v			03/25/13 12:46	1
Chloromethane	ND		0.80	0.40	ppb v/v			03/25/13 12:46	1
cis-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/25/13 12:46	1
cis-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Dibromochloromethane	ND		0.40	0.10	ppb v/v			03/25/13 12:46	1
Dichlorodifluoromethane	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Ethylbenzene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Hexachlorobutadiene	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
m,p-Xylene	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1
Methylene chloride	ND		0.40	0.20	ppb v/v			03/25/13 12:46	1
o-Xylene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Styrene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Tetrachloroethene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Toluene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
trans-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/25/13 12:46	1
trans-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Trichloroethene	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Trichlorofluoromethane	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1
Vinyl acetate	ND		0.80	0.20	ppb v/v			03/25/13 12:46	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 340-4392/5
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.40	0.15	ppb v/v			03/25/13 12:46	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
1,2,3-Trichlorobenzene	*0.246*	*J*	*ppb v/v*		*24.55*	*87-61-6*		*03/25/13 12:46*	*1*
Tentatively Identified Compound	*None*		*ppb v/v*					*03/25/13 12:46*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 130*		*03/25/13 12:46*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*03/25/13 12:46*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*		*03/25/13 12:46*	*1*

Lab Sample ID: LCS 340-4392/3
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.36		ppb v/v		94	70 - 130
1,1,2,2-Tetrachloroethane	11.0	11.3		ppb v/v		103	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.74		ppb v/v		87	70 - 130
1,1,2-Trichloroethane	10.9	10.5		ppb v/v		97	70 - 130
1,1-Dichloroethane	10.0	9.27		ppb v/v		93	70 - 130
1,1-Dichloroethene	10.0	9.18		ppb v/v		92	70 - 130
1,2,4-Trichlorobenzene	11.0	12.0		ppb v/v		109	70 - 130
1,2,4-Trimethylbenzene	10.8	11.0		ppb v/v		102	70 - 130
1,2-Dibromoethane (EDB)	10.8	11.1		ppb v/v		103	70 - 130
1,2-Dichloro-1,1,2,2-tetrafluoroethane	10.0	9.64		ppb v/v		96	70 - 130
1,2-Dichlorobenzene	10.9	10.9		ppb v/v		100	70 - 130
1,2-Dichloroethane	10.8	10.9		ppb v/v		100	70 - 130
1,2-Dichloropropane	10.8	11.3		ppb v/v		105	70 - 130
1,3,5-Trimethylbenzene	11.0	10.9		ppb v/v		99	70 - 130
1,3-Dichlorobenzene	11.0	10.9		ppb v/v		99	70 - 130
1,4-Dichlorobenzene	10.9	11.3		ppb v/v		104	70 - 130
2-Butanone (MEK)	10.8	10.1		ppb v/v		94	70 - 130
2-Hexanone	11.0	12.0		ppb v/v		109	70 - 130
4-Ethyltoluene	10.8	11.4		ppb v/v		106	70 - 130
4-Methyl-2-pentanone (MIBK)	10.8	12.6		ppb v/v		116	70 - 130
Acetone	10.0	8.45		ppb v/v		84	70 - 130
Benzene	10.6	10.7		ppb v/v		100	70 - 130
Benzyl chloride	11.0	11.9		ppb v/v		108	70 - 130
Bromodichloromethane	10.9	11.5		ppb v/v		106	70 - 130
Bromoform	10.8	11.6		ppb v/v		107	70 - 130
Bromomethane	10.0	9.77		ppb v/v		98	70 - 130
Carbon disulfide	10.0	10.2		ppb v/v		102	70 - 130
Carbon tetrachloride	10.8	10.7		ppb v/v		99	70 - 130
Chlorobenzene	11.0	10.3		ppb v/v		94	70 - 130
Chloroethane	10.0	10.1		ppb v/v		101	70 - 130

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 340-4392/3
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloroform			10.0	9.35		ppb v/v		93	70 - 130		
Chloromethane			10.0	9.08		ppb v/v		91	70 - 130		
cis-1,2-Dichloroethene			10.6	10.3		ppb v/v		97	70 - 130		
cis-1,3-Dichloropropene			10.0	12.1		ppb v/v		121	70 - 130		
Dibromochloromethane			11.0	11.5		ppb v/v		105	70 - 130		
Dichlorodifluoromethane			10.0	9.39		ppb v/v		94	70 - 130		
Ethylbenzene			10.9	11.1		ppb v/v		102	70 - 130		
Hexachlorobutadiene			11.0	10.7		ppb v/v		97	70 - 130		
m,p-Xylene			21.6	21.9		ppb v/v		102	70 - 130		
Methylene chloride			11.0	10.1		ppb v/v		92	70 - 130		
o-Xylene			11.0	11.8		ppb v/v		107	70 - 130		
Styrene			11.0	12.0		ppb v/v		109	70 - 130		
Tetrachloroethene			10.0	9.84		ppb v/v		98	70 - 130		
Toluene			10.9	11.2		ppb v/v		103	70 - 130		
trans-1,2-Dichloroethene			10.0	9.77		ppb v/v		98	70 - 130		
trans-1,3-Dichloropropene			11.0	11.0		ppb v/v		100	70 - 130		
Trichloroethene			10.9	11.6		ppb v/v		106	70 - 130		
Trichlorofluoromethane			10.0	8.89		ppb v/v		89	70 - 130		
Vinyl acetate			11.0	12.0		ppb v/v		109	70 - 130		
Vinyl chloride			10.0	9.17		ppb v/v		92	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Toluene-d8 (Surr)	*105*		*70 - 130*

Lab Sample ID: LCSD 340-4392/4
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			10.0	8.79		ppb v/v		88	70 - 130	6	25
1,1,2,2-Tetrachloroethane			11.0	11.0		ppb v/v		100	70 - 130	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane			10.0	8.05		ppb v/v		80	70 - 130	8	25
1,1,2-Trichloroethane			10.9	10.2		ppb v/v		93	70 - 130	4	25
1,1-Dichloroethane			10.0	9.05		ppb v/v		91	70 - 130	2	25
1,1-Dichloroethene			10.0	8.83		ppb v/v		88	70 - 130	4	25
1,2,4-Trichlorobenzene			11.0	11.1		ppb v/v		101	70 - 130	7	25
1,2,4-Trimethylbenzene			10.8	10.5		ppb v/v		97	70 - 130	5	25
1,2-Dibromoethane (EDB)			10.8	10.8		ppb v/v		100	70 - 130	3	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane			10.0	8.78		ppb v/v		88	70 - 130	9	25
1,2-Dichlorobenzene			10.9	10.2		ppb v/v		94	70 - 130	6	25
1,2-Dichloroethane			10.8	9.96		ppb v/v		92	70 - 130	9	25
1,2-Dichloropropane			10.8	10.8		ppb v/v		100	70 - 130	5	25
1,3,5-Trimethylbenzene			11.0	10.5		ppb v/v		95	70 - 130	4	25
1,3-Dichlorobenzene			11.0	10.5		ppb v/v		95	70 - 130	4	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 340-4392/4
Matrix: Air
Analysis Batch: 4392

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene			10.9	10.7		ppb v/v		98	70 - 130	5	25
2-Butanone (MEK)			10.8	10.4		ppb v/v		96	70 - 130	2	25
2-Hexanone			11.0	11.6		ppb v/v		106	70 - 130	3	25
4-Ethyltoluene			10.8	10.9		ppb v/v		101	70 - 130	5	25
4-Methyl-2-pentanone (MIBK)			10.8	11.9		ppb v/v		111	70 - 130	5	25
Acetone			10.0	8.12		ppb v/v		81	70 - 130	4	25
Benzene			10.6	10.1		ppb v/v		95	70 - 130	5	25
Benzyl chloride			11.0	11.4		ppb v/v		104	70 - 130	4	25
Bromodichloromethane			10.9	10.5		ppb v/v		96	70 - 130	9	25
Bromoform			10.8	11.1		ppb v/v		103	70 - 130	4	25
Bromomethane			10.0	9.23		ppb v/v		92	70 - 130	6	25
Carbon disulfide			10.0	9.83		ppb v/v		98	70 - 130	3	25
Carbon tetrachloride			10.8	9.51		ppb v/v		88	70 - 130	12	25
Chlorobenzene			11.0	10.4		ppb v/v		95	70 - 130	1	25
Chloroethane			10.0	9.66		ppb v/v		97	70 - 130	4	25
Chloroform			10.0	8.80		ppb v/v		88	70 - 130	6	25
Chloromethane			10.0	7.23		ppb v/v		72	70 - 130	23	25
cis-1,2-Dichloroethene			10.6	10.0		ppb v/v		95	70 - 130	3	25
cis-1,3-Dichloropropene			10.0	11.3		ppb v/v		113	70 - 130	7	25
Dibromochloromethane			11.0	11.0		ppb v/v		100	70 - 130	5	25
Dichlorodifluoromethane			10.0	8.30		ppb v/v		83	70 - 130	12	25
Ethylbenzene			10.9	10.9		ppb v/v		100	70 - 130	2	25
Hexachlorobutadiene			11.0	9.92		ppb v/v		90	70 - 130	7	25
m,p-Xylene			21.6	21.3		ppb v/v		98	70 - 130	3	25
Methylene chloride			11.0	9.63		ppb v/v		88	70 - 130	4	25
o-Xylene			11.0	11.3		ppb v/v		103	70 - 130	4	25
Styrene			11.0	11.7		ppb v/v		106	70 - 130	3	25
Tetrachloroethene			10.0	9.46		ppb v/v		95	70 - 130	4	25
Toluene			10.9	10.4		ppb v/v		96	70 - 130	7	25
trans-1,2-Dichloroethene			10.0	9.42		ppb v/v		94	70 - 130	4	25
trans-1,3-Dichloropropene			11.0	10.7		ppb v/v		97	70 - 130	3	25
Trichloroethene			10.9	10.9		ppb v/v		100	70 - 130	6	25
Trichlorofluoromethane			10.0	8.17		ppb v/v		82	70 - 130	8	25
Vinyl acetate			11.0	11.8		ppb v/v		107	70 - 130	2	25
Vinyl chloride			10.0	7.68		ppb v/v		77	70 - 130	18	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Toluene-d8 (Surr)	*102*		*70 - 130*

Lab Sample ID: MB 340-4402/9
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30	0.15	ppb v/v			03/26/13 16:19	1
1,1,2,2-Tetrachloroethane	ND		0.40	0.10	ppb v/v			03/26/13 16:19	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 340-4402/9
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.20	ppb v/v			03/26/13 16:19	1
1,1,2-Trichloroethane	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,1-Dichloroethane	ND		0.30	0.15	ppb v/v			03/26/13 16:19	1
1,1-Dichloroethene	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
1,2,4-Trichlorobenzene	ND		2.5	0.70	ppb v/v			03/26/13 16:19	1
1,2,4-Trimethylbenzene	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
1,2-Dibromoethane (EDB)	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,2-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,2-Dichloroethane	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
1,2-Dichloropropane	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,3,5-Trimethylbenzene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,3-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
1,4-Dichlorobenzene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
2-Butanone (MEK)	ND		0.80	0.40	ppb v/v			03/26/13 16:19	1
2-Hexanone	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
4-Ethyltoluene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
4-Methyl-2-pentanone (MIBK)	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Acetone	ND		1.2	0.60	ppb v/v			03/26/13 16:19	1
Benzene	ND		0.40	0.20	ppb v/v			03/26/13 16:19	1
Benzyl chloride	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Bromodichloromethane	ND		0.30	0.15	ppb v/v			03/26/13 16:19	1
Bromoform	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Bromomethane	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Carbon disulfide	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Carbon tetrachloride	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Chlorobenzene	ND		0.30	0.10	ppb v/v			03/26/13 16:19	1
Chloroethane	ND		1.5	0.70	ppb v/v			03/26/13 16:19	1
Chloroform	ND		0.30	0.10	ppb v/v			03/26/13 16:19	1
Chloromethane	ND		0.80	0.40	ppb v/v			03/26/13 16:19	1
cis-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/26/13 16:19	1
cis-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Dibromochloromethane	ND		0.40	0.10	ppb v/v			03/26/13 16:19	1
Dichlorodifluoromethane	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Ethylbenzene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Hexachlorobutadiene	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
m,p-Xylene	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Methylene chloride	ND		0.40	0.20	ppb v/v			03/26/13 16:19	1
o-Xylene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Styrene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Tetrachloroethene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Toluene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
trans-1,2-Dichloroethene	ND		0.40	0.20	ppb v/v			03/26/13 16:19	1
trans-1,3-Dichloropropene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Trichloroethene	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Trichlorofluoromethane	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1
Vinyl acetate	ND		0.80	0.20	ppb v/v			03/26/13 16:19	1
Vinyl chloride	ND		0.40	0.15	ppb v/v			03/26/13 16:19	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 340-4402/9
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Method Blank
Prep Type: Total/NA

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ppb v/v					03/26/13 16:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		03/26/13 16:19	1
4-Bromofluorobenzene (Surr)	88		70 - 130		03/26/13 16:19	1
Toluene-d8 (Surr)	89		70 - 130		03/26/13 16:19	1

Lab Sample ID: LCS 340-4402/7
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.44		ppb v/v		94	70 - 130
1,1,2,2-Tetrachloroethane	11.0	11.4		ppb v/v		104	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.90		ppb v/v		89	70 - 130
1,1,2-Trichloroethane	10.9	10.5		ppb v/v		97	70 - 130
1,1-Dichloroethane	10.0	9.31		ppb v/v		93	70 - 130
1,1-Dichloroethene	10.0	9.54		ppb v/v		95	70 - 130
1,2,4-Trichlorobenzene	11.0	12.0		ppb v/v		109	70 - 130
1,2,4-Trimethylbenzene	10.8	11.4		ppb v/v		105	70 - 130
1,2-Dibromoethane (EDB)	10.8	11.1		ppb v/v		102	70 - 130
1,2-Dichloro-1,1,2,2-tetrafluoroethane	10.0	9.97		ppb v/v		100	70 - 130
1,2-Dichlorobenzene	10.9	11.4		ppb v/v		105	70 - 130
1,2-Dichloroethane	10.8	10.9		ppb v/v		101	70 - 130
1,2-Dichloropropane	10.8	10.8		ppb v/v		100	70 - 130
1,3,5-Trimethylbenzene	11.0	11.5		ppb v/v		105	70 - 130
1,3-Dichlorobenzene	11.0	11.5		ppb v/v		105	70 - 130
1,4-Dichlorobenzene	10.9	12.0		ppb v/v		110	70 - 130
2-Butanone (MEK)	10.8	10.5		ppb v/v		97	70 - 130
2-Hexanone	11.0	11.7		ppb v/v		106	70 - 130
4-Ethyltoluene	10.8	11.3		ppb v/v		105	70 - 130
4-Methyl-2-pentanone (MIBK)	10.8	12.2		ppb v/v		113	70 - 130
Acetone	10.0	8.86		ppb v/v		89	70 - 130
Benzene	10.6	10.7		ppb v/v		101	70 - 130
Benzyl chloride	11.0	12.3		ppb v/v		112	70 - 130
Bromodichloromethane	10.9	11.4		ppb v/v		105	70 - 130
Bromoform	10.8	11.7		ppb v/v		108	70 - 130
Bromomethane	10.0	8.90		ppb v/v		89	70 - 130
Carbon disulfide	10.0	10.1		ppb v/v		101	70 - 130
Carbon tetrachloride	10.8	10.7		ppb v/v		99	70 - 130
Chlorobenzene	11.0	10.5		ppb v/v		95	70 - 130
Chloroethane	10.0	9.43		ppb v/v		94	70 - 130
Chloroform	10.0	9.44		ppb v/v		94	70 - 130
Chloromethane	10.0	10.1		ppb v/v		101	70 - 130
cis-1,2-Dichloroethene	10.6	10.3		ppb v/v		97	70 - 130
cis-1,3-Dichloropropene	10.0	12.0		ppb v/v		120	70 - 130

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 340-4402/7
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dibromochloromethane	11.0	11.7		ppb v/v		107	70 - 130
Dichlorodifluoromethane	10.0	10.1		ppb v/v		101	70 - 130
Ethylbenzene	10.9	11.4		ppb v/v		105	70 - 130
Hexachlorobutadiene	11.0	11.2		ppb v/v		101	70 - 130
m,p-Xylene	21.6	22.3		ppb v/v		103	70 - 130
Methylene chloride	11.0	10.1		ppb v/v		92	70 - 130
o-Xylene	11.0	11.9		ppb v/v		108	70 - 130
Styrene	11.0	12.2		ppb v/v		111	70 - 130
Tetrachloroethene	10.0	9.76		ppb v/v		98	70 - 130
Toluene	10.9	11.2		ppb v/v		102	70 - 130
trans-1,2-Dichloroethene	10.0	9.71		ppb v/v		97	70 - 130
trans-1,3-Dichloropropene	11.0	10.9		ppb v/v		99	70 - 130
Trichloroethene	10.9	11.5		ppb v/v		106	70 - 130
Trichlorofluoromethane	10.0	9.39		ppb v/v		94	70 - 130
Vinyl acetate	11.0	12.0		ppb v/v		109	70 - 130
Vinyl chloride	10.0	10.1		ppb v/v		101	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*

Lab Sample ID: LCSD 340-4402/8
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	10.0	9.42		ppb v/v		94	70 - 130	0	25
1,1,2,2-Tetrachloroethane	11.0	11.1		ppb v/v		101	70 - 130	3	25
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.64		ppb v/v		86	70 - 130	3	25
1,1,2-Trichloroethane	10.9	10.2		ppb v/v		94	70 - 130	3	25
1,1-Dichloroethane	10.0	9.31		ppb v/v		93	70 - 130	0	25
1,1-Dichloroethene	10.0	9.07		ppb v/v		91	70 - 130	5	25
1,2,4-Trichlorobenzene	11.0	11.6		ppb v/v		105	70 - 130	4	25
1,2,4-Trimethylbenzene	10.8	10.8		ppb v/v		100	70 - 130	5	25
1,2-Dibromoethane (EDB)	10.8	10.7		ppb v/v		99	70 - 130	3	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	10.0	9.75		ppb v/v		98	70 - 130	2	25
1,2-Dichlorobenzene	10.9	10.9		ppb v/v		100	70 - 130	5	25
1,2-Dichloroethane	10.8	10.6		ppb v/v		98	70 - 130	3	25
1,2-Dichloropropane	10.8	11.0		ppb v/v		102	70 - 130	2	25
1,3,5-Trimethylbenzene	11.0	10.9		ppb v/v		99	70 - 130	6	25
1,3-Dichlorobenzene	11.0	10.9		ppb v/v		99	70 - 130	5	25
1,4-Dichlorobenzene	10.9	11.2		ppb v/v		103	70 - 130	6	25
2-Butanone (MEK)	10.8	10.6		ppb v/v		98	70 - 130	1	25
2-Hexanone	11.0	11.1		ppb v/v		101	70 - 130	5	25
4-Ethyltoluene	10.8	10.9		ppb v/v		101	70 - 130	3	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 340-4402/8
Matrix: Air
Analysis Batch: 4402

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Methyl-2-pentanone (MIBK)			10.8	12.2		ppb v/v		113	70 - 130	1	25
Acetone			10.0	8.70		ppb v/v		87	70 - 130	2	25
Benzene			10.6	10.4		ppb v/v		98	70 - 130	2	25
Benzyl chloride			11.0	11.5		ppb v/v		104	70 - 130	7	25
Bromodichloromethane			10.9	11.2		ppb v/v		103	70 - 130	2	25
Bromoform			10.8	11.3		ppb v/v		105	70 - 130	3	25
Bromomethane			10.0	8.76		ppb v/v		88	70 - 130	2	25
Carbon disulfide			10.0	10.0		ppb v/v		100	70 - 130	1	25
Carbon tetrachloride			10.8	10.5		ppb v/v		97	70 - 130	2	25
Chlorobenzene			11.0	10.0		ppb v/v		91	70 - 130	4	25
Chloroethane			10.0	9.57		ppb v/v		96	70 - 130	1	25
Chloroform			10.0	9.40		ppb v/v		94	70 - 130	0	25
Chloromethane			10.0	9.97		ppb v/v		100	70 - 130	1	25
cis-1,2-Dichloroethene			10.6	10.3		ppb v/v		97	70 - 130	1	25
cis-1,3-Dichloropropene			10.0	11.7		ppb v/v		117	70 - 130	2	25
Dibromochloromethane			11.0	11.3		ppb v/v		102	70 - 130	4	25
Dichlorodifluoromethane			10.0	9.74		ppb v/v		97	70 - 130	3	25
Ethylbenzene			10.9	10.8		ppb v/v		99	70 - 130	5	25
Hexachlorobutadiene			11.0	10.6		ppb v/v		97	70 - 130	5	25
m,p-Xylene			21.6	21.3		ppb v/v		99	70 - 130	4	25
Methylene chloride			11.0	9.98		ppb v/v		91	70 - 130	1	25
o-Xylene			11.0	11.4		ppb v/v		104	70 - 130	4	25
Styrene			11.0	11.7		ppb v/v		106	70 - 130	5	25
Tetrachloroethene			10.0	9.31		ppb v/v		93	70 - 130	5	25
Toluene			10.9	10.9		ppb v/v		100	70 - 130	2	25
trans-1,2-Dichloroethene			10.0	9.71		ppb v/v		97	70 - 130	0	25
trans-1,3-Dichloropropene			11.0	10.3		ppb v/v		94	70 - 130	6	25
Trichloroethene			10.9	11.4		ppb v/v		104	70 - 130	1	25
Trichlorofluoromethane			10.0	8.91		ppb v/v		89	70 - 130	5	25
Vinyl acetate			11.0	12.0		ppb v/v		109	70 - 130	0	25
Vinyl chloride			10.0	9.87		ppb v/v		99	70 - 130	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
Toluene-d8 (Surr)	*104*		*70 - 130*

Lab Chronicle

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Client Sample ID: AWT-INFLUENT

Lab Sample ID: 480-34695-1

Date Collected: 03/16/13 11:17

Matrix: Air

Date Received: 03/20/13 10:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		188	4392	03/25/13 15:08	DLK	TAL LA
Total/NA	Analysis	TO-15		376	4402	03/26/13 18:34	DLK	TAL LA

Client Sample ID: AWT-MIDPOINT

Lab Sample ID: 480-34695-2

Date Collected: 03/16/13 11:17

Matrix: Air

Date Received: 03/20/13 10:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	4388	03/25/13 04:12	DLK	TAL LA

Client Sample ID: AWT-EFFLUENT

Lab Sample ID: 480-34695-3

Date Collected: 03/16/13 11:17

Matrix: Air

Date Received: 03/20/13 10:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	4388	03/25/13 05:01	DLK	TAL LA

Laboratory References:

TAL LA = TestAmerica Costa Mesa, 3585 Cadillac Ave, Suite A, Costa Mesa, CA 92626, TEL (714)258-8610

Certification Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Laboratory: TestAmerica Buffalo

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0686	07-06-13
California	NELAP	9	1169CA	09-30-13
Connecticut	State Program	1	PH-0568	09-30-14
Florida	NELAP	4	E87672	06-30-13
Georgia	State Program	4	N/A	03-31-13
Georgia	State Program	4	956	06-30-13
Georgia	State Program	4	956	06-30-13
Illinois	NELAP	5	200003	09-30-13
Iowa	State Program	7	374	03-01-13
Kansas	NELAP	7	E-10187	01-31-14
Kentucky	State Program	4	90029	12-31-13
Kentucky (UST)	State Program	4	30	04-01-13
Louisiana	NELAP	6	02031	06-30-13
Maine	State Program	1	NY00044	12-04-13
Maryland	State Program	3	294	03-31-13
Massachusetts	State Program	1	M-NY044	06-30-13
Michigan	State Program	5	9937	04-01-13
Minnesota	NELAP	5	036-999-337	12-31-13
New Hampshire	NELAP	1	2973	09-11-13
New Hampshire	NELAP	1	2337	11-17-13
New Jersey	NELAP	2	NY455	06-30-13
New York	NELAP	2	10026	03-31-13
North Dakota	State Program	8	R-176	03-31-13
Oklahoma	State Program	6	9421	08-31-13
Oregon	NELAP	10	NY200003	06-09-13
Pennsylvania	NELAP	3	68-00281	07-31-13
Rhode Island	State Program	1	LAO00328	12-31-13
Tennessee	State Program	4	TN02970	04-01-13
Texas	NELAP	6	T104704412-11-2	07-31-13
USDA	Federal		P330-11-00386	11-22-14
Virginia	NELAP	3	460185	09-14-13
Washington	State Program	10	C784	02-10-14
West Virginia DEP	State Program	3	252	09-30-13
Wisconsin	State Program	5	998310390	08-31-13

Laboratory: TestAmerica Costa Mesa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arizona	State Program	9	AZ0727	02-09-14
Florida	NELAP	4	E87652	06-30-13
L-A-B	DoD ELAP		L2273	11-09-13
Louisiana	NELAP	6	01948	06-30-13
New York	NELAP	2	11851	04-01-13
Oregon	NELAP	10	CA200013	07-19-13
Utah	NELAP	8	CA000032012-1	06-30-13
Washington	State Program	10	C579	11-29-13

Method Summary

Client: CWM Chemical Services Inc
Project/Site: Model City Landfill

TestAmerica Job ID: 480-34695-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL LA

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL LA = TestAmerica Costa Mesa, 3585 Cadillac Ave, Suite A, Costa Mesa, CA 92626, TEL (714)258-8610

TestAmerica Los Angeles
3585 Cadillac Drive
Suite A
Costa Mesa, California
phone 714-258-8610

Canister Samples Chain of Custody Record

Client Contact Information	Project Manager: Jonathan Rizzo	Samples Collected By:	1 of 1 COCs
Company: CWM Model City	Phone: 716-286-0246	Ed Murphy	
Address: 1550 Balmer Road	Email: jrizzo@golder.com		
City/State/Zip Model City, NY 14107			
Phone: 716-286-0246	Site Contact: Ed Murphy		
FAX:	TA Contact: Candace Fox		
Project Name: AWT Effluent Sampling	**Analysis Turnaround Time**		
Site: CWM Model City	Standard (Specify) X		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
AWT - INFLUENT	3/16/2013	1133	1117	27	0	24055	34001573	X											X
AWT - MIDPOINT	3/16/2013	1440	1117	22	0	24053	34001410	X											X
AWT - EFFLUENT	3/16/2013	1133	1117	30	4	24262	34001578	X											X
AWT - MIDPOINT (SPARE)	3/15/2013	1133	1432	28	0	24123	34001242	X											X

Temperature (Fahrenheit)			
	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)			
	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments: HOLD SAMPLE AWT-MIDPOINT (SPARE). SAMPLE RECOLLECTED DUE TO CAN BEING CONSUMED IN UNDER 3 HOURS. SAMPLES HAVE BETWEEN 700-850 PPM VOCs PER FID READING. THREE OF FOUR CANS WENT FLAT EARLY, LIKELY DUE TO TEMPERATURE EFFECTS AND POSITIVE PRESSURE FROM SAMPLE. ONE REGULATOR 34124 HAD TOP BREAK OFF FILTER UNDER NORMAL HAND TIGHTENING DUE TO METAL FATIGUE.

Samples Shipped by: EDWARD M. MURPHY	Date/Time: 3/16/13 1315	Samples Received by: 3/20/13 10:20
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

3/29/2013

Attachment 14
Tanks Software Model Output for Petroleum Storage Tanks

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification		
User Identification	T-27	
City	Buffalo	
State	New York	
Company	CWM Chemical Services, LLC	
Type of Tank	Horizontal Tank	
Description	Horizontal Tank	
Tank Dimensions		
Shell Length (ft)	24.00	
Diameter (ft)	12.00	
Volume (gal)	20,000	
Turnovers	33.22	10.00
Net Throughput (gal/yr)	200,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	
Paint Characteristics		
Shell Color/Shade	Red/Primer	
Shell Condition	Good	
Breather Vent Settings		
Vacuum Settings (psig)	-0.03	
Pressure Settings (psig)	0.03	

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-27 - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Distillate Fuel Oil #2	All	58.30	48.11	68.49	52.02	0.0062	0.0042	0.0086	130.0000	1	1	188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-27 - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	6.7897	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	1728.8765	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0001	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0748				
K_S = Vented Vapor Saturation Factor		K_S =	0.9980				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	1728.8765	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	19.1541	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	6.0000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0001	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0748		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0044	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9980			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Space Outage (ft)						

Working Losses (lb)

	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	3.8136	lbs		
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr	
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000		K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18	
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	4,761.90	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$	
Annual Turnovers		N =	10.00		for turnovers <36, $K_N = 1$	
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless	
Tank Diameter (ft)					for crude oils $K_P = 0.75$	
Working Loss Product Factor		K_P =	1.00		for all other organic liquids, $K_P = 1$	
Total Losses (lb)		L_T =	10.6034	lbs		

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-27 - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
3.81364	6.78972	10.60336

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification		
User Identification	275 gallon Kerosene Tank	
City	Buffalo	
State	New York	
Company	CWM Chemical Services, LLC	
Type of Tank	Horizontal Tank	
Description	Horizontal Tank	
Tank Dimensions		
Shell Length (ft)	5.25	
Diameter (ft)	3.00	
Volume (gal)	275	
Turnovers	33.22	3.64
Net Throughput (gal/yr)	1,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	
Paint Characteristics		
Shell Color/Shade	Red/Primer	
Shell Condition	Good	
Breather Vent Settings		
Vacuum Settings (psig)	-0.03	
Pressure Settings (psig)	0.03	

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

275 gallon Kerosene Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Distillate Fuel Oil #2	All	58.30	48.11	68.49	52.02	0.0062	0.0042	0.0086	130.0000	1	1	188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

275 gallon Kerosene Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0930	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	23.6370	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0001	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0748				
K_S = Vented Vapor Saturation Factor		K_S =	0.9995				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	23.6370	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.4793	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0001	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

K_E = Vapor Space Expansion Factor

$K_E = [\text{delta } T_V/T_{LA}] + [(\text{delta}P_V - \text{delta } P_B)/(P_A - P_{VA})]$

K_E = 0.0748

delta T_V = Daily Vapor Temperature Range (deg. R)

delta $T_V = 0.72(T_{AX} - T_{AN}) + 0.028 * \text{alpha} * I]$

delta T_V = 40.7601 R

delta P_V = Daily Vapor Pressure Range (psia)

delta P_V = 0.0044 psia

delta P_B = Breather Vent Press. Setting Range (psia)

delta P_B = 0.06 psia

As per sources listed on page 6-5 of TANKS user manual:

T_{AX} = 515.4867

T_{AN} = 499.2117

Vapor Pressure at Daily Average Liquid Surface Temperature (psia)

Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)

Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)

Daily Avg. Liquid Surface Temp. (deg R) 517.9736 R

Daily Min. Liquid Surface Temp. (deg R)

$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$

T_{LN} = 507.783595 R

Daily Max. Liquid Surface Temp. (deg R)

$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$

T_{LX} = 528.1636 R

delta T_A = Daily Ambient Temp. Range (deg. R)

delta T_A = 16.2750 R

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor

$K_S = 1/[1 + (.053 * P_{VA} * H_{VO})]$

K_S = 0.9995

Vapor Pressure at Daily Average Liquid Surface Temperature (psia)

Vapor Space Outage (ft)

Working Losses (lb)

$L_W = 0.0010 M_V P_{VA} Q K_N K_P$

L_W = 0.0191 lbs

M_V = Vapor Molecular Weight

M_V = 130.0000 lb/lb-mole

P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)

0.0000

Q = Annual Net Throughput (gal/yr)

1 bbl/yr = 42 US gal/yr

Q = 23.81 bbl/yr

Annual Turnovers

N = 3.64

K_N = Turnover Factor

$K_N = (180 + N)/6N$

K_N = 1.00

Tank Diameter (ft)

Working Loss Product Factor

K_P = 1.00

Total Losses (lb)

L_T = 0.1120 lbs

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

275 gallon Kerosene Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.01907	0.09296	0.11203

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification		
User Identification	1,000 gallon Fuel Oil Tank	
City	Buffalo	
State	New York	
Company	CWM Chemical Services, LLC	
Type of Tank	Horizontal Tank	
Description	Horizontal Tank	
Tank Dimensions		
Shell Length (ft)	9.00	
Diameter (ft)	4.50	
Volume (gal)	1,000	
Turnovers	33.22	10.00
Net Throughput (gal/yr)	10,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	
Paint Characteristics		
Shell Color/Shade	Red/Primer	
Shell Condition	Good	
Breather Vent Settings		
Vacuum Settings (psig)	-0.03	
Pressure Settings (psig)	0.03	

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

1,000 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Distillate Fuel Oil #2	All	58.30	48.11	68.49	52.02	0.0062	0.0042	0.0086	130.0000	1	1	188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

1,000 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.3585	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	91.1712	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0001	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0748				
K_S = Vented Vapor Saturation Factor		K_S =	0.9993				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	91.1712	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	7.1828	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.2500	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0001	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0748		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0044	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9993	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)				
Vapor Space Outage (ft)				

Working Losses (lb)

	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.1907	lbs	
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000		K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers		N =	10.00		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless
Tank Diameter (ft)					for crude oils $K_P = 0.75$
Working Loss Product Factor		K_P =	1.00		for all other organic liquids, $K_P = 1$
Total Losses (lb)		L_T =	0.5492	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

1,000 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.19068	0.35849	0.54917

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	117 gallon Diesel Fuel Tank
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions		
Shell Length (ft)	5.00	
Diameter (ft)	3.00	
Volume (gal)	117	
Turnovers	33.22	2.14
Net Throughput (gal/yr)	250	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

117 gallon Diesel Fuel Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Distillate Fuel Oil #2	All	58.30	48.11	68.49	52.02	0.0062	0.0042	0.0086	130.0000	1	1	188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

117 gallon Diesel Fuel Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0885	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	22.5114	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0001	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0748				
K_S = Vented Vapor Saturation Factor		K_S =	0.9995				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	22.5114	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.3713	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0001	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0748		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0044	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9995	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)				
Vapor Space Outage (ft)				

Working Losses (lb)

	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.0048	lbs	
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000		K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	5.95	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers		N =	2.14		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless
Tank Diameter (ft)					for crude oils $K_P = 0.75$
Working Loss Product Factor		K_P =	1.00		for all other organic liquids, $K_P = 1$
Total Losses (lb)		L_T =	0.0933	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

117 gallon Diesel Fuel Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.00477	0.08854	0.09330

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	1,000 gallon Gasoline Tank
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions	
Shell Length (ft)	8.50
Diameter (ft)	4.50
Volume (gal)	1,000
Turnovers	2.00
Net Throughput (gal/yr)	2,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

1,000 gallon Gasoline Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Gasoline (RVP 6)	All	58.30	48.11	68.49	52.02	2.8326	2.2788	3.4914	69.0000	1	1	92.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

1,000 gallon Gasoline Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	147.5343	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	86.1062	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0352	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.1786				
K_S = Vented Vapor Saturation Factor		K_S =	0.7475				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	86.1062	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{1/2}$	D_E =	6.9804	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.2500	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0352	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	69.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.1786		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	1.2126	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.7475	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			2.8326	
Vapor Space Outage (ft)				

Working Losses (lb)	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	9.3071	lbs	
M_V = Vapor Molecular Weight		M_V =	69.0000	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000		K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	47.62	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers		N =	2.00		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless
Tank Diameter (ft)					for crude oils $K_P = 0.75$
Working Loss Product Factor		K_P =	1.00		for all other organic liquids, $K_P = 1$
Total Losses (lb)		L_T =	156.8414	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

1,000 gallon Gasoline Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
9.30711	147.53426	156.84137

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	1,500 gallon Fuel Oil Tank
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions		
Shell Length (ft)	10.25	
Diameter (ft)	5.00	
Volume (gal)	1,500	
Turnovers	33.22	6.67
Net Throughput (gal/yr)	10,000	
Is tank heated (y/n)	N	
Is tank underground (y/n)	N	

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

1,500 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Distillate Fuel Oil #2	All	58.30	48.11	68.49	52.02	0.0062	0.0042	0.0086	130.0000	1	1	188.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

1,500 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.5040	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	128.1900	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0001	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0748				
K_S = Vented Vapor Saturation Factor		K_S =	0.9992				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	128.1900	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	8.0800	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	2.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0001	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0748		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0044	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	0.9992	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)				
Vapor Space Outage (ft)				

Working Losses (lb)

	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.1907	lbs
M_V = Vapor Molecular Weight		M_V =	130.0000	lb/lb-mole
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000	
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr
Annual Turnovers		N =	6.67	
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00	
Tank Diameter (ft)				
Working Loss Product Factor		K_P =	1.00	
Total Losses (lb)		L_T =	0.6947	lbs

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

1,500 gallon Fuel Oil Tank - Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.19068	0.50401	0.69469

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	325 gallon Engine Oil Tank
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions	
Shell Length (ft)	6.50
Diameter (ft)	3.00
Volume (gal)	270
Turnovers	37.04
Net Throughput (gal/yr)	10,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

325 gallon Engine Oil Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Residual Oil No. 6	All	58.30	48.11	68.49	52.02	0.0000	3E-05	0.00006	190.0000	1	1	387.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

325 gallon Engine Oil Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0011	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	29.2648	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0000	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0745				
K_S = Vented Vapor Saturation Factor		K_S =	1.0000				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	29.2648	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.9841	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0000	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	190.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0745		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	1.0000	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)				
Vapor Space Outage (ft)				

Working Losses (lb)

	$L_W = 0.0010 M_V P_{VA} Q K_N K_P$	L_W =	0.0018	lbs	
M_V = Vapor Molecular Weight		M_V =	190.0000	lb/lb-mole	Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)			0.0000		K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18
Q = Annual Net Throughput (gal/yr)	1 bbl/yr = 42 US gal/yr	Q =	238.10	bbl/yr	for turnovers >36, $K_N = (180 + N)/6N$
Annual Turnovers		N =	37.04		for turnovers <36, $K_N = 1$
K_N = Turnover Factor	$K_N = (180 + N)/6N$	K_N =	1.00		K_P = working loss product factor, dimensionless
Tank Diameter (ft)					for crude oils $K_P = 0.75$
Working Loss Product Factor		K_P =	1.00		for all other organic liquids, $K_P = 1$
Total Losses (lb)		L_T =	0.0029	lbs	

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

325 gallon Engine Oil Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.00181	0.00109	0.00290

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification	270 gallon Engine Oil Tank
City	Buffalo
State	New York
Company	CWM Chemical Services, LLC
Type of Tank	Horizontal Tank
Description	Horizontal Tank

Tank Dimensions	
Shell Length (ft)	5.50
Diameter (ft)	3.00
Volume (gal)	270
Turnovers	37.04
Net Throughput (gal/yr)	10,000
Is tank heated (y/n)	N
Is tank underground (y/n)	N

Paint Characteristics	
Shell Color/Shade	Red/Primer
Shell Condition	Good

Breather Vent Settings	
Vacuum Settings (psig)	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

270 gallon Engine Oil Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min	Max	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min	Max	Vapor Mol Weight g/mol	Liquid Mass Fraction	Vapor Mass Fraction	Mol Weight g/mol	Basis for Vapor Pressure Calculations
Residual Oil No. 6	All	58.30	48.11	68.49	52.02	0.0000	0.00003	0.00006	190.0000	1	1	387.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

270 gallon Engine Oil Tank - Horizontal Tank
Buffalo, New York

Annual Emission Calculations	**AP-42 EQUATIONS**	**CALCULATIONS**					
Standing Losses (lb)	$L_S = 365\ V_V\ W_V\ K_E\ K_S$	L_S =	0.0009	lbs			
V_V = Vapor Space Volume (cu ft)		V_V =	24.7626	cu ft			
W_V = Vapor Density (lb/cu ft)		W_V =	0.0000	lb / cu ft			
K_E = Vapor Space Expansion Factor		K_E =	0.0745				
K_S = Vented Vapor Saturation Factor		K_S =	1.0000				
Tank Vapor Space Volume							
V_V = Vapor Space Volume (cu ft)	$V_V = [(Pi/4)\ D_E^2]\ H_{VO}$	V_V =	24.7626	cu ft			
D = Tank Diameter (ft)							
D_E = Effective Diameter (ft)	$D_E = (L * D/(pi/4))^{\wedge}1/2$	D_E =	4.5847	ft			
H_{VO} = Vapor Space Outage (ft)	$H_{VO} = H_E/2$ for horizontal tank	H_{VO} =	1.5000	ft			Vertical Tank: $H_{VO} = H_S - H_L + H_{RO}$
Hs = Tank Shell Length (ft)							
Vapor Density							
W_V = Vapor Density (lb/cu ft)	$W_V = M_v\ P_{VA} / R\ T_{LA}$	W_V =	0.0000	lb / cu ft			0 deg F = 459.67 R
M_V = Vapor Molecular Weight		M_V =	190.0000	lb/lb-mole			
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)							
T_{LA} = Daily Avg. Liquid Surface Temp. (deg. R)	$T_{LA} = 0.44\ T_{AA} + 0.56\ T_B + 0.0079*alpha*I$	T_{LA} =	517.9736	R =	14.61	deg C	
T_{AA} = Daily Average Ambient Temp. (deg. F)	$T_{AA} = T_{AX}+T_{AN} / 2$	T_{AA} =	47.6792	deg F =	507.35	R	
Ideal Gas Constant R (psia cuft / (lb-mol-deg R))			10.7310				
T_B = Liquid Bulk Temperature (deg. R)	$T_B = T_{AA} + 6\ alpha - 1$	T_B =	511.6892				
Tank Paint Solar Absorptance (Shell)			0.89				As per Table 7.1-6: Red/Primer = .89
I = Daily Total Solar Insulation Factor (Btu/sqft day)			1,165.412	Btu/sqft d			I_{AVG} = 1,165 Btu/ft^2-d as per sources mentioned on page 6-5 of TANKS user manual

Vapor Space Expansion Factor

As per sources listed on page 6-5 of TANKS user manual:

K_E = Vapor Space Expansion Factor	$K_E = [\text{delta } T_V/T_{LA}]+ [(\text{delta}P_V-\text{delta } P_B)/(P_A-P_{VA})]$	K_E =	0.0745		T_{AX} =	515.4867
delta T_V = Daily Vapor Temperature Range (deg. R)	$\text{delta } T_V = 0.72(T_{AX}-T_{AN})+0.028*\text{alpha}*I]$	delta T_V =	40.7601	R	T_{AN} =	499.2117
delta P_V = Daily Vapor Pressure Range (psia)		delta P_V =	0.0000	psia		
delta P_B = Breather Vent Press. Setting Range (psia)		delta P_B =	0.06	psia		
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)						
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)						
Daily Avg. Liquid Surface Temp. (deg R)			517.9736	R		
Daily Min. Liquid Surface Temp. (deg R)	$T_{LN} = T_{LA} - 0.25 \text{ delta } T_V$	T_{LN} =	507.783595	R		
Daily Max. Liquid Surface Temp. (deg R)	$T_{LX} = T_{LA} + 0.25 \text{ delta } T_V$	T_{LX} =	528.1636	R		
delta T_A = Daily Ambient Temp. Range (deg. R)		delta T_A =	16.2750	R		

Vented Vapor Saturation Factor

Vented Vapor Saturation Factor	$K_S = 1/[1+ (.053*P_{VA}*H_{VO})]$	K_S =	1.0000	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)				
Vapor Space Outage (ft)				

Working Losses (lb)

$L_W = 0.0010 M_V P_{VA} Q K_N K_P$

L_W =	0.0018	lbs	
M_V = Vapor Molecular Weight	M_V =	190.0000	lb/lb-mole
P_{VA} = Vapor Pressure at Daily Average Liquid Surface Temperature (psia)		0.0000	
Q = Annual Net Throughput (gal/yr)	Q =	238.10	bbl/yr
Annual Turnovers	N =	37.04	
K_N = Turnover Factor	K_N =	1.00	
Tank Diameter (ft)			
Working Loss Product Factor	K_P =	1.00	
Total Losses (lb)	L_T =	0.0027	lbs

1 bbl/yr = 42 US gal/yr

$K_N = (180 + N)/6N$

Q = annual net throughput = tank capacity [bbl] * annual turnover rate, bbl/yr

K_N = working loss turnover (saturation) factor, dimensionless; see Figure 7.1-18

for turnovers >36, $K_N = (180 + N)/6N$

for turnovers <36, $K_N = 1$

K_P = working loss product factor, dimensionless

for crude oils $K_P = 0.75$

for all other organic liquids, $K_P = 1$

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

270 gallon Engine Oil Tank -
Horizontal Tank
Buffalo, New York

CALCULATED VALUES

Losses (lbs)		
Working Loss	*Breathing Loss*	*Total Emissions*
0.00181	0.00092	0.00273

Attachment 15
Estimated Emissions: Drum Storage Building

Drum Storage Building (DSB)

1) Sampling

The drum storage building currently processes 36,000 drums annually, but DSB supervisors believe they can process a sustained capacity of 4,000 drums per month, or 48,000 drums annually.

Each drum's bung is opened and the contents are sampled. A 0.10 pint sample is extracted from each 55 gallon drum and take to the laboratory in a closed, marked jar. A small portion of this sample is used for the laboratory analysis, with the remainder being returned to the drum. It is conservatively estimated that 10% of the material, or 0.01 pint, is consumed in the analysis procedure.

Each drum's bung is removed for less than one minute to return unused sample material. These drums are sampled after they have been in the Drum Storage Building long enough to reach equilibrium temperature and "settle out."

The amount of VOC emissions is overestimated by assuming that all of the analyzed volume evaporates, since only a small fraction of the drums are filled with VOCs[1]. Thus, annual emissions may be conservatively estimated to be:

$$\text{VOC emissions} = \frac{(48{,}000 \text{ drums})}{\text{yr}} \frac{(0.01 \text{ pint})}{\text{drum}} \frac{(1 \text{ gal})}{8 \text{ pint}} \frac{(7.00 \text{ lb})}{\text{gal}} \frac{(1 \text{ ton})}{2000 \text{ lb}} = 0.21 \text{ ton/yr}$$

The density of 7.00 lb/gal coincides closely with distillate fuels; most solvents are closer to 6.00 lb/gal. This estimate is probably at least one order of magnitude over actual emissions when these conservative factors are taken into account. Regardless of how greatly this emissions level is overestimated, the calculated value already establishes this activity to be a very minimal source of VOC emissions.

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[1] Currently only 2,400 drums annually contain waste fuel

2) Waste Fuel Transfer

After sampling and analysis activities have been completed, any waste fuel is transferred from 55 gallon drums to tank trucks. The fuel transferred from the 55 gallon drums in a separate, isolated room in the DSB. The room is ventilated directly to the atmosphere. The waste fuel drums are pumped out with no vapor recovery apparatus. It is assumed that splash loading occurs inside the truck. The physical properties of gasoline and fuel oil have been averaged to establish a representative composite fuel profile for emissions estimation purposes.

The properties of gasoline (RVP = 13) and #2 fuel oil were taken from AP-42, Table 4.3-2 for determination of this composite profile. The resultant values for fuel loading VOC emissions are used below:

$$L_L = 12.46 \frac{SPM}{T} = \frac{(12.46)(1.45)(3.4537)(96)}{(460 + 55.8)}$$

$$= 11.61 \text{ lb VOC}/10^3 \text{ gal of fuel loaded}$$

where:

S	=	Saturation factor for splash loading (Table 4.4-1 of AP-42)
P	=	True vapor pressure of liquid loaded, psia
M	=	Molecular weight of vapor, lb/lb-mole
T	=	Temperature of bulk liquid loaded, °R (Table 12.3-6 of AP-42)

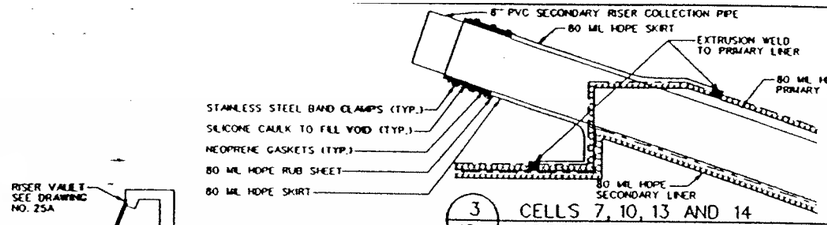
Since the maximum fuel transfer capacity is 5,000 drums per year, the maximum potential emissions are:

$$\frac{(5{,}000 \text{ drums})}{\text{yr}} \frac{(55 \text{ gal})}{\text{drum}} \frac{(11.61 \text{ lb VOC})}{1000 \text{ gal}} \frac{(1 \text{ ton})}{2000 \text{ lb}} = 1.60 \text{ ton VOC/yr}$$

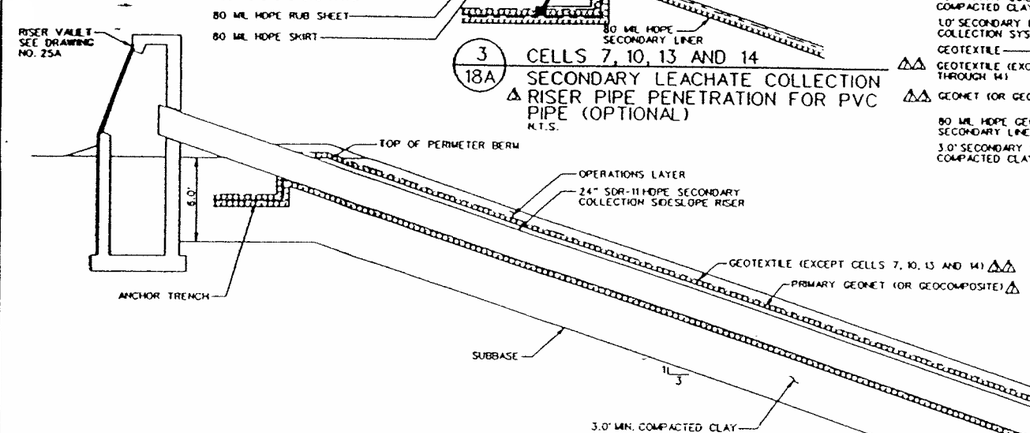
The current annual emissions are less than one-half of the potential for this operation. The current level of emissions is:

$$\frac{(2{,}400 \text{ drums})}{\text{yr}} \frac{(55 \text{ gal})}{\text{drum}} \frac{(11.61 \text{ lb VOC})}{1000 \text{ gal}} \frac{(1 \text{ ton})}{2000 \text{ lb}} = 0.77 \text{ ton VOC/yr}$$

Attachment 16
Select Drawings of Landfills

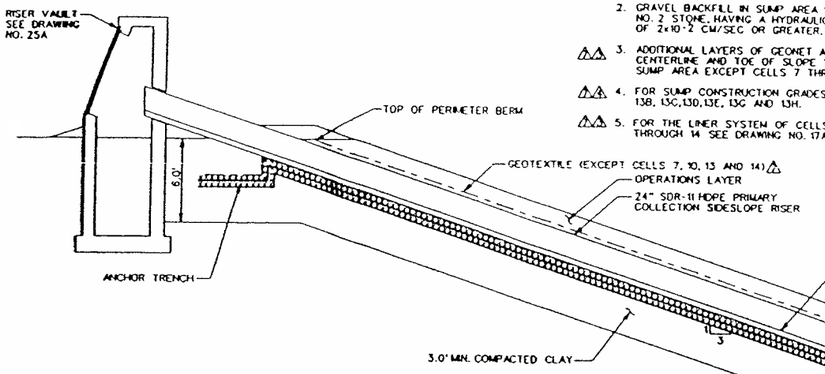


3 / 18A CELLS 7, 10, 13 AND 14
SECONDARY LEACHATE COLLECTION RISER PIPE PENETRATION FOR PVC PIPE (OPTIONAL) △
N.T.S.



A / 18A SECTION △△
SECONDARY LEACHATE COLLECTION SUMP AND RISER
SCALE 1" = 5'

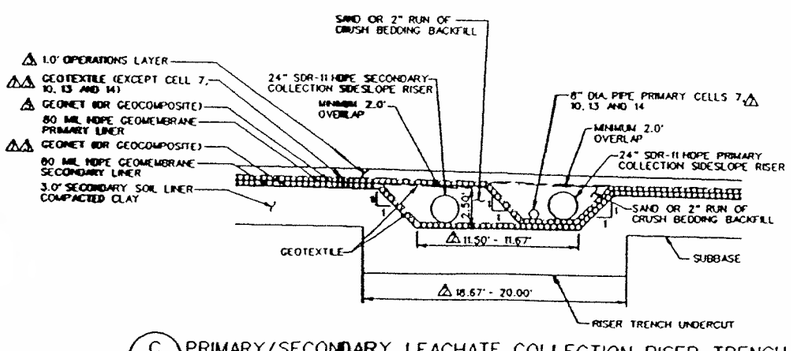
NOTES:
1. HORIZONTAL SECTION OF HDPE SIDESLOPE RISER SHALL BE PERFERATED WITH EVENLY SPACED 1/2" DIAMETER HOLES AND WRAPPED WITH TWO LAYERS OF GEONET. HOLE SPACING SHALL BE 6" EACH WAY.
2. GRAVEL BACKFILL IN SUMP AREA SHALL BE N.Y.S.D.O.T. NO. 2 STONE, HAVING A HYDRAULIC CONDUCTIVITY OF 2x10-2 CM/SEC OR GREATER.
△△ 3. ADDITIONAL LAYERS OF GEONET ALONG CENTERLINE AND TOE OF SLOPE TO EXTEND 5 FEET INTO SUMP AREA EXCEPT CELLS 7 THROUGH 14.
△△△ 4. FOR SUMP CONSTRUCTION GRADES SEE DRAWINGS NO. 13A, 13B, 13C, 13D, 13E, 13G AND 13H.
△△ 5. FOR THE LINER SYSTEM OF CELLS 7 THROUGH 14 SEE DRAWING NO. 17A.



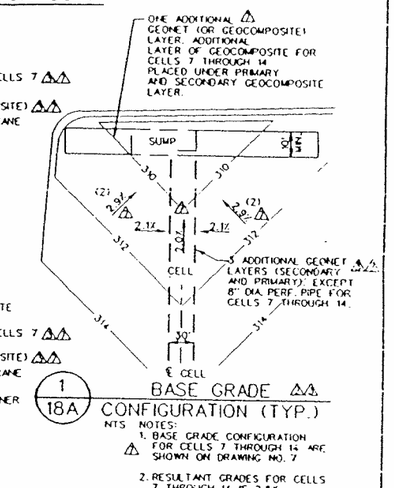
B / 18A SECTION △
PRIMARY LEACHATE COLLECTION SUMP AND RISER
SCALE 1" = 5'

NOTES:
1. HORIZONTAL SECTION OF HDPE SIDESLOPE RISER SHALL BE PERFERATED WITH EVENLY SPACED 1/2" DIAMETER HOLES AND WRAPPED WITH THREE LAYERS OF GEONET. HOLE SPACING SHALL BE 6" EACH WAY.
2. GRAVEL BACKFILL IN SUMP AREA AND BETWEEN VERTICAL RISER AND CONCRETE SLEEVE SHALL N.Y.S.D.O.T. NO. 2 STONE, HAVING A HYDRAULIC CONDUCTIVITY OF 2x10-2 CM/SEC OR GREATER.
3. HDPE VERTICAL RISER BETWEEN HORIZONTAL SECTION OF FABRICATED TEE AND BOTTOM OF MANHOLE SHALL BE PERFORATED WITH A MINIMUM OF 20 EVENLY SPACED 1/2" DIA. HOLES. PERFORATED PORTION OF RISER SHALL BE WRAPPED WITH THREE LAYERS OF GEONET.
△△ 4. ADDITIONAL LAYERS OF GEONET ALONG CENTERLINE AND TOE OF SLOPE TO EXTEND 5 FEET INTO SUMP AREA EXCEPT CELLS 7 THROUGH 14
△△ 5. FOR SUMP CONSTRUCTION GRADES SEE DRAWINGS NO. 13A, 13B, 13C, 13D, 13E, 13G AND 13H.
△△ 6. FOR THE LINER SYSTEMS OF CELLS 7 THROUGH 14 SEE DRAWING NO. 17A.

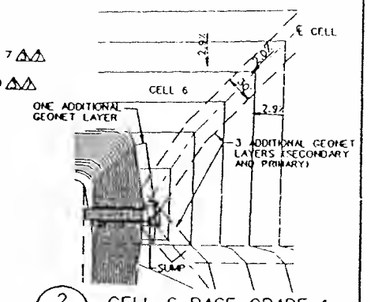
CADD PRODUCED DRAWING



C / 18A PRIMARY/SECONDARY LEACHATE COLLECTION RISER TRENCH △△
SCALE 1" = 5'



1 / 18A BASE GRADE △△
CONFIGURATION (TYP.)
NTS NOTES:
1. BASE GRADE CONFIGURATION FOR CELLS 7 THROUGH 14 ARE △ SHOWN ON DRAWING NO. 7
2. RESULTANT GRADES FOR CELLS 7 THROUGH 14 IS 2.5%.
3. CENTERLINE GRADE FOR CELLS 7 THROUGH 14 IS 1.3%.



2 / 18A CELL 6 BASE GRADE △
CONFIGURATION (TYP.)
NTS

REV.	DATE	DESCRIPTION	DRN BY	APP BY
△	10-97	MODIFY PIPING AND ADDED NOTES	FAS	CPB
△	7-97	ADJUSTED 8" PIPE LOCATION	FAS	CPB
△	6-97	DELETED SECONDARY RISER CLEANOUT	FAS	CPB
△	4-97	REVISED FOR CELL 8	FAS	CPB
△	11-96	MODIFY LINER SYSTEM	FAS	CPB
△	7-96	ADD NOTE DETAIL 1, REVISED TITLE FOR CELL 10	FAS	CPB
△	4-96	ADDED DETAIL CELL 6 BASE GRADE	FAS	CPB

DATE: NOVEMBER 1995 | PROJECT NO. 34282.100 | SCALE: AS SHOWN

DES BY	FAS	
DRN BY	FAS	
CHK BY	CPB	
REV BY	AWE	
APP BY	CPB	

PROJECT: RESIDUALS MANAGEMENT UNIT 1

SHEET TITLE: SUMP DETAILS CELLS 5 THROUGH 14 △△

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

STATE OF NEW YORK
CHARLES P. BALLOD
LICENSED PROFESSIONAL ENGINEER
59688-1

NOV 18 1997

CWM Chemical Services, Inc.
Model City Facility

DRAWING NO. 18A



LEGEND

- 300 — EXISTING CONTOURS
- x318.9 EXISTING SPOT ELEVATIONS
- ROADS
- FENCE LINES
- TREES-WOODED AREAS
- TRAILS
- STREAMS, BODIES OF WATER
- BUILDINGS
- TP 3 — TEST PIT LOCATION AND NUMBER
- B 1 — TEST BORING LOCATION AND NUMBER
- WELL NO.3 — EXISTING GROUND-WATER MONITORING WELL LOCATION NUMBER
- R-1 — SURFACE WATER SAMPLING STATION

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: RH
Checked by:
Date: OCT. 30, 1979

Scales: 1" = 300'

SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date:

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
FACILITY PLAN

Sheet 1 of 13
Project No. 01368157

Tech-Repro Inc. N44901

N

EXISTING LAGOON NO. 8

MAX. WE 330
BOTTOM EL. 309

EXISTING LAGOON No. 9

MAX. WE. 328.
BOTTOM EL. 312

PROPOSED SLF 10

14' BERM EL. 333

10' BERM EL. 331

15' BERM EL. 333

EL. 333 15' BERM

MAX. 10 BERM

MAC ARTHUR STREET

M. STREET

TOP EL. 351±

B-66 B-69 B-71 B-78 B-77 B-70 B-79 B-5 B-74 B-35

140' BUFFER ZONE

APPROXIMATE EDGE OF WETLANDS

PROPOSED FIREFIGHTING STOCKPILE AREA

90'±

3:1

TOWN OF PORTER

TOWN OF LEWISTON

NOTES:

1. DRAINAGE & ROADWAY TO BE DEVELOPED AS COMPLETION AND OR OPERATION OF SLF REQUIRES.
2. EDGE OF WET LANDS TO BE DETERMINED IN THE FIELD BY N.Y.S D.E.C.

NO.	DATE	REVISIONS
1	4/15/80	FIREFIGHTING STOCKPILE AREA

WEHRAN ENGINEERING
CONSULTING ENGINEERS

DRAWN FWD
CHECKED
DATE OCT. 30, 1979

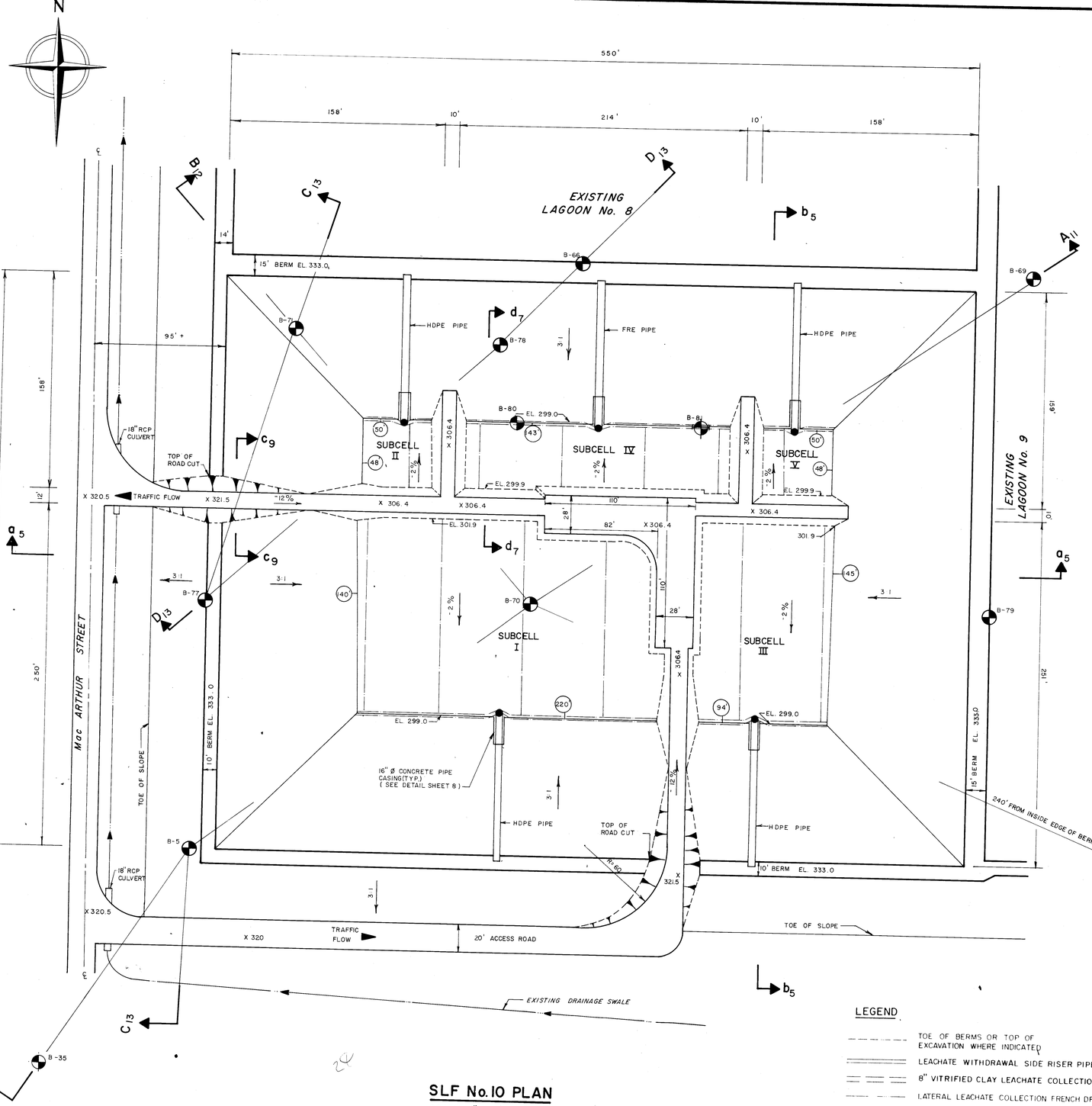
SCALE 1" = 100

SALVATORE V. ARLOTTA, JR., P.E.
N.Y.P.E. No. DATE

SCA CHEMICAL WASTE SERVICES, INC
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
SITE LOCATION PLAN

Sheet 2 of 13
Project No 01368157



SLF No. 10 PLAN

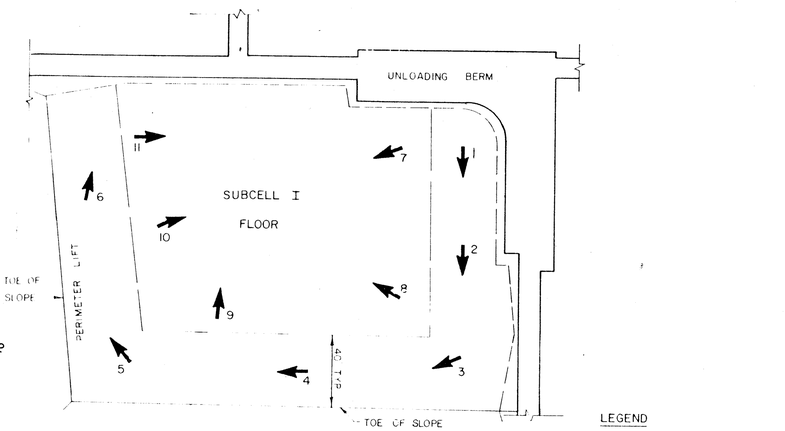
SCALE: 1"= 40'

OPERATION PLAN

Subcell	Waste Material	Location in SLF # 10	% of SLF Volume	Approx. No. of Lifts	Waste Capacity (cy)	Fill and Cover Material (cy)	Total Capacity (cy)
Subcell I	Heavy Metals	Southwest Corner	40 41 %	13	49,800	26,700	76,500
Subcell II	Pseudo Metals	Northwest Corner	20 24 %	12	12,100	6,600	18,700
Subcell III	General Wastes	Southeast Corner	25 10 %	13	29,100	15,700	44,800
Subcell IV	Halogenated wastes	North Center	15 15 %	12	18,200	9,800	28,000
Subcell V	Flammable Wastes	Northeast Corner	10 10 %	12	12,100	6,600	18,700
				TOTAL	121,300	65,400	186,700

NOTES:

1. SEE SHEET 4 FOR CONSTRUCTION NOTES
2. b_5 REFFERS TO SECTION b ON SHEET 5
3. B_{12} REFFERS TO GEOLOGIC SECTION B ON SHEET 12



LEGEND

1 ORDER OF FILLING

DIRECTION OF FILLING

TYPICAL OPERATIONAL SEQUENCE

N. T. S.

WASTE SHALL BE PLACED INITIALLY AS A PERIMETER LIFT ALONG THE TOE OF SLOPE OF THE OUTSIDE CELL WALLS. FILLING SHOULD START AT A LOCATION THAT WILL PROVIDE EASY ACCESS FOR THE PLACEMENT OF COVER MATERIAL. ONCE THE PERIMETER LIFT IS COMPLETED, FILLING SHALL PROCEED AS SHOWN. THIS PROCEDURE IS TO BE FOLLOWED FOR EACH LIFT.

LEGEND

- TOE OF BERMS OR TOP OF EXCAVATION WHERE INDICATED
- LEACHATE WITHDRAWAL SIDE RISER PIPE
- 8" VITRIFIED CLAY LEACHATE COLLECTION PIPE
- LATERAL LEACHATE COLLECTION FRENCH DRAIN
- VERTICAL RISER PIPE
- X 321.5 SPOT ELEVATION, TOP OF 2' CLAY LINER OR ACCESS BERMS
- (125) CELL BOTTOM DIMENSIONS
- B-74 BORING LOCATION

NO.	Date	REVISIONS
1	4/15/80	FRENCH DRAIN SUBCELLS II AND V

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: F.W. DG.
Checked by:
Date: 1/30/80

Scales: 1"= 40'

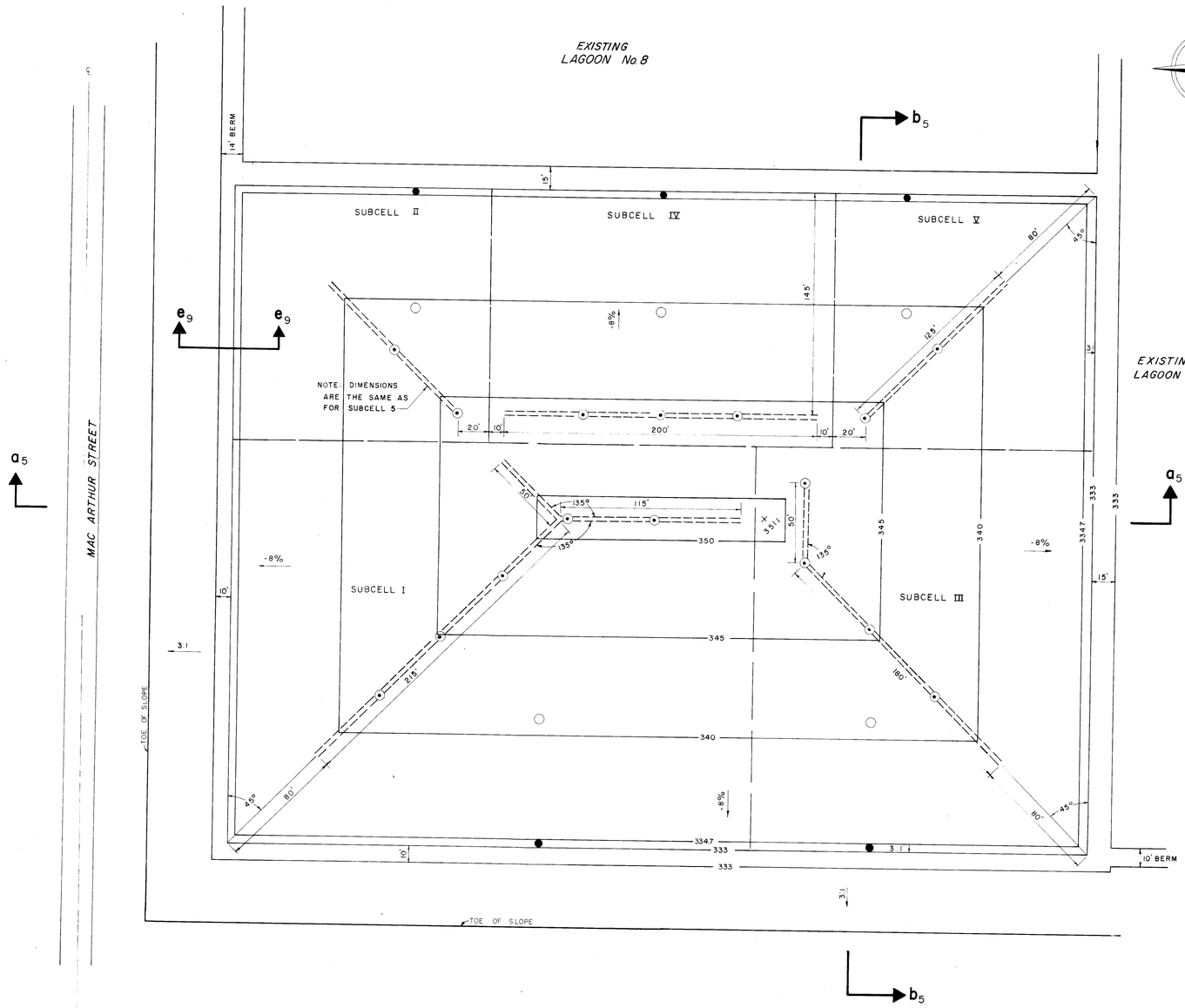
SALVATORE V. ARLOTTA, JR., P.E.
Salvatore V Arlotta Jr 4 Feb 80
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
PLAN

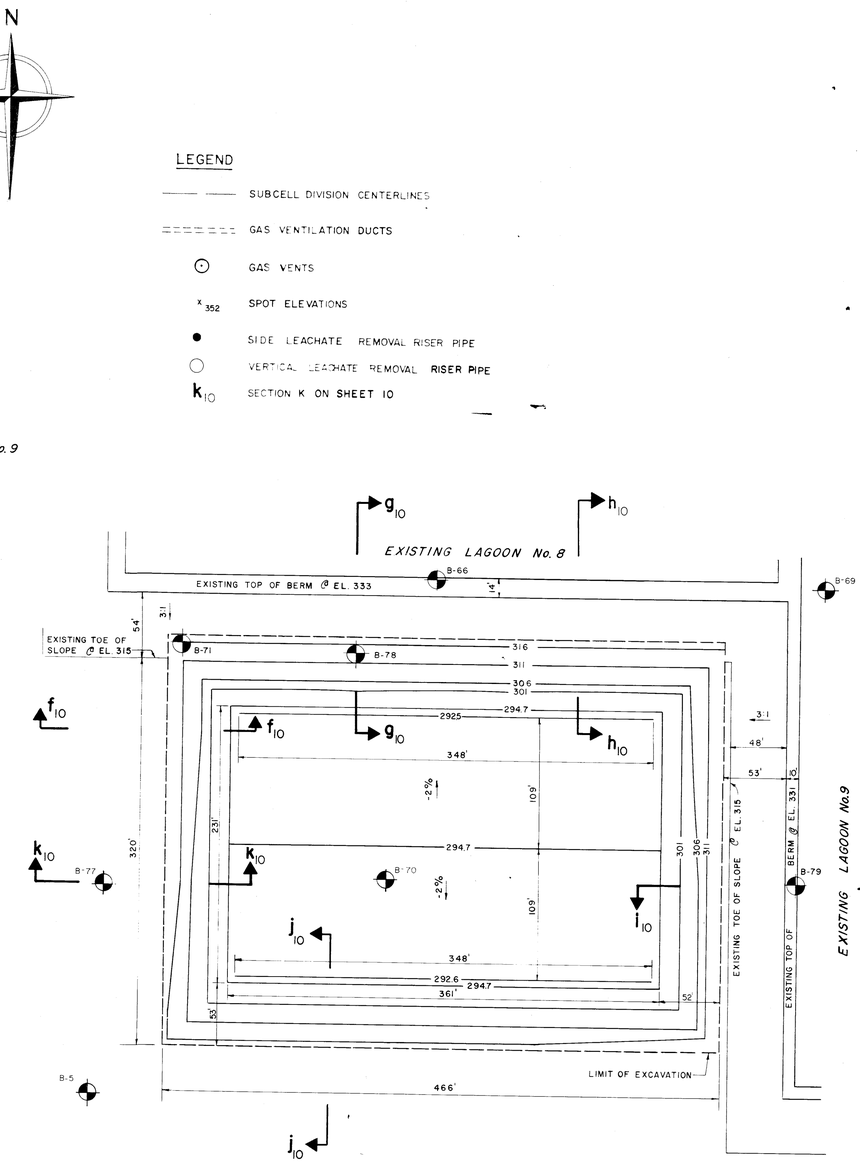
Sheet 3 of 13
Project No. 01368157

Tech-Repro, Inc. 37934



FINAL GRADING PLAN

SCALE: 1"=40'



EXCAVATION PLAN

SCALE: 1"= 60'

NOTES:

1. EXCAVATION AND FINAL GRADING PLANS REFLECT TOPOGRAPHY AS IT SHOULD EXIST AT THE RESPECTIVE TIMES OF EXCAVATION AND CAPPING OF THE LANDFILL
2. EXCAVATION PLAN DOES NOT REFLECT STRIPPING 1½ FEET OF MATERIAL OFF THE SOUTH BERM OF LAGOON No.8 FOR PLACEMENT OF HYPALON LINER

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: A.K.
Checked by:
Date: 10/30/79

Scales: AS SHOWN

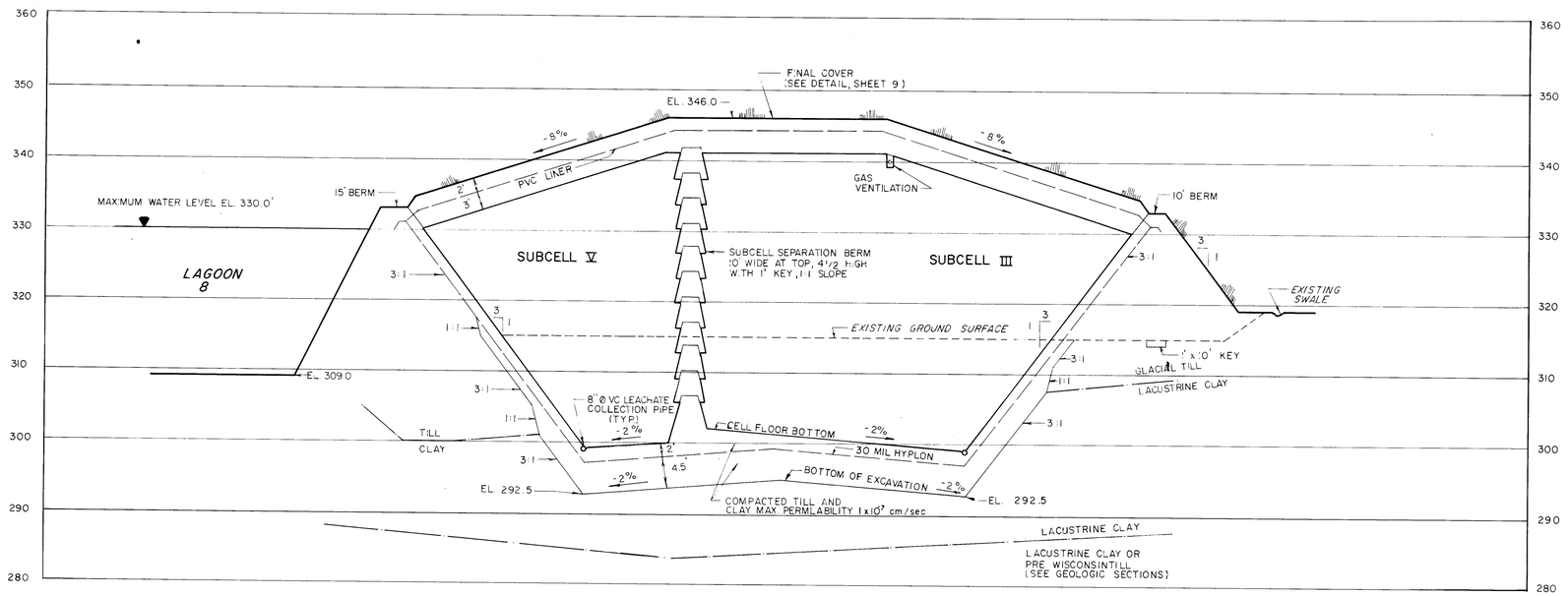
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

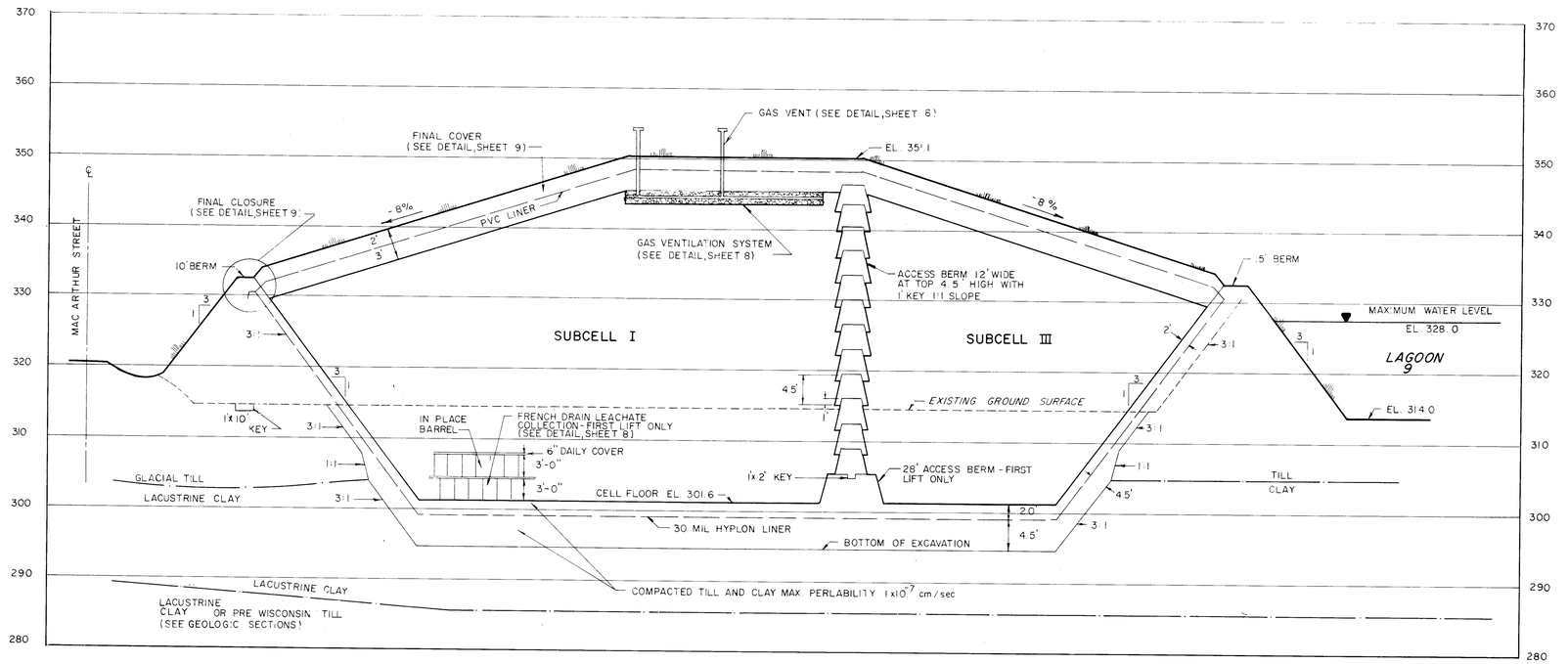
SCIENTIFIC LANDFILL No. 10
FINAL GRADING PLAN
EXCAVATION PLAN

Sheet 4 of 13
Project No. 01368157

Tech-Repro Inc. 144901



SECTION b-b 3,4



SECTION a-a 3,4

CONSTRUCTION NOTES

1. CONTRACTOR IS TO VERIFY ALL DIMENSIONS IN FIELD PRIOR TO START OF CONSTRUCTION.

2. THE LANDFILL SHALL BE PROTECTED ON ITS BOTTOM AND EXTERIOR SIDE BY A DOUBLE LINER CONSISTING OF 2 FEET OF COMPACTED CLAY OVER A HYPALON LINER. THE CLAY SHALL BE COMPACTED TO A MAXIMUM PERMEABILITY OF 10^{-7} CM/SEC. AND 90% MODIFIED PROCTOR DENSITY. 30 MIL HYPALON WITH A 10 x 10 SCRIM SHALL BE USED AND PANELS JOINED WITH BEAD BOND CEMENT. THE HYPALON SHALL BE PLACED PER MANUFACTURER'S SPECIFICATIONS. ALL SHARP OBJECTS, STICKS, STONES, AND TRASH SHALL BE REMOVED FROM THE AREA UNDER THE LINER. A LINER BASE CONSISTING OF A MINIMUM 4 1/2 FT. OF COMPACTED GLACIAL TILL SHALL BE PLACED UNDER THE HYPALON WHERE EXCAVATION ENTERS THE LACUSTRINE CLAY. THE LINER BASE SHALL THEN BE ROLLED SMOOTH PRIOR TO HYPALON PLACEMENT.

3. THE SUBCELLS IN SLF NO. 10 SHALL BE SEGREGATED BY COMPACTED SOIL BERMS TO PROVIDE A MINIMUM OF TEN FEET OF SEPARATION BETWEEN WASTES IN ADJACENT CELLS. CLAYEY SOILS EXCAVATED DURING THE CONSTRUCTION OF SLF NO. 10 SHALL BE USED FOR BERM CONSTRUCTION. EACH BERM SHALL BE APPROXIMATELY 4'-6" IN HEIGHT, WITH THE HEIGHT OF THE FINAL STAGE VARIABLE TO ACHIEVE A GRADE OF ONE FOOT HIGHER THAN THE LANDFILLED WASTE. THE BERMS SHALL BE CONSTRUCTED IN SIX-INCH LAYERS AND COMPACTED WITH A SHEEPSFOOT ROLLER TO 90% MODIFIED PROCTOR DENSITY.

4. SUBCELL IV (HALOGENATED WASTES) WILL HAVE A SYNTHETIC MEMBRANE LINER, AS SPECIFIED BY SCA CHEMICAL WASTE SERVICES, INC., PLACED ON ONE FOOT BASE OF COMPACTED AND ROLLED CLAY ABOVE THE HYPALON, AND ALONG THE SIDE WALLS TO A HEIGHT OF 5 TO 7 FEET ABOVE THE SUBCELL FLOOR. ONE FOOT OF COMPACTED CLAY SHALL BE PLACED ABOVE THE SYNTHETIC MEMBRANE LINER. (SEE SECTION d_3-d_3). ALL CLAYS ARE TO BE COMPACTED TO A MAXIMUM PERMEABILITY OF 10^{-7} CM/SEC.

5. INTERNAL LEACHATE MONITORING SYSTEMS SHALL BE INSTALLED IN EACH SUBCELL OF SLF NO. 10 AND LOCATED AS SHOWN ON THE PLAN. FOR LEACHATE MONITORING AND PUMPING. THE BOTTOM OF EACH SUBCELL SHALL BE GRADED AS NECESSARY TO PROVIDE A MINIMUM 2% SLOPE TO THE LEACHATE COLLECTION PIPES. THE COLLECTION PIPES SHALL BE EIGHT-INCH DIAMETER VITRIFIED CLAY PIPE. THE MINIMUM CRUSHING STRENGTH OF THE EIGHT-INCH PIPE SHALL BE "EXTRA STRENGTH" STANDARDS 2200 LBS/LINEAR FOOT. THE STRENGTH, MATERIAL, AND WORKMANSHIP OF THE CLAY PIPE SHALL CONFORM TO THE A.S.T.M. C-700. INSTALLATION OF THE VITRIFIED CLAY PIPE SHALL BE IN ACCORDANCE WITH A.S.T.M. C-12. A TEN INCH OBSERVATION PIPE SHALL BE INSTALLED FOR LEACHATE MONITORING AND PUMPING DURING THE OPERATIONAL STAGES OF THE LANDFILL, EXCEPT IN SUBCELL IV. WHERE FIBERGLASS REINFORCED EPOXY PIPE SHALL BE USED. MATERIALS OF CONSTRUCTION SHALL CONFORM TO ASTM D1598 FOR THE HDPE PIPE AND HAVE A MINIMUM HYDROSTATIC DESIGN STRESS OF 720 PSI.

   MATERIALS OF CONSTRUCTION FOR THE FIBERGLASS REINFORCED EPOXY PIPE SHALL CONFORM TO ASTM D2310 AND ASTM D2996. PIPE SHALL BE DESIGNED FOR THE ACTUAL LOADS IMPOSED. WHERE CLASS IV BEDDING IS REQUIRED, REINFORCED CONCRETE PIPE SHALL BE USED AS INDICATED ON THE PLANS. CONCRETE PIPE SHALL CONFORM TO ASTM C-76.

   A STEEL PIPE DESIGN MAY BE SUBSTITUTED FOR CONCRETE PIPE FOR ENCASEMENT OF THE RISER. PRESTRESSED CONCRETE CYLINDER PIPE WITH HARNESSED JOINTS (ROPS AS MANUFACTURED BY INTERPACE OR EQUIV.) SHALL BE USED AS THE VERTICAL LEACHATE COLLECTION RISER PIPE AND SUMP WITH A CAST IN PLACE BASE AS SHOWN IN THE DETAILS. PIPE SHALL CONFORM WITH AWWA C-301-72.

6. THE CONSTRUCTION OF SLF NO. 10 SHALL BE INSPECTED BY A PROFESSIONAL ENGINEER AFTER EXCAVATION IS COMPLETED BUT PRIOR TO INSTALLATION OF LINER. PERMEABILITY SAMPLES SHALL BE TAKEN AND LABORATORY TESTED, FROM THE BOTTOM AND SIDES OF SLF NO. 10, TO ASSURE COMPLIANCE WITH THE SPECIFICATIONS SET FORTH IN NOTE 2. ONE PERMEABILITY SAMPLE PER SUBCELL IS REQUIRED.

7. THE PERIMETER BERMS SHALL BE SET AT ELEVATION 333.0.

8. ALL DIMENSIONS TO BE VERIFIED AND APPROVED BY THE ENGINEER OR HIS REPRESENTATIVE IN THE FIELD.

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: FWP
Checked by:
Date: NOV. 30, 1979

Scales
1" = 40' HORIZONTAL
1" = 10' VERTICAL

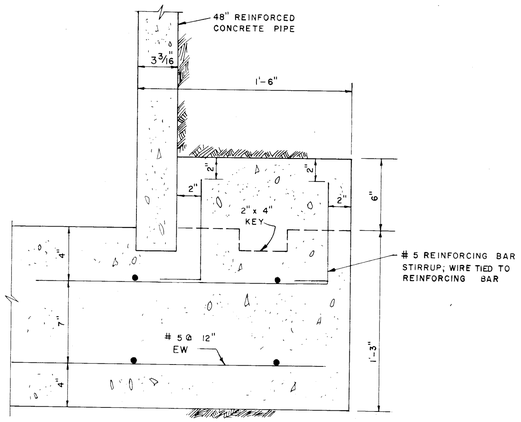
SALVATORE V. ARLOTTA, JR., P.E.
N.Y.P.E. No. 53679

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
SECTIONS

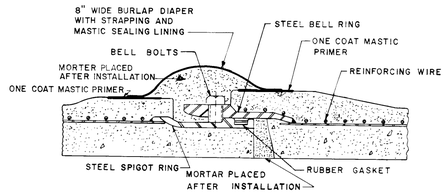
Sheet 5 of 13
Project No. 01368157

Tech-Repro Inc. N44901



BASE REINFORCING RING DETAIL

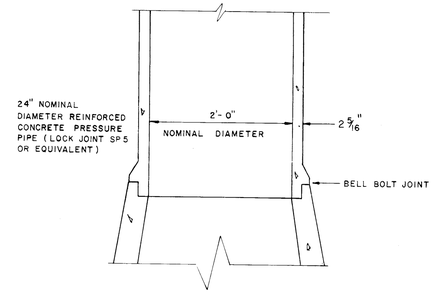
SCALE: 2"= 1'-0"

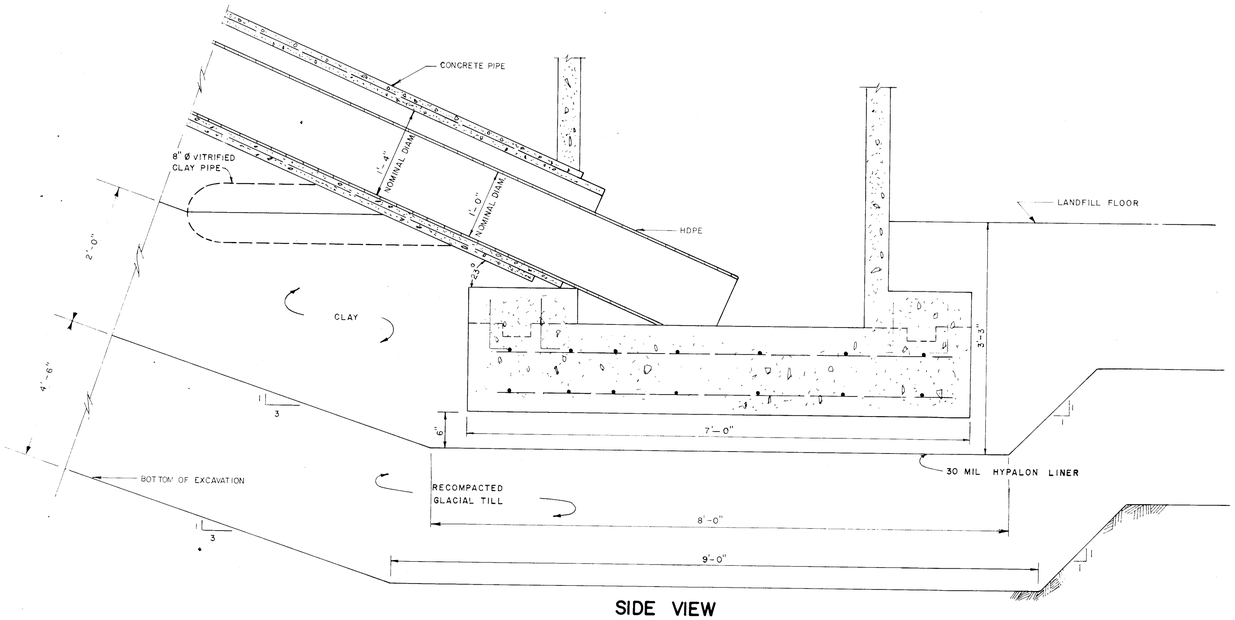


BELL BOLT JOINT DETAIL

NOTES

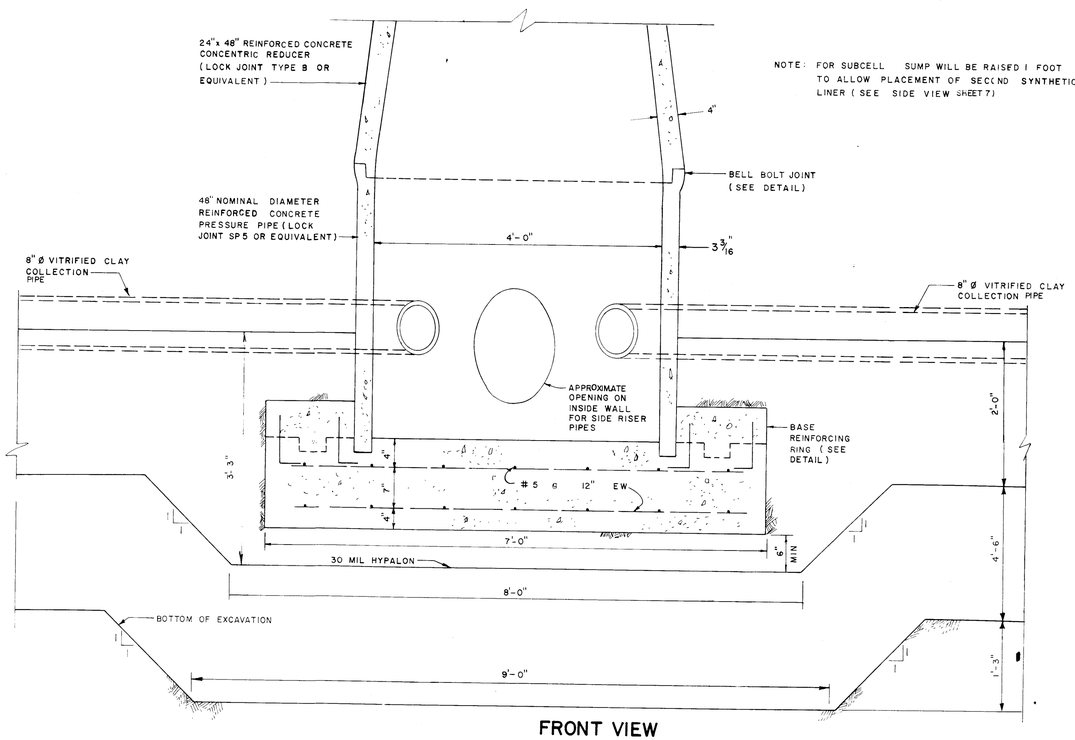
1. LEACHATE SUMP BASE TO BE POURED IN PLACE. CONCRETE REINFORCED WITH NO. 5 REINFORCING BARS ON 12" CENTERS IN BOTH DIRECTIONS AS SHOWN.
2. VERTICAL RISER SECTIONS TO BE REINFORCED CONCRETE PRESSURE PIPE WITH MECHANICAL JOINTS.
3. 48" NOMINAL DIAMETER CONCRETE PIPE TO BE PRESSED INTO POURED CONCRETE BASE TO A MINIMUM DEPTH OF 2 INCHES. PIPE THAN TO BE REMOVED, GROOVE CLEANED, AND REINSTALLED AFTER BASE SETS UP. STABILIZATION. RING WILL THEN BE POURED IN PLACE.
4. ALL EXPOSED CONCRETE SURFACES TO BE COATED WITH EPOXY (KOPPERS NO. 300 OR EQUIVALENT) FOR CORROSION PROTECTION
5. MINIMUM 1' OF GRAVEL TO BE PLACED AROUND VERTICAL RISER PIPES AND BASES FOR FULL DEPTH OF CELL.
6. SIDE RISER PIPE TO BE 12" DIA. HDPE WITH A MINIMUM WALL THICKNESS OF .4". EXCEPT IN THE HALOGENATED WASTES CELL WHERE THE PIPE MATERIAL IS TO BE FIBERGLASS REINFORCED EPOXY.
7. A 16" DIA RCP SHALL ENCASE THE RISER PIPE FOR A LENGTH OF 20' UP THE SIDE WALLS. (CLASS "A" BEDDING)
8. A MIN. OF 18" OF PROTECTIVE SOIL LAYER SHALL BE PLACED ABOVE THE RISER PIPES ALL THE WAY UP THE SLOPE.
9. BOTTOM OF RISER PIPE IS TO BE BEVELED TO REST ON BOTTOM OF MANHOLE.





SIDE VIEW
LEACHATE COLLECTION AND REMOVAL SUMP

SCALE: 1" = 1'
(NOT FOR SUBCELL IV)



NOTE: FOR SUBCELL SUMP WILL BE RAISED 1 FOOT TO ALLOW PLACEMENT OF SECOND SYNTHETIC LINER (SEE SIDE VIEW SHEET 7)

FRONT VIEW
LEACHATE COLLECTION AND REMOVAL SUMP

SCALE: 1" = 1'

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: A.K.
Checked by:
Date:

Scales: AS SHOWN

SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53619 Date:

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

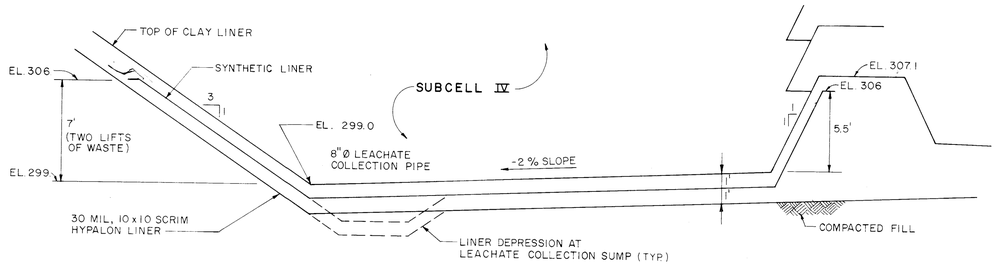
SCIENTIFIC LANDFILL No 10
DETAILS

Sheet 6 of 13
Project No. 01368157

Tech-Reprc Inc. 144901

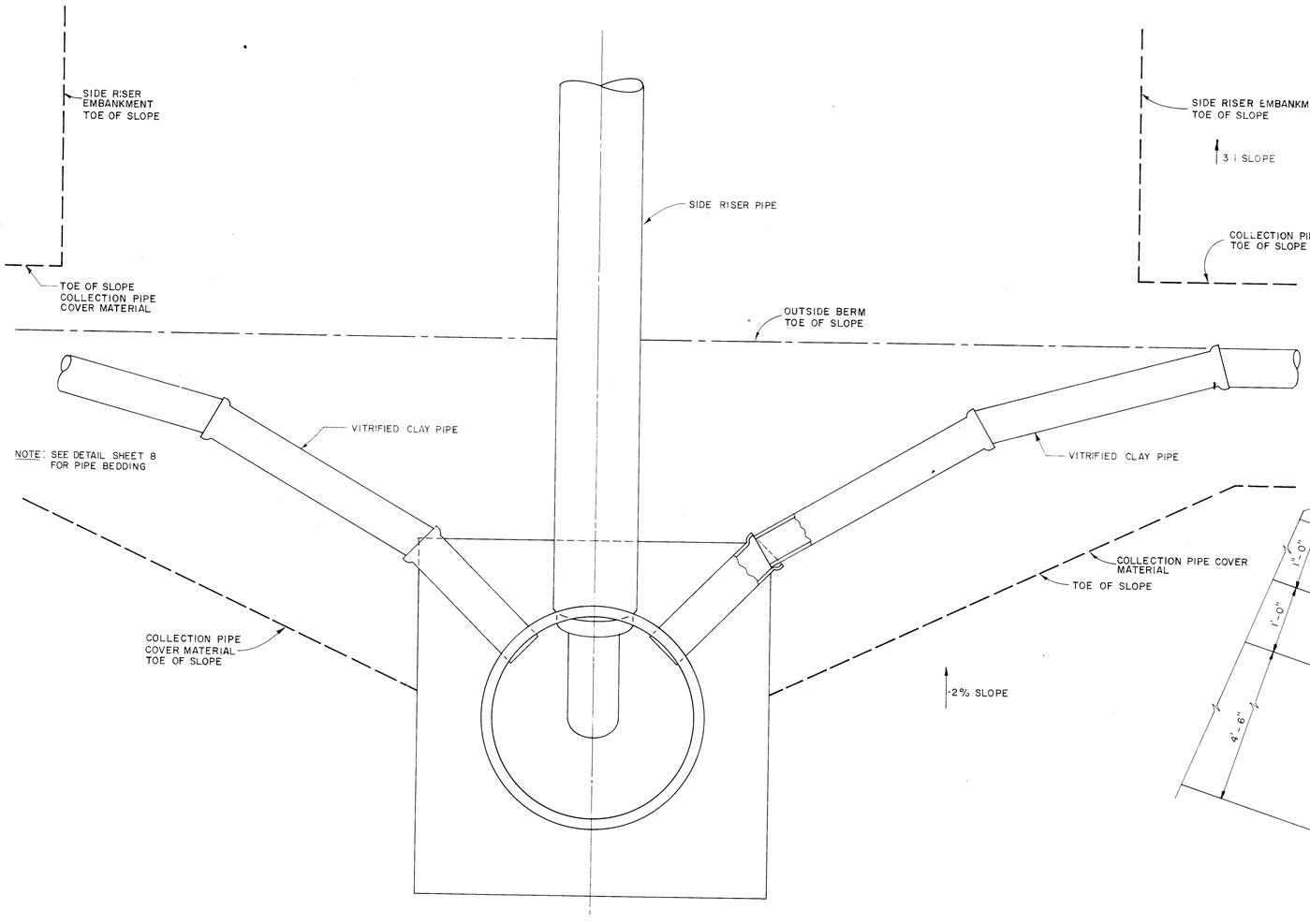
NOTES

1. LEACHATE COLLECTION PIPE TO BE 8" EXTRA STRENGTH NON-PERFORATED VITRIFIED CLAY PIPE. PIPE IS TO BE LAID WITH OPEN JOINTS. JOINTS ARE TO BE WRAPPED AROUND THE CIRCUMFERENCE OF THE PIPES WITH FILTER FABRIC (8101M C-22 OR EQUIV.) FOR A MINIMUM OF ONE FOOT ON EITHER SIDE OF THE JOINT TO PREVENT CLOGGING. PIPES WILL BE COVERED WITH WELL GRADED GRAVEL FOR A MINIMUM DEPTH OF 18" ABOVE THE TOP OF THE PIPE.
2. ALL PIPE CONNECTIONS TO LEACHATE COLLECTION SUMP WILL BE SEALED WITH NON-SHRINK GROUT.
3. BEDDING FOR PIPE SHALL BE AS SHOWN IN DETAIL ON SHEET 8.
4. THE CLAY PIPE SHALL BE MANUFACTURED FROM FIRE CLAY, SHALE, SURFACE CLAY OR A COMBINATION OF THESE MATERIALS AND FIRED TO SUITABLE TEMPERATURES WHICH YIELDS A STRONG DURABLE PIPE. THE MINIMUM CRUSHING STRENGTH FOR 8" PIPE SHALL BE 2,200 LBS/LINEAR FOOT. THE PIPE SHALL MEET A.S.T.M. C-700 STANDARDS.



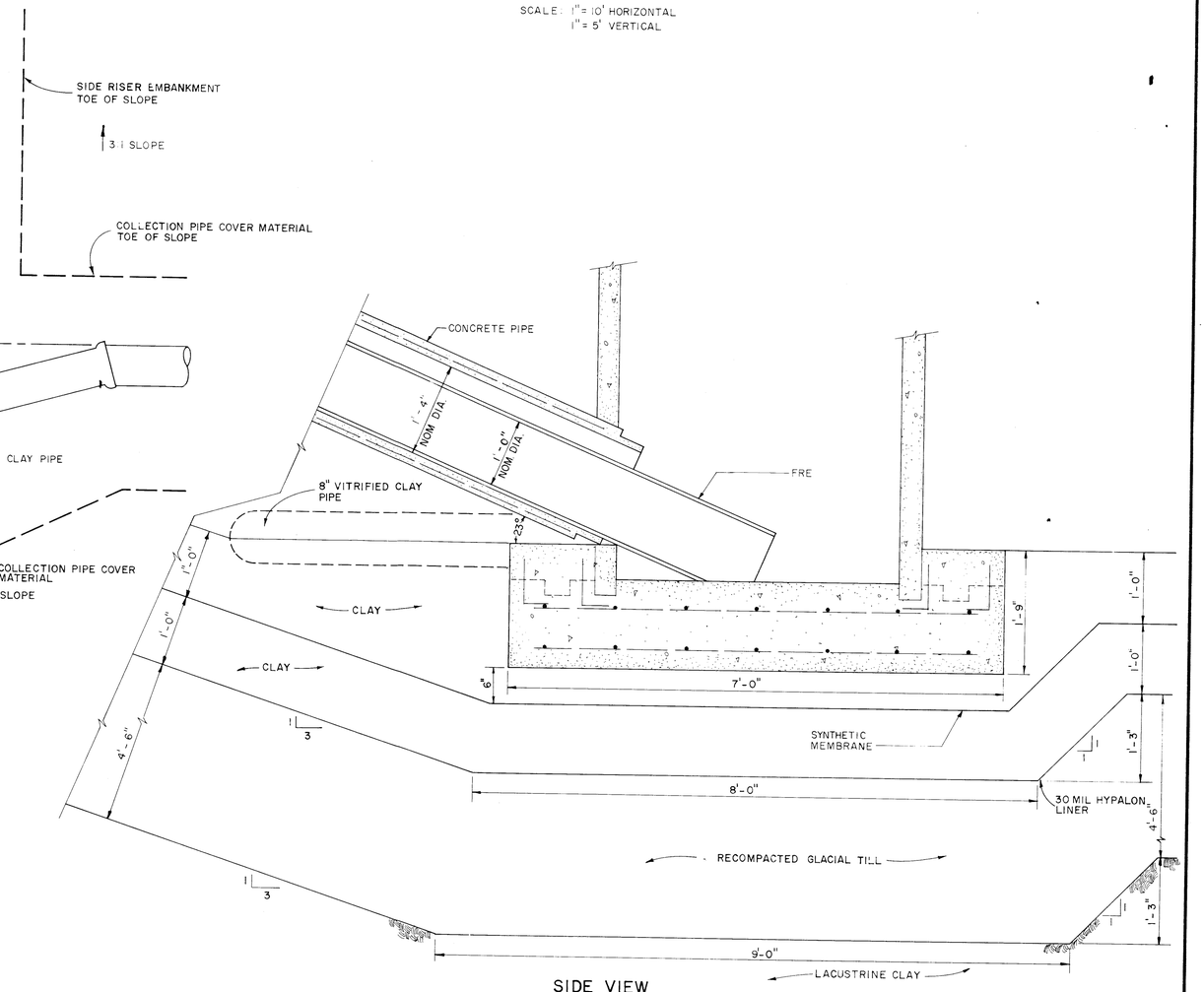
SECTION d_3-d_3
HALOGENATED WASTE SUBCELL DETAIL
(SUBCELL IV)

SCALE: 1" = 10' HORIZONTAL
1" = 5' VERTICAL



LEACHATE COLLECTION AND REMOVAL SUMP PLAN

SCALE 3/4" = 1'-0"



SIDE VIEW
LEACHATE SUMP IN SUBCELL IV

SCALE 1" = 1'

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: R.H.
Checked by:
Date: 10/30/79

Scales: AS SHOWN

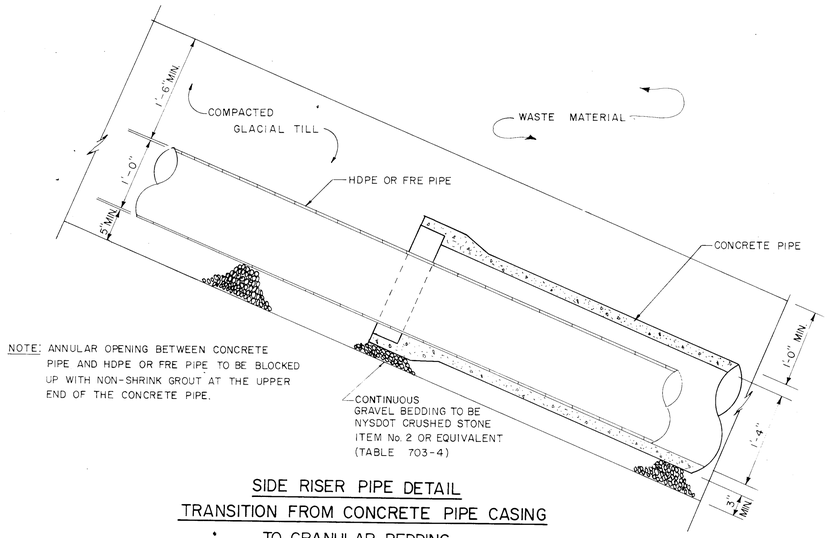
SALVATORE V. ARLOTTA JR., P.E.
N.Y. P.E. No. 53679 Date:

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
DETAILS

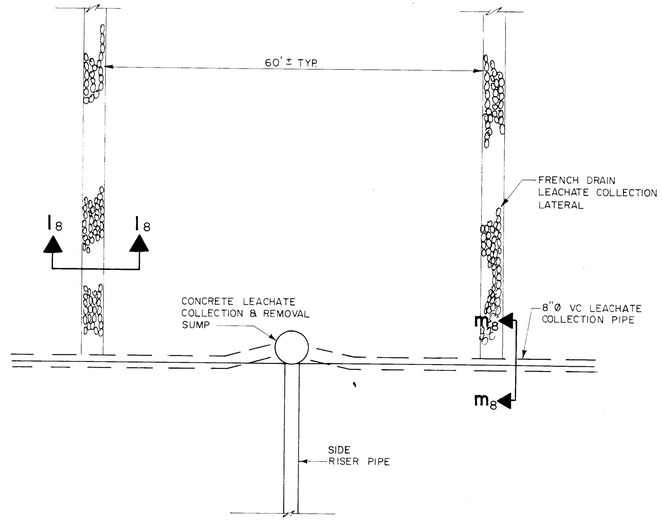
Sheet 7 of 13
Project No. 01368157

Tech-Repro Inc. 716/852-7500

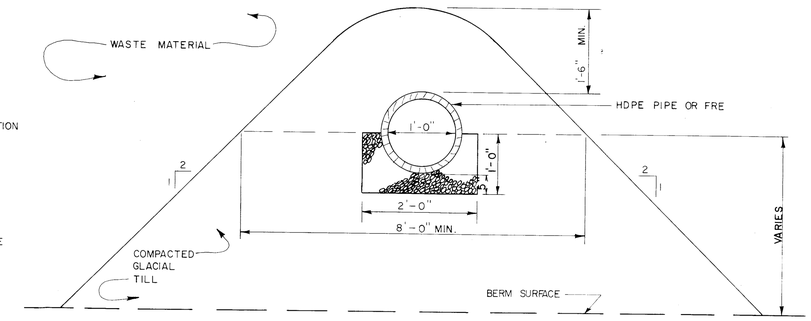


NOTE: ANNULAR OPENING BETWEEN CONCRETE PIPE AND HDPE OR FRE PIPE TO BE BLOCKED UP WITH NON-SHRINK GROUT AT THE UPPER END OF THE CONCRETE PIPE.

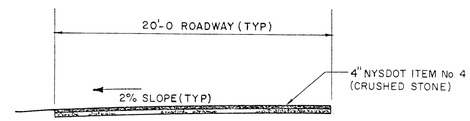
SIDE RISER PIPE DETAIL
TRANSITION FROM CONCRETE PIPE CASING TO GRANULAR BEDDING
N.T.S.



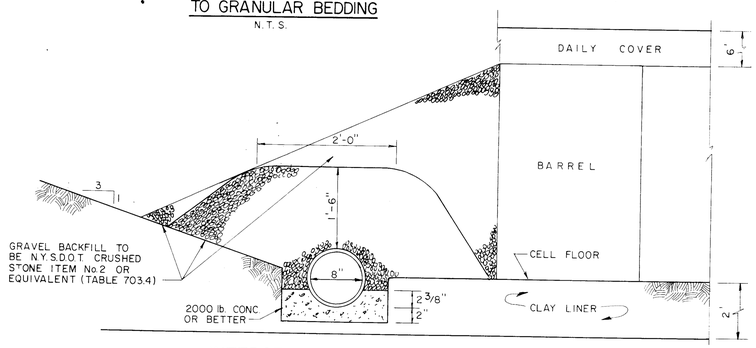
LEACHATE COLLECTION SYSTEM DETAIL
N.T.S.



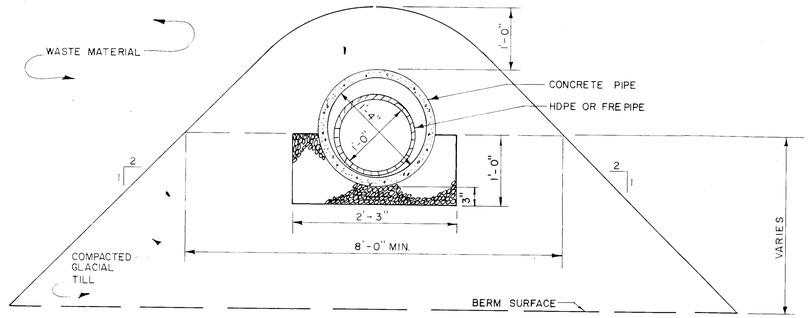
SIDE RISER PIPE BEDDING DETAIL
WITHOUT CONCRETE CASING
N.T.S.



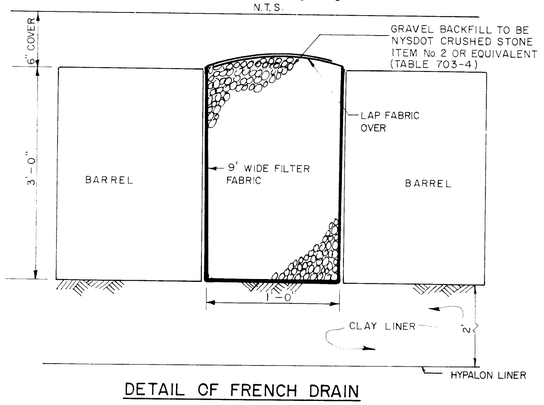
TYPICAL ROADWAY DETAIL
N.T.S.



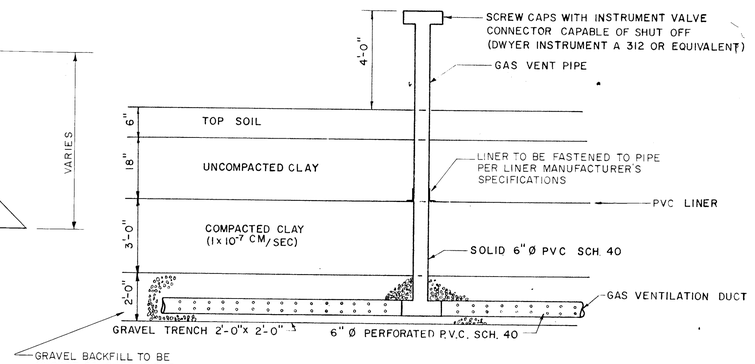
INTERSECTION OF FRENCHDRAIN AND VITRIFIED CLAY LEACHATE COLLECTION SYSTEM
SECTION m_8 - m_8
N.T.S.



SIDE RISER PIPE BEDDING DETAIL
WITH CONCRETE PIPE CASING
N.T.S.



DETAIL OF FRENCH DRAIN LEACHATE COLLECTION LATERAL
SECTION l_8 - l_8
N.T.S.



GAS VENTING DETAIL
NOT TO SCALE

NO.	DATE	REVISIONS
1	4/15/80	FRENCH DRAIN-VITRIFIED CLAY COLLECTION SYSTEM

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: MSL
Checked by: DC, WD
Date: OCT. 30, 1979

Scales: AS SHOWN

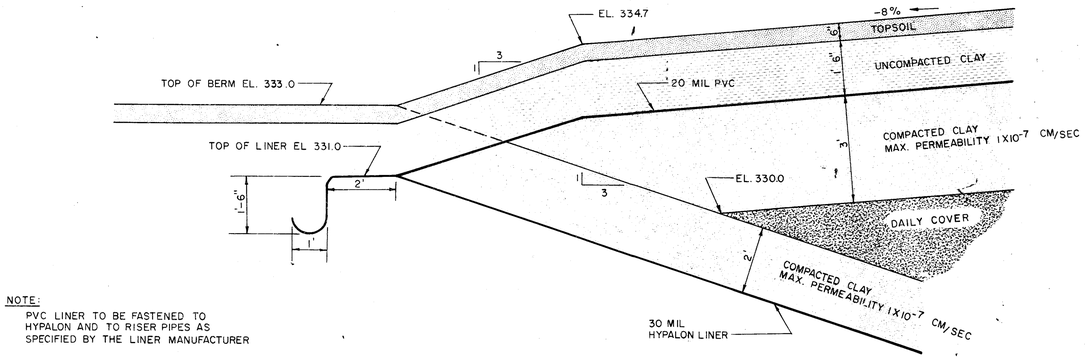
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date:

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
DETAILS

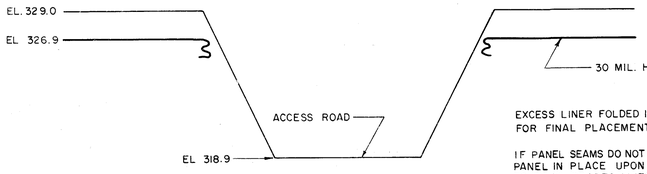
Sheet 8 of 13
Project No. 01368157

Tech-Repro Inc. N-44901



NOTE:
PVC LINER TO BE FASTENED TO HYPALON AND TO RISER PIPES AS SPECIFIED BY THE LINER MANUFACTURER

SECTION $e_4 - e_4$
FINAL COVER DETAIL
SCALE: 1" = 2'



SECTION $c_3 - c_3$
1" = 10' HORIZONTAL
1" = 5' VERTICAL

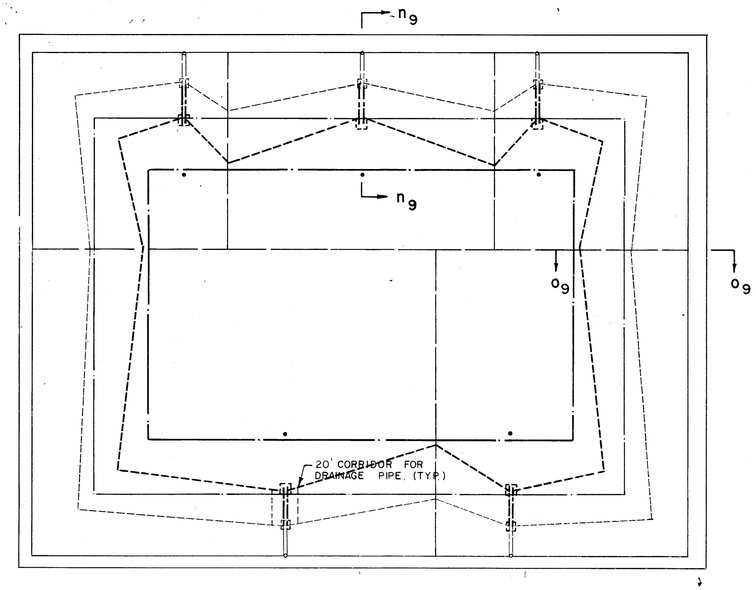
EXCESS LINER FOLDED IN TWO FOOT WIDE SECTIONS AND BURIED IN BANK FOR FINAL PLACEMENT UPON COMPLETION

IF PANEL SEAMS DO NOT FALL ON ACCESS CUT IN BERM SPLICE AN ADDITIONAL PANEL IN PLACE UPON BERM COMPLETION BERM AND LINER MUST BE COMPLETED TO FINAL GRADES WHEN WASTE PLACEMENT REACHES AN ELEVETION ON 315.0 (1' BELOW BREAK IN LINER AT ACCESS BERMS)

FINAL CLOSURE COVER

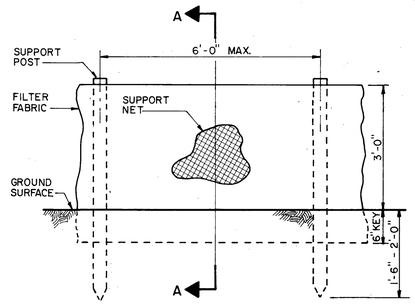
CONSTRUCTION SEQUENCE

1. WHEN THE TOP OF LANDFILL WASTE REACHES TO WITHIN 1 FOOT OF THE TOP OF SYNTHETIC LINER (I.E. 3 FEET BELOW TOP OF BERM), INSTALL THE 6 INCH DIAMETER ADS PIPE AT THE LOCATIONS SHOWN. CONNECT THE 6 INCH PIPE TO THE 12 INCH DIAMETER HDPE SIDE RISER PIPE.
2. CONSTRUCT A MINIMUM 3 FOOT THICK CLAY COVER OVER THE WASTE AND EXTENDING AT LEAST 25 FEET FROM THE INTERIOR TOP OF BERM. THE CLAY WILL BE COMPACTED TO ACHIEVE A MAXIMUM PERMEABILITY OF 1 X 10^{-7} CM/SEC AND SLOPE AT AN 8% GRADE AS SHOWN.
3. THE FIRST LIFT OF MOUNDED WASTE CAN BE PLACED IN THE LANDFILL AS SHOWN.
4. EXTEND THE 6 INCH DIAMETER ADS PIPE AS SHOWN.
5. EXTEND THE 3 FOOT THICK COMPACTED CLAY COVER OVER THE LANDFILL AS SHOWN.
6. PLACE THE NEXT LIFT OF MOUNDED WASTE AS SHOWN.
7. REPEAT STEPS 4 THROUGH 6 FOR SUCCEEDING LIFTS OF WASTE UNTIL THE LANDFILL AREA IS COMPLETELY COVERED.

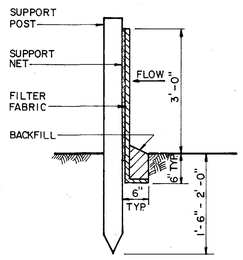


PLAN VIEW—RUNOFF CONTROL BERMS
SCALE 1"= 60'

LEGEND
- OUTER LIMIT OF LIFT
- SIDE RISER PIPE
- VERTICAL RISER PIPE
- CENTERLINE OF INTERIOR BERMS
- LIMIT OF COVER MATERIAL—RUNOFF CONTROL BERMS
- INDICATES MATERIAL PLACED PRIOR TO OR DURING 1st LIFT OF MOUNDED WASTE
- (PLAN) INDICATES MATERIAL PLACED PRIOR TO OR DURING 2nd LIFT OF MOUNDED WASTE BUT AFTER THE 1st LIFT
- SILT FENCING



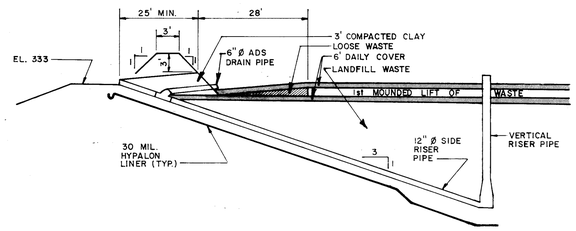
PROFILE



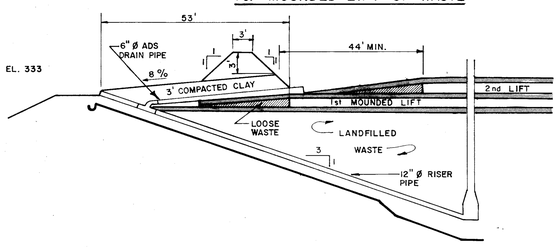
SECTION A-A

NOTES:
1) SUPPORT POSTS MAY BE WOOD OR METAL SUCH AS A 4"x4" TREATED CONSTRUCTION TIMBER OR ANGLE IRON.
2. SUPPORT NET MAY BE GALVANIZED WIRE MESH OR WOOD SLATS SPACED IN A MAXIMUM 4"x4" PATTERN.
3) FILTER FABRIC: BIDIM C-29 OR C-34 OR EQUIVALENT.
4) THE MAXIMUM SIZE FOR THE SILT FENCE SHOULD BE 4' HIGH BY 6' LONG BOX COMPLETELY SURROUNDING THE CORRUGATED POLYETHYLENE INLET PIPE.
5. PIPE SHALL PROTRUDE THROUGH SUPPORT NET AND FILTER FABRIC SHALL BE FASTENED TO PIPE WITH STAINLESS STEEL CLAMPS AND SCREWS.

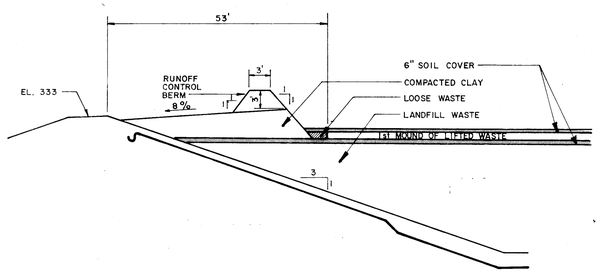
TYPICAL SILT FENCE DETAILS
N.T.S.



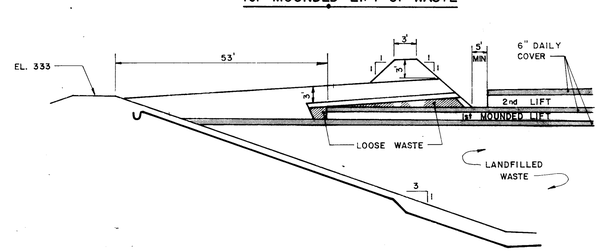
SECTION $n_9 - n_9$
1st MOUNDED LIFT OF WASTE



SECTION $n_9 - n_9$
2nd MOUNDED LIFT OF WASTE



SECTION $o_9 - o_9$
1st MOUNDED LIFT OF WASTE



SECTION $o_9 - o_9$
2nd MOUNDED LIFT OF WASTE

SECTION VIEW-RUNOFF CONTROL BERMS
N.T.S.

NO.	DATE	REVISIONS
1	6/80	REVISE RUNOFF CONTROL BERM

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: A.K.
Checked by:
Date:

Scales: AS SHOWN

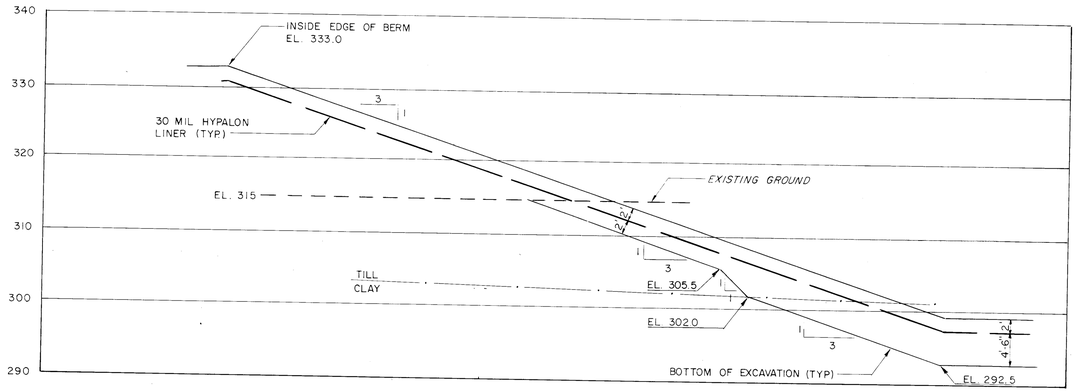
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. Lic. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

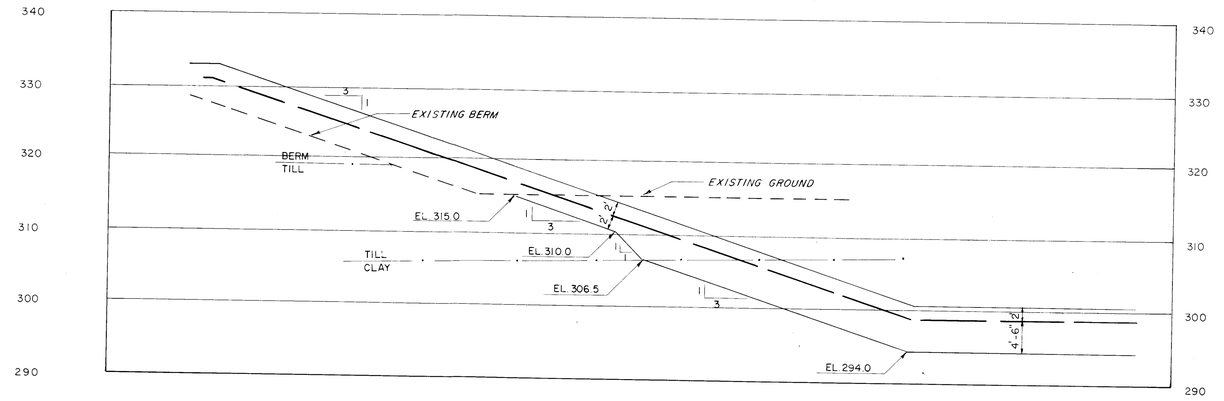
SCIENTIFIC LANDFILL No. 10
DETAILS

Sheet 9 of 13
Project No. 01368157

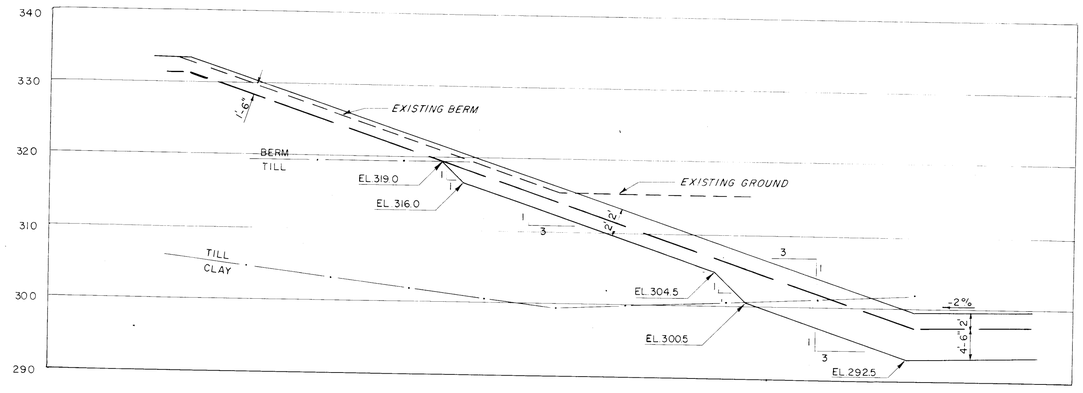
Tetra-Tech Inc. TT-A1-00-1



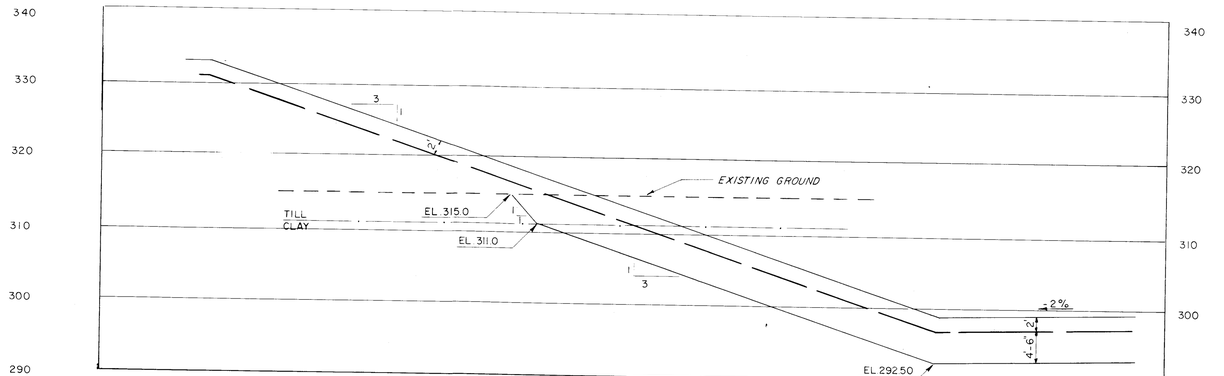
SECTION f_4-f_4



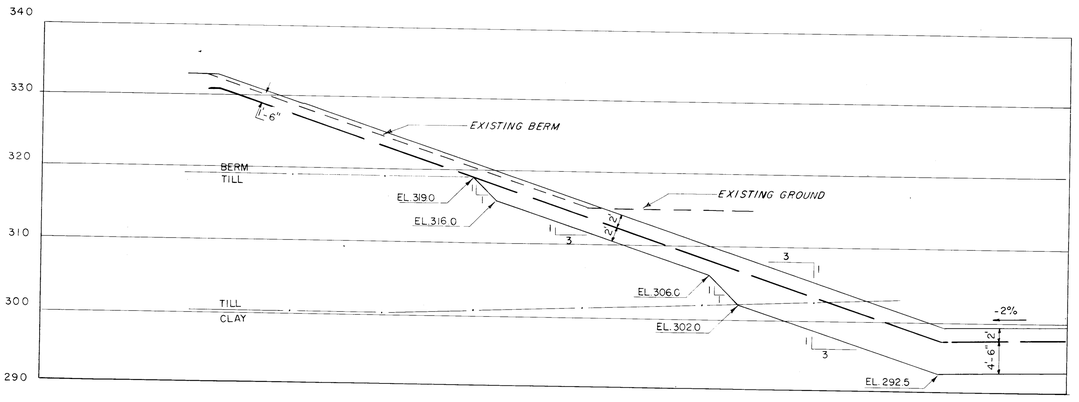
SECTION i_4-i_4



SECTION g_4-g_4

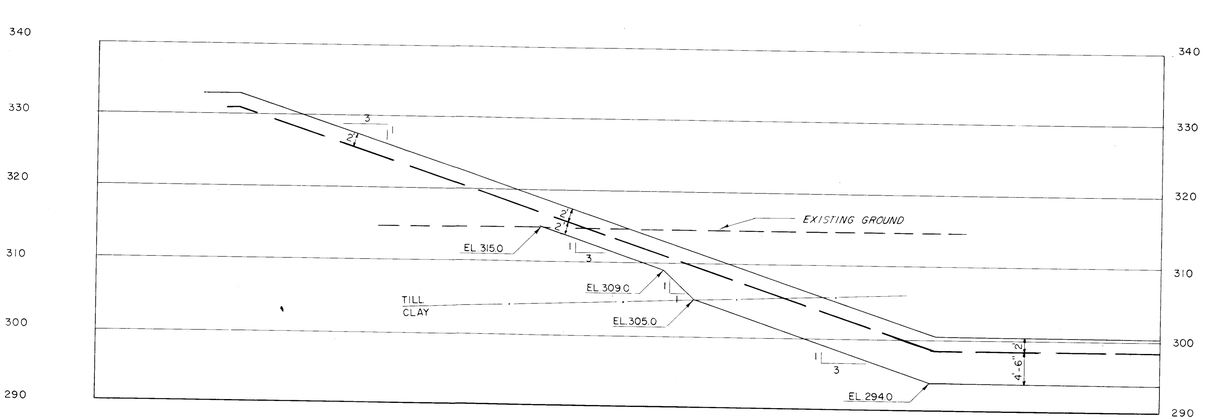


SECTION j-j_4



SECTION h_4-h_4

NOTE: SLOPE CHANGES ARE AT INTERPOLATED POSITIONS. FOR THE GIVEN LOCATIONS. DURING TIME OF EXCAVATION, SMALL TEST PITS SHOULD FIX THE ELEVATION OF THE CLAY LAYER AND DETERMINE SLOPE CHANGES ACCORDINGLY.



SECTION k-k_4

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: M.S.L.
Checked by:
Date: JAN. 30, 1980

Scales
HORIZONTAL 1"= 10'
VERTICAL 1"= 10'

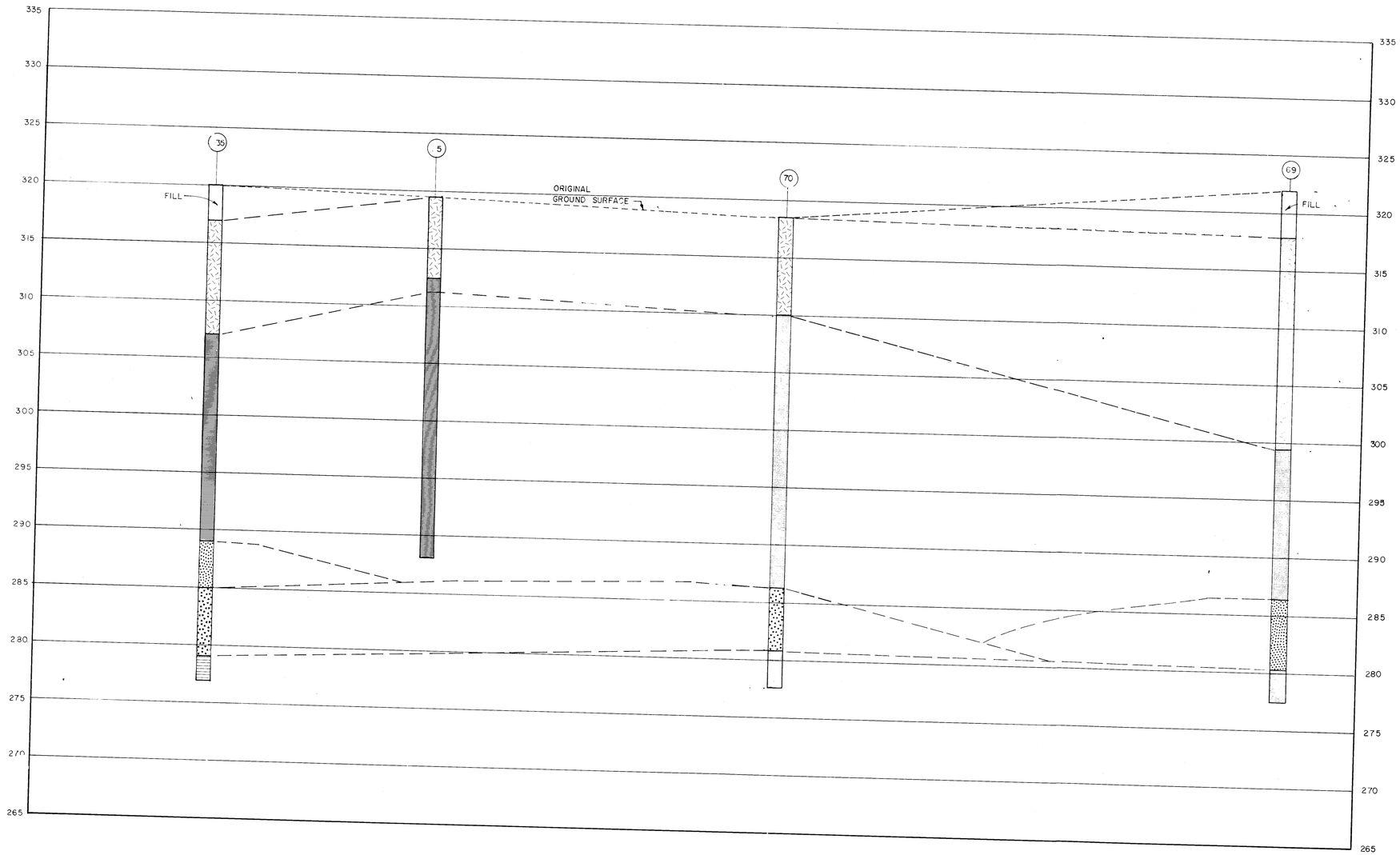
SALVATORE V. ARLOTTA, JR., PE.
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL NO. 10
SECTIONS

Sheet 10 of 13
Project No. 01368157

Tech-Repro, Inc. N44951



SEE SHEET 12 FOR LEGEND AND GEOLOGIC DESCRIPTION

SECTION A_3-A_3

10X VERTICAL EXAGGERATION

0 5 10 VERTICAL

0 50 100 HORIZONTAL

SCALE IN FEET

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: SWD
Checked by: TPP, S.V.A., JS.
Date: 10/30/79

Scales: AS SHOWN

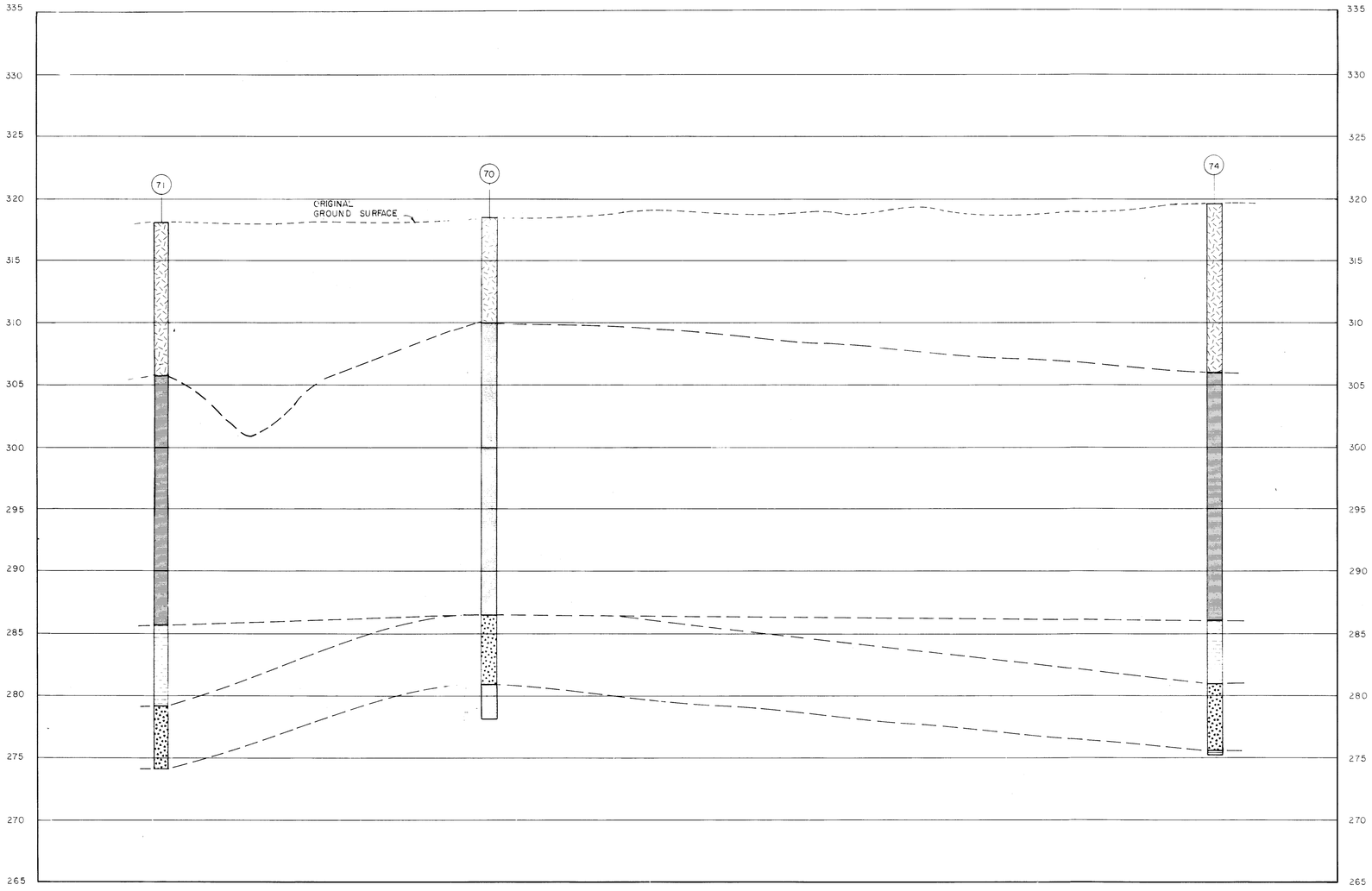
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL No. 10
GEOLOGIC SECTIONS

Sheet 11 of 13
Project No. 01368157

Tech-Repro Inc. 144161



SECTION B_2-B_3

10X VERTICAL EXAGGERATION

0 5 10 VERTICAL

0 50 100 HORIZONTAL

SCALE IN FEET

DESIGNATION	GEOLOGIC DESCRIPTION
	GLACIAL TILL
	GLACIOLACUSTRINE CLAYS AND SILTS
	GLACIOLACUSTRINE SILT, FINE SAND, LITTLE FINE GRAVEL
	GLACIOLACUSTRINE SAND
	PRE-WISCONSIN GLACIAL TILL
	QUEENSTON SHALE

LEGEND

- 35 — BORING OR TEST PIT LOCATION
- GROUND SURFACE
- CONTACT
- GEOLOGIC DESIGNATION
- ORIGINAL GROUND SURFACE
- INFERRED CONTACTS
- LIMITS OF LAGOON

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by:
Checked by: B.S.
Date: 10/30/79

Scales
AS SHOWN

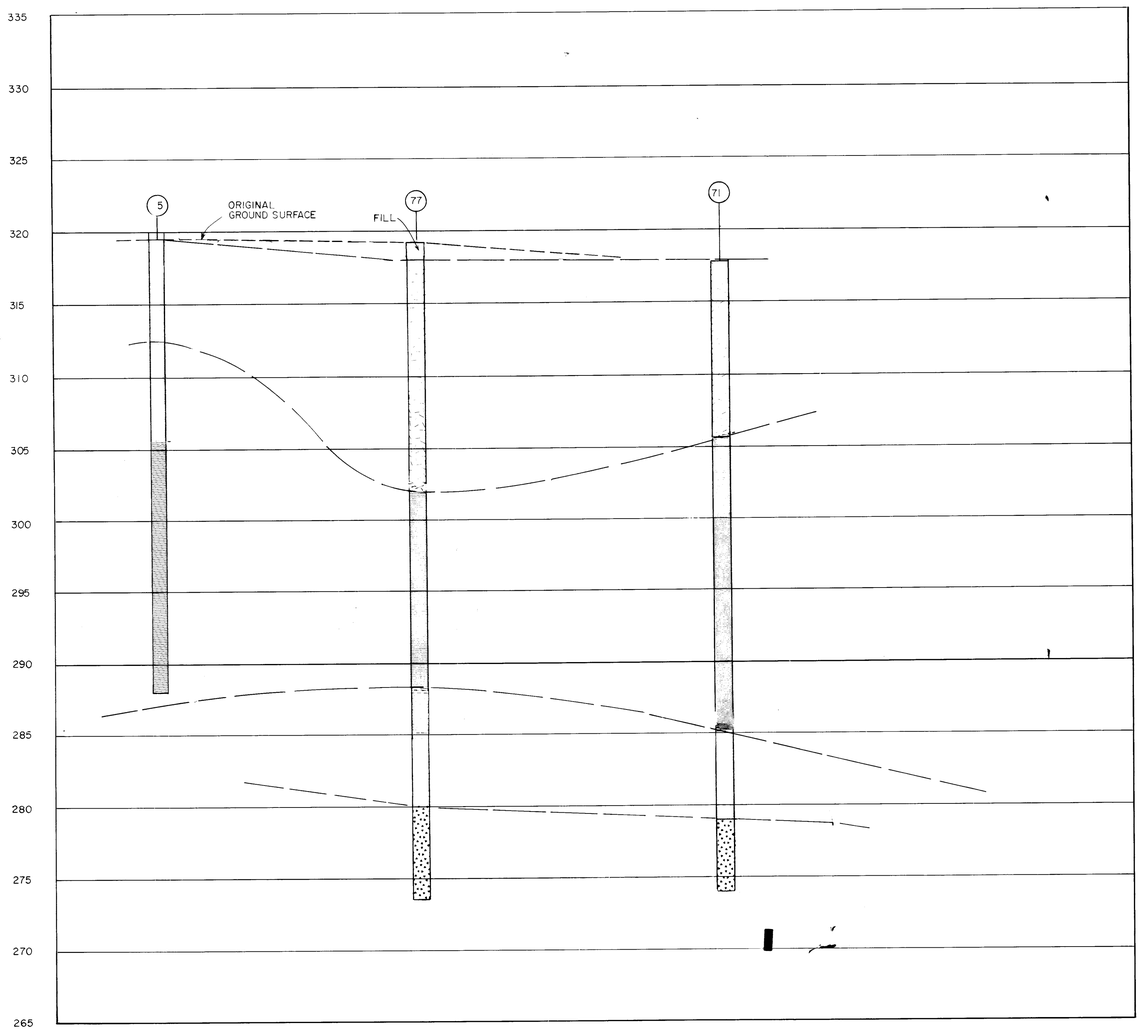
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

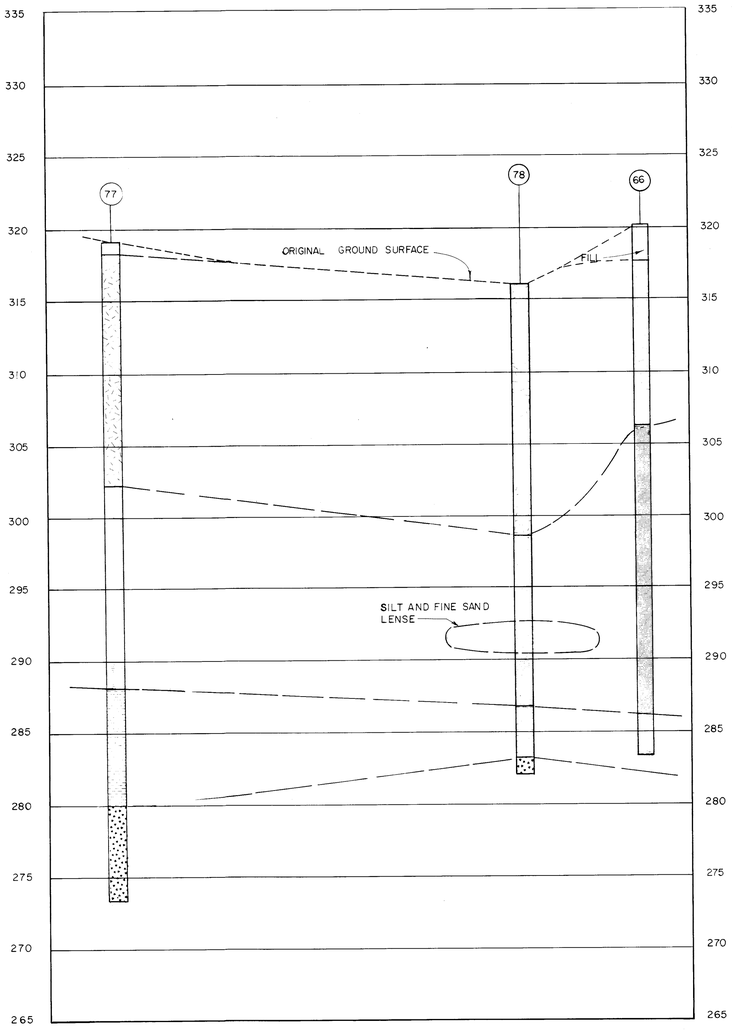
SCIENTIFIC LANDFILL NO. 10
GEOLOGIC SECTIONS

Sheet 12 of 13
Project No. 368157

Trak-Repro, Inc. 1144901



SECTION C_3-C_3



SECTION D_3-D_3

10X VERTICAL EXAGGERATION

0 5 10 VERTICAL

0 50 100 HORIZONTAL

SCALE IN FEET

NO.	DATE	REVISIONS

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Drawn by: FND
Checked by:
Date: 10/30/79

Scales: AS SHOWN

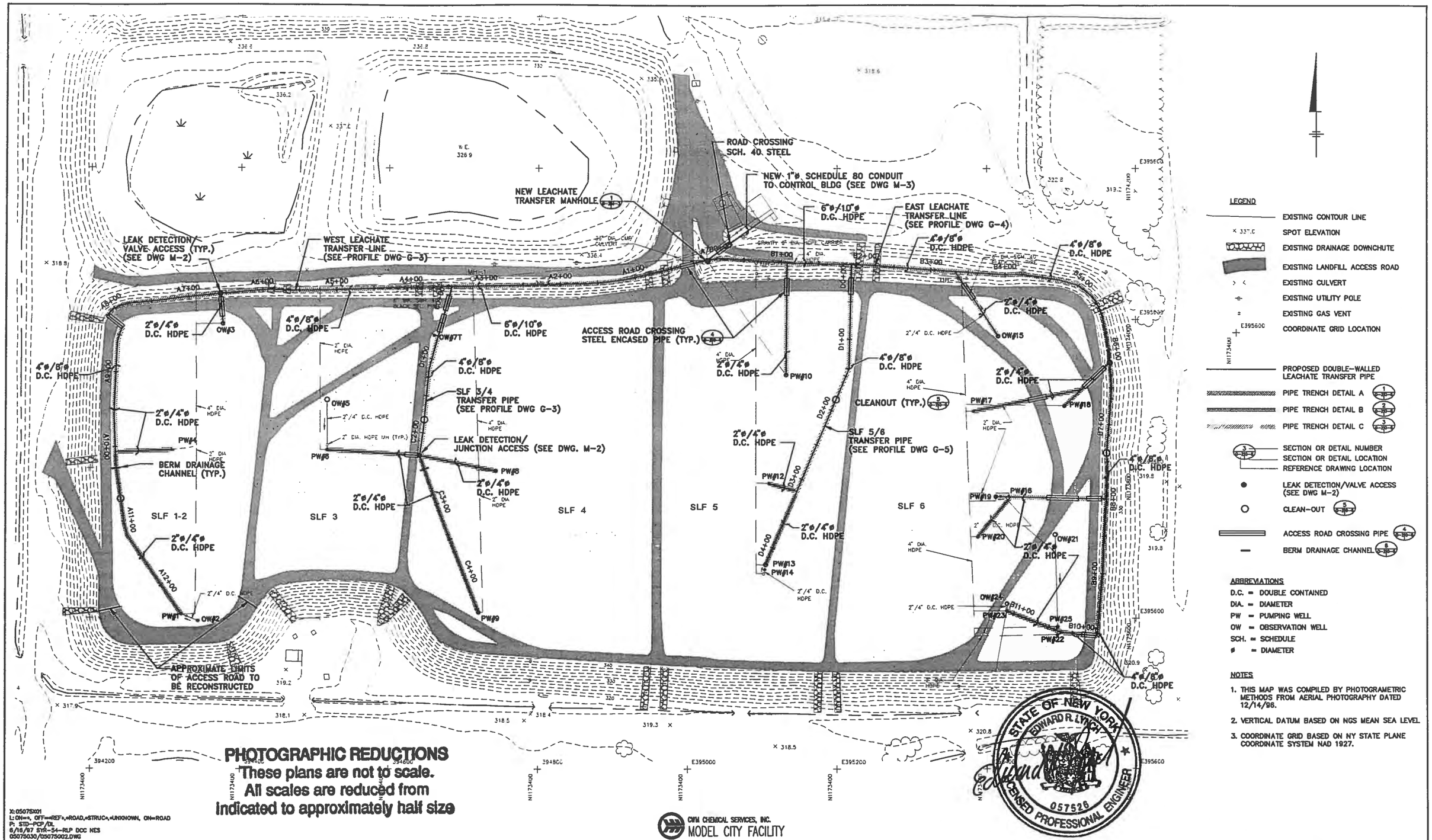
SALVATORE V. ARLOTTA, JR., P.E.
N.Y. P.E. No. 53679 Date

SCA CHEMICAL WASTE SERVICES, INC.
MODEL CITY, NIAGARA COUNTY, NEW YORK

SCIENTIFIC LANDFILL NO.10
GEOLOGIC SECTIONS

Sheet 13 of 13
Project No. 01368157

Tech-Reprd Inc. N44901



LEGEND

- EXISTING CONTOUR LINE
- SPOT ELEVATION
- EXISTING DRAINAGE DOWNCHUTE
- EXISTING LANDFILL ACCESS ROAD
- EXISTING CULVERT
- EXISTING UTILITY POLE
- EXISTING GAS VENT
- COORDINATE GRID LOCATION
- PROPOSED DOUBLE-WALLED LEACHATE TRANSFER PIPE
- PIPE TRENCH DETAIL A (1)
- PIPE TRENCH DETAIL B (2)
- PIPE TRENCH DETAIL C (3)
- SECTION OR DETAIL NUMBER
- SECTION OR DETAIL LOCATION
- REFERENCE DRAWING LOCATION
- LEAK DETECTION/VALVE ACCESS (SEE DWG M-2)
- CLEAN-OUT (5)
- ACCESS ROAD CROSSING PIPE (4)
- BERM DRAINAGE CHANNEL (6)

ABBREVIATIONS

D.C. = DOUBLE CONTAINED
DIA. = DIAMETER
PW = PUMPING WELL
OW = OBSERVATION WELL
SCH. = SCHEDULE
ø = DIAMETER

NOTES

1. THIS MAP WAS COMPILED BY PHOTOGRAMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 12/14/96.
2. VERTICAL DATUM BASED ON NGS MEAN SEA LEVEL
3. COORDINATE GRID BASED ON NY STATE PLANE COORDINATE SYSTEM NAD 1927.

CWM CHEMICAL SERVICES, INC.
MODEL CITY FACILITY

X:\05075\X01
L:ON==, OFF==REF*,=ROAD,=STRUC*,=UNKNOWN, ON=ROAD
P: STD-PCP/DL
6/16/97 SYR-54-RLP DCC NES
05075030/05075002.DWG

Graphic Scale
60' 0 60' 120'
1"=60'

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

No.	Date	Revisions	Init

Project Mgr. CJC
Designed by CJC/PHB
Drawn by NES
Checked by GRC
Prof. Eng. EDWARD R. LYNCH
PE License 057526

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CWM CHEMICAL SERVICES, INC. • MODEL CITY, NEW YORK

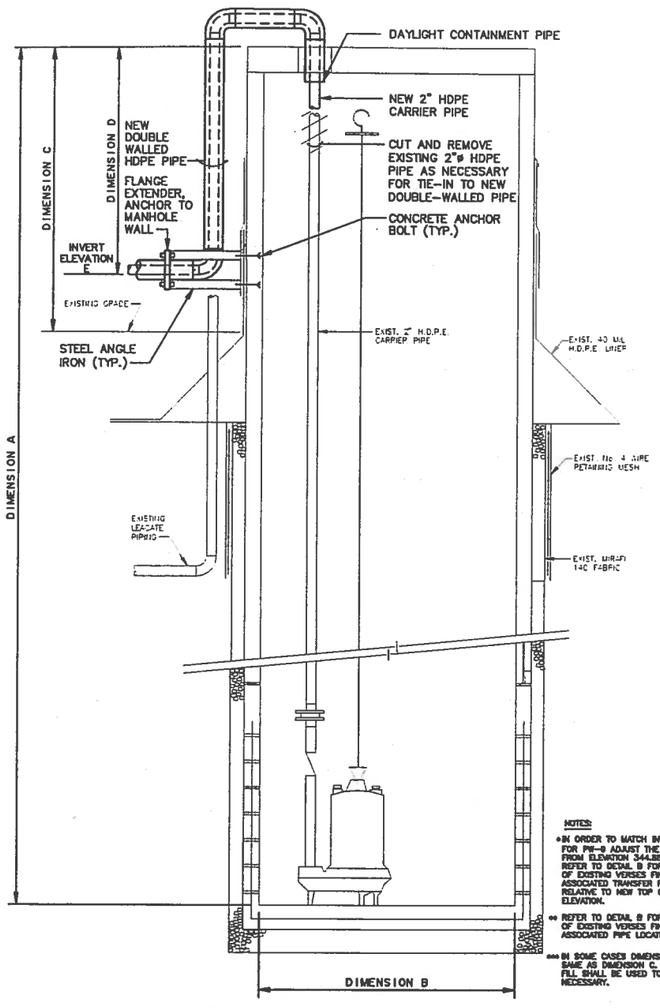
SLF 1-6 LEACHATE TRANSFER LINE UPGRADE

PROPOSED LEACHATE TRANSFER SITE PLAN

File Number 050.75.02F
Date JUNE 1997

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

G-2



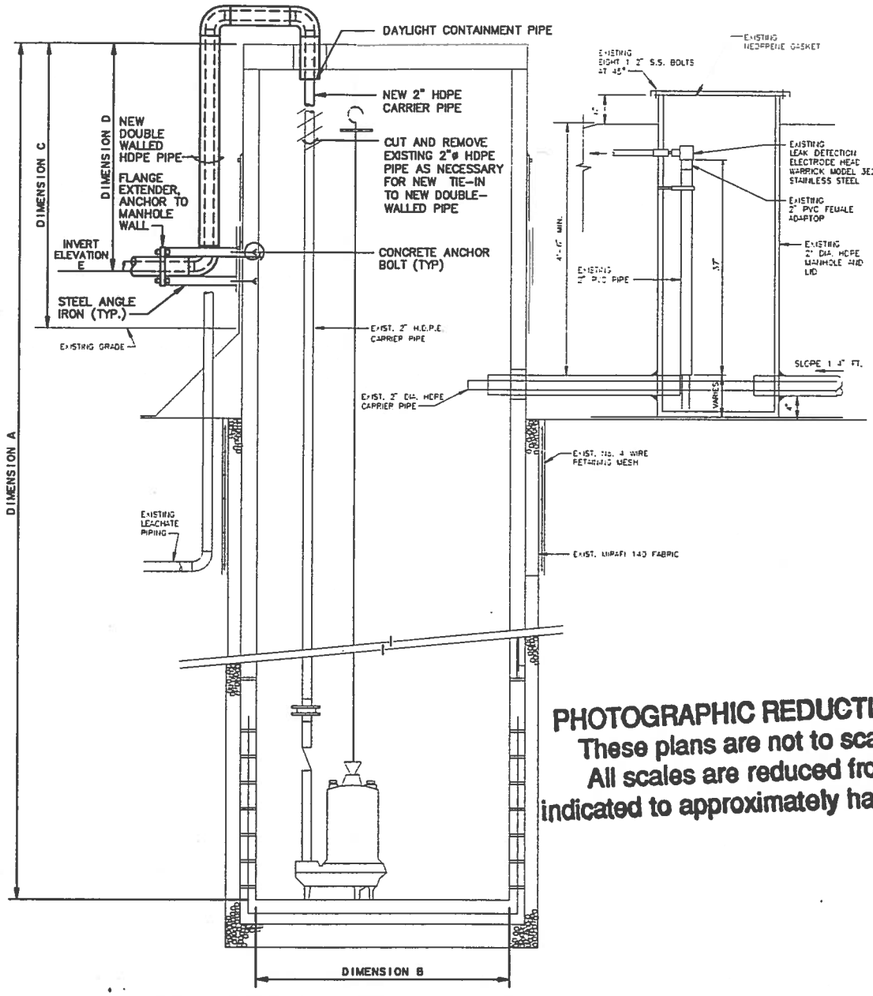
NOTES:

- IN ORDER TO MATCH INVERT ELEVATION E FOR PW-9 ADJUST THE TOP OF MANHOLE FROM ELEVATION 344.88 TO 348.0. REFER TO DETAIL B FOR REPRESENTATION OF EXISTING VERSES FINAL GRADE AND ASSOCIATED TRANSFER PIPE LOCATION RELATIVE TO NEW TOP OF MANHOLE ELEVATION.
- REFER TO DETAIL B FOR REPRESENTATION OF EXISTING VERSES FINAL GRADE AND ASSOCIATED PIPE LOCATION FOR PW-22.
- IN SOME CASES DIMENSION D WILL BE THE SAME AS DIMENSION C. IN OTHER CASES FILL SHALL BE USED TO ADJUST GRADE AS NECESSARY.

EXTRACTION WELL NUMBER	EXISTING TOP OF MANHOLE ELEVATION (FEET)	DIMENSION A (FEET)	DIMENSION B (FEET)	DIMENSION C (FEET)	DIMENSION D (FEET)	INVERT ELEVATION E
PW-4	353.02	48.83	2.0	3.6	3.6	349.4
PW-8	352.42	42.33	2.0	3.72	3.72	348.7
• PW-9	344.88	34.00	2.0	3.60	1.00	347.0
PW-10	349.25	29.25	4.0	1.55	1.55	347.7
PW-12	351.63	40.75	2.0	4.23	4.23	347.4
PW-17	351.33	31.00	4.0	4.33	4.33	347.0
PW-18	349.05	28.25	4.0	4.95	4.95	344.8
PW-20	352.42	35.67	4.0	4.42	4.42	348.2
•• PW-22	347.85	34.58	2.0	6.05	5.65	342.2

DETAIL A

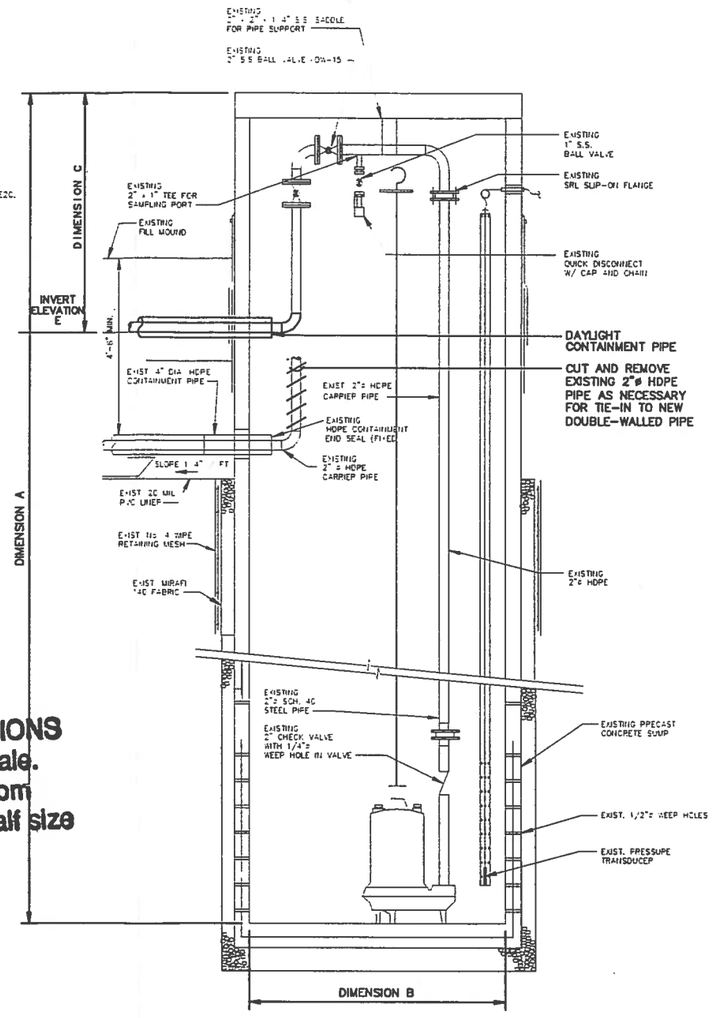
(TYPICAL FOR PW-4, PW-8, PW-9, PW-10 PW-12, PW-17, PW-18, PW-20, PW-22)
SCALE: 3/4"=1'-0"



EXTRACTION WELL NUMBER	EXISTING TOP OF MANHOLE ELEVATION (FEET)	DIMENSION A (FEET)	DIMENSION B (FEET)	DIMENSION C (FEET)	NEW DIMENSION D (FEET)	INVERT ELEVATION E
PW-1	346.65	29.25	2.0	4.45	1.45	345.2
PW-6	350.11	41.75	2.0	3.71	3.61	346.5
PW-13	348.17	28.83	4.0	3.17	0.57	347.6
PW-19	352.41	38.92	4.0	4.41	4.41	348.0
PW-23	349.68	38.83	2.0	5.18	5.28	344.4
PW-25	348.82	31.67	4.0	6.92	6.62	342.2

DETAIL B

(TYPICAL FOR PW-1, PW-6, PW-13, PW-19, PW-23, AND PW-25)
SCALE: 3/4"=1'-0"



EXTRACTION WELL NUMBER	EXISTING TOP OF MANHOLE ELEVATION (FEET)	DIMENSION A (FEET)	DIMENSION B (FEET)	DIMENSION C (FEET)	INVERT ELEVATION E
• OW-7T	344.12	10.08	2.5	1.92	342.2
•• OW-15	349.84	34.49	4.0	5.94	343.9

NOTES:

- REMOVE EXISTING PIPING AS NECESSARY TO CONNECT TO NEW TIE-IN. IF NECESSARY, RELOCATE EXISTING VALVE AND SAMPLE TAP.
- •• CONTRACTOR TO VERIFY WHETHER EXISTING MANHOLE PENETRATION MAY BE UTILIZED FOR REQUIRED TIE-IN. IF POSSIBLE, THEN CUT-IN AND WELD JUST OUTSIDE MANHOLE FOR TIE-IN.

DETAIL C

(TYPICAL FOR OW-7T, OW-15)
SCALE: 3/4"=1'-0"

PHOTOGRAPHIC REDUCTIONS
These plans are not to scale.
All scales are reduced from indicated to approximately half size

GENERAL NOTE FOR DETAIL A, B, AND C
1.DISCHARGE PIPE LOCATION SHOWN FOR REPRESENTATIVE PURPOSES ONLY. REFER TO SITE PLAN FOR PROPER ORIENTATION.

CWM CHEMICAL SERVICES, INC.
MODEL CITY FACILITY

STATE OF NEW YORK
EDWARD R. LYNCH
057526
LICENSED PROFESSIONAL ENGINEER

X:NONE
L:ON=*, OFF=*REF*
P: STD-PCP/XL
6/97 SYR-54-NES AK DCC
05075030/05075006.DWG

Graphic Scale
3/4"=1'-0" 2' 1' 0 1' 2'

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

No.	Date	Revisions	Init

Project Mgr. CJC
Designed by CJC/AKR
Drawn by NES
Checked by GRC
Prof. Eng. EDWARD R. LYNCH
PE License 057526

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

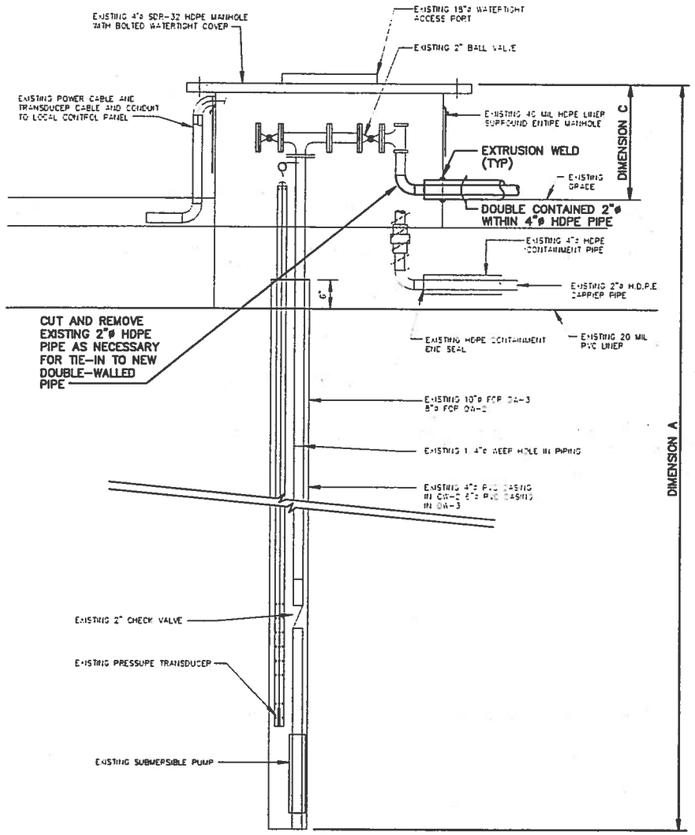
CWM CHEMICAL SERVICES, INC. • MODEL CITY, NEW YORK
SLF 1-6 LEACHATE TRANSFER LINE UPGRADE

PUMPING WELL AND OBSERVATION WELL DETAILS

File Number 050.75.08F
Date JUNE 1997

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-448-9120

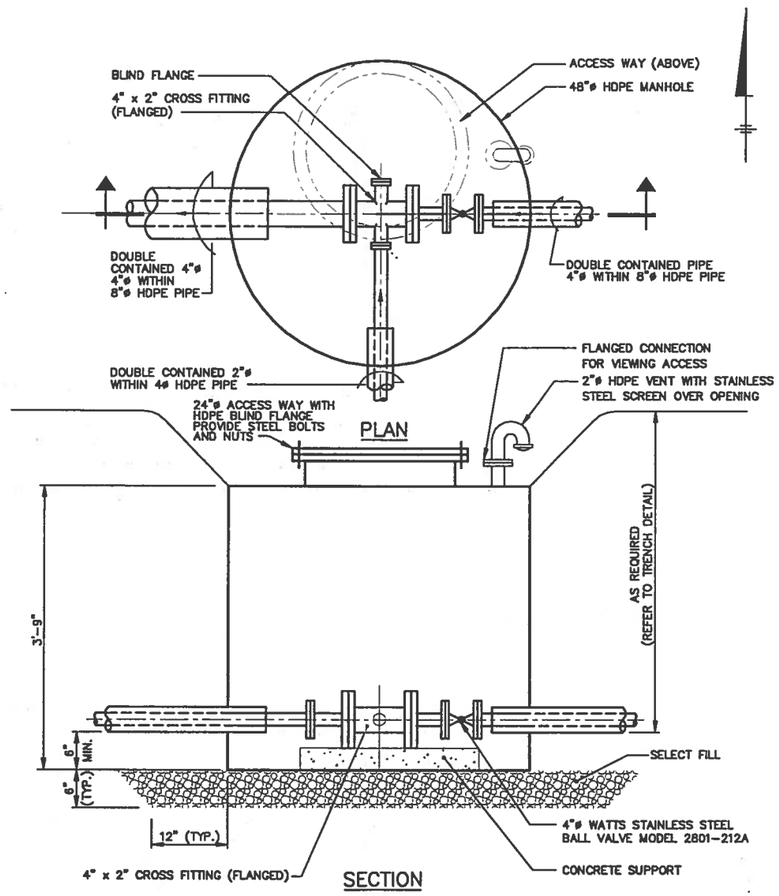
M-1



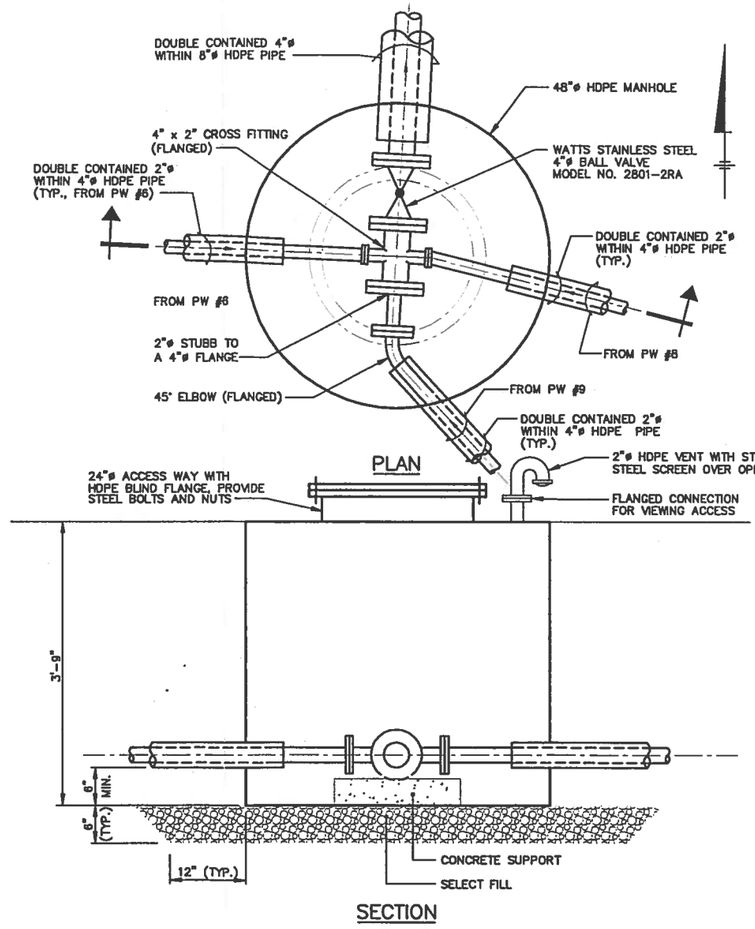
NOTE
1. DISCHARGE PIPE LOCATION SHOWN FOR REPRESENTATIVE PURPOSES ONLY. REFER TO SITE PLAN FOR PROPER ORIENTATION.

EXTRACTION WELL NUMBER	EXIST. TOP OF MANHOLE ELEVATION	DIMENSION A (FEET)	DIMENSION C (FEET)	INVERT ELEVATION E
OW-3	345.86	26.50	2.26	343.6

DETAIL D
(TYPICAL FOR OW-3)
SCALE: 3/4"=1'-0"



LEAK DETECTION/VALVE ACCESS
1 D-2M-3
SCALE: 1"=1'-0"



LEAK DETECTION/JUNCTION ACCESS
2 D-2M-3
SCALE: 1"=1'-0"

PHOTOGRAPHIC REDUCTIONS
These plans are not to scale.
All scales are reduced from indicated to approximately half size

STATE OF NEW YORK
EDWARD R. LYNCH
057528
LICENSED PROFESSIONAL ENGINEER

CWM CHEMICAL SERVICES, INC.
MODEL CITY FACILITY

X: NONE
L: ON=*, OFF=REF*
P: STD-PCP/DL
6/97 SYR-S4-NES MFS DCC
05075030/05075G08.DWG

Graphic Scale
3/4"=1'-0" 2' 1' 0 1' 2'

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

No.	Date	Revisions	Init

Project Mgr. CJC
Designed by CJC/AKR
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Prof. Eng. EDWARD R. LYNCH
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BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CWM CHEMICAL SERVICES, INC. • MODEL CITY, NEW YORK
SLF 1-6 LEACHATE TRANSFER LINE UPGRADE

MECHANICAL DETAILS

File Number 050.75.09F
Date JUNE 1997

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

M-2

Attachment 17
VOC and HAP Emissions from Landfill Open Face

Chemical Waste Management, Model City, New York

Waste Profile Report

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Non-Hazardous VOCs (Generic Oil)	N/A	N/A		
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	1.147447	
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	0.011028	
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	Class II	9.988952	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II		
1,2-Dibromoethane (Ethylene bromide, Ethylene dibro	106-93-4	Class I		
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	Class II	0.028965	
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Class II		
1,3-Dichloropropylene (1,3-dichloropropene, DCP)	542-75-6	Class II		
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	Class II	0.351931	
1,4-Dioxane (Diethylene dioxide, p-Dioxane)	123-91-1	Class II		
2,3-Toluene diamine (MTD, Toluene-2,4-diamine)	25376-45-8	Class II		
2,4,5-Trichlorophenol	95-95-4	Class III		
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II		
2,4-Dinitrophenol	51-28-5	Class II		
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II		
2,6-Dinitrotoluene	606-20-2	Class II		
2-Acetylaminofluorene (N-flouren-2-yl-acetamide)	53-96-3	Class II		
4,4'-Methylene-bis(2-chloroaniline) (MOCA, MBOCA)	101-14-4	Class II		
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III		
Acetonitrile (Cyanomethane, Methyl cyanide)	75-05-8	Class II		
Acetophenone	98-86-2	Class III		
Acrylamide (Acrylic amide)	79-06-1	Class II		
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III		
Acrylonitrile	107-13-1	Class I	0.00031	
Allyl chloride (3-Chloropropene)	107-05-1	Class II		
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II		
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	0.345517	
bis(2-Chloroethyl) ether (Dichloroethyl ether)	111-44-4	Class I		
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)p	117-81-7	Class II	7.332404	
Bromoform (Tribromomethane)	75-25-2	Class II		
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	0.119793	
Carbon tetrachloride (Tetrachloromethane)	56-23-5	Class II	0.00809	
Chlordane	57-74-9	Class II	0.054264	
Chlorobenzene (Benzene chloride)	108-90-7	Class II	6.765508	
Chloroethane (Ethyl chloride)	75-00-3	Class II		
Chloroform (Trichloromethane)	67-66-3	Class II	0.039264	
Chloromethane (Methyl chloride)	74-87-3	Class II		
Cresol - mixed isomers	1319-77-3	Class III	0.000942	
DDE (p,p'-dichlorodiphenyldichloroethylene)	72-55-9	Class II		
Dibutyl phthalate (DBP)	84-74-2	Class II	6.012406	
Dichloromethane (Methylene chloride, DCM)	75-09-2	Class II	0.715861	
Dimethyl phthalate (Phthalic acid methyl ester)	131-11-3	Class II		
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II		
Ethyl benzene (Phenylethane)	100-41-4	Class II	3.475857	

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Ethylene glycol	107-21-1	Class III	0.268326	
Ethylene oxide	75-21-8	Class I		
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII		
Formaldehyde (methylene oxide)	50-00-0	Class I		
Glycol ethers	109-86-4	Class II		
Heptachlor (3-Chlorochlordene)	76-44-8	Class II		
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	87-68-3	Class II		
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II		
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III		
Hexachloroethane (Perchloroethane)	67-72-1	Class II		
Methanol (Methyl alcohol)	67-56-1	Class III		
Methoxychlor (Methoxy DDT, DMDT, Dimethoxy-DDT)	72-43-5	Class II		
Methyl Bromide (Bromomethane)	74-83-9	Class III		
Methyl ethyl ketone (MEK)	78-93-3	Class III	1.991377	
Methyl iodide (Iodomethane)	74-88-4	Class II		
Methyl isobutyl ketone (MIBK)	108-10-1	Class III		
Methyl methacrylate	80-62-6	Class III		
n-Butyl alcohol (n-Butanol)	71-36-3	Class III		
n-Hexane	110-54-3	Class III		
n-Nitrosodimethylamine (DMN, dimethylnitrosoamine)	62-75-9	Class I		
n-Nitrosomorpholine (4-Nitrosomorpholine)	59-89-2	Class II		
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	5.263441	
Nitrobenzene (Nitrobenzol)	98-95-3	Class II		
Parathion (AATP, ethyl parathion)	56-38-2	Class II		
Pentachloronitrobenzene (Quintobenzene, PCNB)	82-68-8	Class II		
Pentachlorophenol (PCP)	87-86-5	Class II		
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	0.000881	
Phthalic anhydride	85-44-9	Class III		
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	Class II	15.03722	
Propoxur (Baygon, 0-Isopropoxyphenyl methylcarbam	114-26-01	Class III		
Pyridine	110-86-1	Class III	0.000717	
Styrene (Vinylbenzene)	100-42-5	Class II		
Tetrachloroethane (Acetylene tetrachloride)	79-34-5	Class II		
Tetrachloroethylene (Antisol 1, Carbon dichloride, Per	127-18-4	Class II	0.899999	
Toluene (Methylbenzene)	108-88-3	Class III	13.55171	
Toluene-2,4-diisocyanate	584-84-9	Class II		
Toxaphene (Chlorinated camphene)	8001-35-2	Class II		
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	0.602068	
Vinyl acetate	108-05-4	Class III		
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	Class I	0.010034	
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II		
Xylene (mixed isomers)	1330-20-7	Class II	10.25792	
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II		
Benzyl Chloride (Totyl chloride)	100-44-7	II		
4,6-Dinitro-o-cresol	534-52-1	II		
Triethylamine	121-44-8	III		

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Carbaryl	63-25-2	II		
o-Toluidine	95-53-4	II		
Hydrazine	302-01-2	II		
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	1715.17	
2-Nitropropane	79-46-9	II		
Cumene (isopropyl benzene)	98-82-8	III		
Acenaphthene	83-32-9	Class II		
Acenaphthylene	208-96-8	Class II		
Acrolein	107-02-8	Class II		
Aldrin	309-00-2	Class II		
Anthracene	120-12-7	Class II	1.603446	
Benz (a) anthracene	56-55-3	Class II		
Benzal Chloride 2	98-87-3	Class II		
Benzo (b) flouranthene 4	205-66-2	Class II		
Benzo (k) flouranthene 4	207-08-9	Class II		
Benzo (a) pyrene	50-32-8	Class II		
BHC - Lindane	58-89-9	Class II		
Chlorobenzilate	510-15-6	Class II		
2-Chloronaphthalene	91-58-7	Class II		
Chrysene	218-01-9	Class II		
Dibenz (a, h) anthracene	53-70-3	Class II		
Dieldrin	60-57-1	Class II		
Diphenyl amine 4	122-39-4	Class 2		
1,2-Diphenylhydrazine	122-66-7	Class II		
Endrin	72-20-8	Class II		
Endrin aldehyde	7421-93-4	Class II		
Ethylene oxide	75-21-8	Class II		
Fluoranthene	206-44-0	Class II		
Fluorene	86-737-7	Class II		
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II		
3-Methylcholanthrene	56-49-5	Class II		
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0	
Penthachlorobenzene	608-93-5	Class II		
Phenathrene	85-01-8	Class II	5.536544	
Pyrene	129-00-0	Class II		
1,1,2,2-Tetrachloroethane	79-34-5	Class II		
Trichloroethene	79-01-6	Class II		
Tetrachloroethene	127-18-4	Class II		
1,3 Butadiene (Biethylene)	106-99-0	Class II		
2-Methylnapthalene	91-57-6	Class II		
1-Methylnaphthalene	90-12-0	Class III		
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III		
Acetaldehyde	75-07-0	Class II		
Diethanolamine	111-42-2	Class III		
Chloroprene	126-99-8	Class II		
Lindane	58-89-9	Class II		

Chemical Waste Management, Model City, New York

Waste Profile Report

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Benzidine	92-87-5	Class I		
p-Phenylenediamine	106-50-3	Class III		
benzo(ghi)perylene	191-24-2	Class	0.143108	
2,4-Dimethylphenol	105-67-9	Class	0.004813	
p-phenylenediamine	106-50-3	Class	0.011368	
Mercury	7439-97-6	Class	0.025836	
1,2,4-Trimethylbenzene	CAS No.	Class	0.00127	

Chemical Waste Management
Model City, New York

Open-Face Landfill Emissions Model Summary	
Modeling Period Start Date:	1/1/2016
Modeling Period End Date:	12/31/2016
Total Days Modeled:	366
Chemical Name	***Pounds Emitted***
1,1,1-Trichloroethane (Methyl chloroform)	23.502073
1,1,2-Trichloroethane (Cloroethene)	0.1018461
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	4.8540961
1,2-Dichloroethane (Ethylene dichloride, EDC)	0.5526388
1,4-Dichlorobenzene (p-Dichlorobenzene)	0.6697347
Acrylonitrile	0.0076544
Benzene (Benzol, Coal naphhtha)	6.6139271
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	0.004063
Carbon disulfide (Carbon bisulfide)	4.8878608
Carbon tetrachloride (Tetrachloromethane)	0.158842
Chlordane	0.0001225
Chlorobenzene (Benzene chloride)	41.532162
Chloroform (Trichloromethane)	1.2077324
Cresol - mixed isomers	0.0008991
Dibutyl phthalate (DBP)	0.0827169
Dichloromethane (Methylene chloride, DCM)	31.488837
Ethyl benzene (Phenylethane)	5.87
Ethylene glycol	0.2070087
Methyl ethyl ketone (MEK)	37.438986
Naphthalene (and Methylnaphthalenes)	4.05
Phenol (Benzenol, Carbolic acid)	0.000974
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	3.1567507
Pyridine	0.0063967
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	6.9616991
Toluene (Methylbenzene)	144.78518
Trichloroethylene (Acetylene trichloride)	9.691938
Vinyl chloride (Chloroethene, Monochloride ethylene)	1.1142895
Xylene (mixed isomers)	52.840407
Polychlorinated Biphenyls (PCB's)	96.091072
Anthracene	0.002176
Phenathrene	5.8859312
benzo(ghi)perylene	1.344E-06
2,4-Dimethylphenol	0.0244584
p-phenylenediamine	0.0013688
Mercury	0.0010761
1,2,4-Trimethylbenzene	0.0044296

Total Non-Hazardous, VOC Emissions:	-
Total Hazardous VOC Emissions:	483.81
Total VOC Emissions:	483.81

Chemical Name	CAS No.	Class	Average Concentration (ppm, by weight)	Chemical Weight Fraction (unitless)	Effective Diffusivity D_e (cm^2/s)	Partition Coefficient K_{eq}	Rate Equation Validity Test <0.25?	Emission Rate Factor K_{dt}	Fraction Emitted F_t	Mass Avb'l for Emission M_o (g/cm^2)	Total Mass Emitted $E_{timeperiod}$ (Megagram	Total Mass Emitted $E_{timeperiod}$ (Pounds)
Non-Hazardous VOCs (Generic Oil)	N/A	N/A	0.000E+00	0.000E+00	8.101E-05	2.463E-06	YES!!	4.655E-07	4.912E-04	0.000	0.00E+00	-
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A	0.000E+00	0.000E+00	1.497E-04	2.239E-04	YES!!	7.819E-05	6.366E-03	0.000	0.00E+00	-
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	1.147E+00	6.351E-04	1.459E-04	7.246E-02	YES!!	2.467E-02	1.131E-01	0.000	1.07E-02	23.50
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	1.103E-02	6.104E-06	1.459E-04	1.473E-02	YES!!	5.015E-03	5.099E-02	0.000	4.62E-05	0.10
1,2,4-Trichlorobenzene (unsym-Trichlorol	120-82-1	Class II	9.989E+00	5.529E-03	5.613E-05	1.060E-04	YES!!	1.389E-05	2.683E-03	0.003	2.20E-03	4.85
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II	0.000E+00	0.000E+00	3.966E-05	4.714E-04	YES!!	4.362E-05	4.755E-03	0.000	0.00E+00	-
1,2-Dibromoethane (Ethylene bromide, E	106-93-4	Class I	0.000E+00	0.000E+00	5.370E-05	6.941E-03	YES!!	8.695E-04	2.123E-02	0.000	0.00E+00	-
1,2-Dichloroethane (Ethylene dichloride, I	107-06-2	Class II	2.897E-02	1.603E-05	1.946E-04	4.716E-02	YES!!	2.141E-02	1.053E-01	0.000	2.51E-04	0.55
1,2-Dichloropropane (Propylene dichlorid	78-87-5	Class II	0.000E+00	0.000E+00	1.463E-04	2.357E-02	YES!!	8.045E-03	6.458E-02	0.000	0.00E+00	-
1,3-Dichloropropylene (1,3-dichloroprope	542-75-6	Class II	0.000E+00	0.000E+00	1.171E-04	2.534E-02	YES!!	6.923E-03	5.991E-02	0.000	0.00E+00	-
1,4-Dichlorobenzene (p-Dichlorobenzene	106-46-7	Class II	3.519E-01	1.948E-04	1.291E-04	7.071E-04	YES!!	2.130E-04	1.051E-02	0.000	3.04E-04	0.67
1,4-Dioxane (Diethylene dioxide, p-Dioxa	123-91-1	Class II	0.000E+00	0.000E+00	4.284E-04	2.180E-02	YES!!	2.179E-02	1.063E-01	0.000	0.00E+00	-
2,3-Toluene diamine (MTD, Toluene-2,4-	25376-45-8	Class II	0.000E+00	0.000E+00	1.065E-04	9.368E-04	YES!!	2.327E-04	1.098E-02	0.000	0.00E+00	-
2,4,5-Trichlorophenol	95-95-4	Class III	0.000E+00	0.000E+00	5.444E-05	2.351E-05	YES!!	2.987E-06	1.244E-03	0.000	0.00E+00	-
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II	0.000E+00	0.000E+00	5.875E-05	4.301E-06	YES!!	5.895E-07	5.528E-04	0.000	0.00E+00	-
2,4-Dinitrophenol	51-28-5	Class II	0.000E+00	0.000E+00	5.108E-05	8.249E-06	YES!!	9.830E-07	7.138E-04	0.000	0.00E+00	-
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II	0.000E+00	0.000E+00	3.798E-04	3.005E-06	YES!!	2.662E-06	1.175E-03	0.000	0.00E+00	-
2,6-Dinitrotoluene	606-20-2	Class II	0.000E+00	0.000E+00	6.118E-05	3.535E-03	YES!!	5.046E-04	1.617E-02	0.000	0.00E+00	-
2-Acetylaminofluorene (N-flouren-2-yl-ac	53-96-3	Class II	0.000E+00	0.000E+00	4.965E-05	7.071E-06	YES!!	8.191E-07	6.516E-04	0.000	0.00E+00	-
4,4'-Methylene-bis(2-chloroaniline) (MOC	101-14-4	Class II	0.000E+00	0.000E+00	3.723E-05	4.075E-08	YES!!	3.540E-09	4.284E-05	0.000	0.00E+00	-
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III	0.000E+00	0.000E+00	8.045E-05	5.911E-08	YES!!	1.109E-08	7.584E-05	0.000	0.00E+00	-
Acetonitrile (Cyanomethane, Methyl cyan	75-05-8	Class II	0.000E+00	0.000E+00	2.395E-04	5.303E-02	YES!!	2.963E-02	1.239E-01	0.000	0.00E+00	-
Acetophenone	98-86-2	Class III	0.000E+00	0.000E+00	1.123E-04	1.750E-04	YES!!	4.583E-05	4.874E-03	0.000	0.00E+00	-
Acrylamide (Acrylic amide)	79-06-1	Class II	0.000E+00	0.000E+00	1.815E-04	7.071E-06	YES!!	2.994E-06	1.246E-03	0.000	0.00E+00	-
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III	0.000E+00	0.000E+00	1.834E-04	3.064E-03	YES!!	1.311E-03	2.607E-02	0.000	0.00E+00	-
Acrylonitrile	107-13-1	Class I	3.103E-04	1.718E-07	2.283E-04	6.717E-02	YES!!	3.577E-02	1.362E-01	0.000	3.47E-06	0.01
Allyl chloride (3-Chloropropene)	107-05-1	Class II	0.000E+00	0.000E+00	1.886E-04	2.127E-01	YES!!	9.359E-02	2.203E-01	0.000	0.00E+00	-
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II	0.000E+00	0.000E+00	1.310E-04	5.893E-04	YES!!	1.801E-04	9.661E-03	0.000	0.00E+00	-
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	3.455E-01	1.912E-04	1.646E-04	5.610E-02	YES!!	2.155E-02	1.057E-01	0.000	3.00E-03	6.61
bis(2-Chloroethyl) ether (Dichloroethyl eth	111-44-4	Class I	0.000E+00	0.000E+00	1.295E-04	8.249E-04	YES!!	2.492E-04	1.137E-02	0.000	0.00E+00	-
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2	117-81-7	Class II	7.332E+00	4.058E-03	6.567E-05	1.178E-10	YES!!	1.805E-11	3.059E-06	0.002	1.84E-06	0.00
Bromoform (Tribromomethane)	75-25-2	Class II	0.000E+00	0.000E+00	2.788E-05	3.300E-03	YES!!	2.146E-04	1.055E-02	0.000	0.00E+00	-
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	1.198E-01	6.630E-05	1.946E-04	2.157E-01	YES!!	9.790E-02	2.253E-01	0.000	2.22E-03	4.89
Carbon tetrachloride (Tetrachloromethane	56-23-5	Class II	8.090E-03	4.478E-06	1.459E-04	6.658E-02	YES!!	2.267E-02	1.084E-01	0.000	7.21E-05	0.16
Chlordane	57-74-9	Class II	5.426E-02	3.003E-05	2.208E-05	5.822E-09	YES!!	2.998E-10	1.247E-05	0.000	5.56E-08	0.00
Chlorobenzene (Benzene chloride)	108-90-7	Class II	6.766E+00	3.745E-03	1.366E-04	6.955E-03	YES!!	2.216E-03	3.389E-02	0.002	1.88E-02	41.53
Chloroethane (Ethyl chloride)	75-00-3	Class II	0.000E+00	0.000E+00	5.070E-04	7.071E-01	NO!!	8.364E-01	6.585E-01	0.000	0.00E+00	-
Chloroform (Trichloromethane)	67-66-3	Class II	3.926E-02	2.173E-05	1.946E-04	1.226E-01	YES!!	5.563E-02	1.698E-01	0.000	5.48E-04	1.21
Chloromethane (Methyl chloride)	74-87-3	Class II	0.000E+00	0.000E+00	2.357E-04	2.257E+00	NO!!	1.241E+00	8.021E-01	0.000	0.00E+00	-
Cresol - mixed isomers	1319-77-3	Class III	9.422E-04	5.215E-07	1.298E-04	1.768E-04	YES!!	5.355E-05	5.269E-03	0.000	4.08E-07	0.00
DDE (p,p'-dichlorodiphenyldichloroethyler	72-55-9	Class II	0.000E+00	0.000E+00	2.694E-05	4.030E-09	YES!!	2.533E-10	1.146E-05	0.000	0.00E+00	-
Dibutyl phthalate (DBP)	84-74-2	Class II	6.012E+00	3.328E-03	8.195E-05	5.822E-08	YES!!	1.113E-08	7.596E-05	0.002	3.75E-05	0.08
Dichloromethane (Methylene chloride, DC	75-09-2	Class II	7.159E-01	3.962E-04	1.890E-04	2.581E-01	YES!!	1.138E-01	2.429E-01	0.000	1.43E-02	31.49
Dimethyl phthalate (Phthalic acid methyl e	131-11-3	Class II	0.000E+00	0.000E+00	1.063E-04	1.178E-07	YES!!	2.920E-08	1.230E-04	0.000	0.00E+00	-
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II	0.000E+00	0.000E+00	1.441E-04	2.357E-02	YES!!	7.921E-03	6.408E-02	0.000	0.00E+00	-
Ethyl benzene (Phenylethane)	100-41-4	Class II	3.476E+00	1.924E-03	1.403E-04	5.128E-04	YES!!	1.679E-04	9.328E-03	0.001	2.66E-03	5.87
Ethylene glycol	107-21-1	Class III	2.683E-01	1.485E-04	2.021E-04	7.424E-05	YES!!	3.500E-05	4.259E-03	0.000	9.39E-05	0.21
Ethylene oxide	75-21-8	Class I	0.000E+00	0.000E+00	1.946E-04	7.365E-01	YES!!	3.343E-01	4.163E-01	0.000	0.00E+00	-
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII	0.000E+00	0.000E+00	1.388E-04	3.483E-01	YES!!	1.128E-01	2.418E-01	0.000	0.00E+00	-

Chemical Name	*CAS No.*	*Class*	*Average Concentration* (ppm, by weight)	*Chemical Weight Fraction* (unitless)	*Effective Diffusivity* D_e (cm^2/s)	*Partition Coefficient* K_{eq}	*Rate Equation Validity Test* <0.25?	*Emission Rate Factor* K_{dt}	*Fraction Emitted* F_t	*Mass Avb'l for Emission* M_o (g/cm^2)	*Total Mass Emitted* $E_{timeperiod}$ (Megagram	*Total Mass Emitted* $E_{timeperiod}$ (Pounds)
Formaldehyde (methylene oxide)	50-00-0	Class I	0.000E+00	0.000E+00	3.330E-04	2.062E+00	NO!!	1.602E+00	9.114E-01	0.000	0.00E+00	-
Glycol ethers	109-86-4	Class II	0.000E+00	0.000E+00	1.310E-04	2.027E-03	YES!!	6.193E-04	1.792E-02	0.000	0.00E+00	-
Heptachlor (3-Chlorochlordene)	76-44-8	Class II	0.000E+00	0.000E+00	2.095E-05	1.769E-07	YES!!	8.647E-09	6.695E-05	0.000	0.00E+00	-
Hexachloro-1,3-butadiene (Hexachlorobu	87-68-3	Class II	0.000E+00	0.000E+00	1.050E-04	8.839E-05	YES!!	2.164E-05	3.350E-03	0.000	0.00E+00	-
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II	0.000E+00	0.000E+00	1.014E-04	2.828E-06	YES!!	6.691E-07	5.890E-04	0.000	0.00E+00	-
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III	0.000E+00	0.000E+00	3.012E-05	4.774E-05	YES!!	3.355E-06	1.319E-03	0.000	0.00E+00	-
Hexachloroethane (Perchloroethane)	67-72-1	Class II	0.000E+00	0.000E+00	4.677E-06	3.830E-04	YES!!	4.179E-06	1.472E-03	0.000	0.00E+00	-
Methanol (Methyl alcohol)	67-56-1	Class III	0.000E+00	0.000E+00	2.806E-04	6.717E-02	YES!!	4.398E-02	1.510E-01	0.000	0.00E+00	-
Methoxychlor (Methoxy DDT, DMDT, Dim	72-43-5	Class II	0.000E+00	0.000E+00	2.919E-05	9.135E-08	YES!!	6.220E-09	5.679E-05	0.000	0.00E+00	-
Methyl Bromide (Bromomethane)	74-83-9	Class III	0.000E+00	0.000E+00	2.788E-05	9.369E-01	YES!!	6.093E-02	1.777E-01	0.000	0.00E+00	-
Methyl ethyl ketone (MEK)	78-93-3	Class III	1.991E+00	1.102E-03	1.512E-04	5.893E-02	YES!!	2.078E-02	1.038E-01	0.001	1.70E-02	37.44
Methyl iodide (Iodomethane)	74-88-4	Class II	0.000E+00	0.000E+00	7.297E-05	2.357E-01	YES!!	4.012E-02	1.442E-01	0.000	0.00E+00	-
Methyl isobutyl ketone (MIBK)	108-10-1	Class III	0.000E+00	0.000E+00	1.403E-04	9.251E-03	YES!!	3.028E-03	3.962E-02	0.000	0.00E+00	-
Methyl methacrylate	80-62-6	Class III	0.000E+00	0.000E+00	1.441E-04	2.121E-02	YES!!	7.129E-03	6.079E-02	0.000	0.00E+00	-
n-Butyl alcohol (n-Butanol)	71-36-3	Class III	0.000E+00	0.000E+00	1.497E-04	3.830E-03	YES!!	1.337E-03	2.633E-02	0.000	0.00E+00	-
n-Hexane	110-54-3	Class III	0.000E+00	0.000E+00	3.742E-04	8.839E-02	YES!!	7.716E-02	2.000E-01	0.000	0.00E+00	-
n-Nitrosodimethylamine (DMN, dimethyln	62-75-9	Class I	0.000E+00	0.000E+00	2.107E-04	4.716E-03	YES!!	2.318E-03	3.466E-02	0.000	0.00E+00	-
n-Nitrosomorpholine (4-Nitrosomorpholine	59-89-2	Class II	0.000E+00	0.000E+00	1.104E-04	5.862E-05	YES!!	1.510E-05	2.797E-03	0.000	0.00E+00	-
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	5.263E+00	2.913E-03	1.104E-04	1.355E-04	YES!!	3.490E-05	4.253E-03	0.001	1.84E-03	4.05
Nitrobenzene (Nitrobenzol)	98-95-3	Class II	0.000E+00	0.000E+00	1.422E-04	1.768E-04	YES!!	5.864E-05	5.513E-03	0.000	0.00E+00	-
Parathion (AATP, ethyl parathion)	56-38-2	Class II	0.000E+00	0.000E+00	3.181E-05	2.239E-08	YES!!	1.661E-09	2.935E-05	0.000	0.00E+00	-
Pentachloronitrobenzene (Quintobenzene	82-68-8	Class II	0.000E+00	0.000E+00	2.975E-05	5.822E-08	YES!!	4.040E-09	4.577E-05	0.000	0.00E+00	-
Pentachlorophenol (PCP)	87-86-5	Class II	0.000E+00	0.000E+00	1.048E-04	2.946E-06	YES!!	7.201E-07	6.110E-04	0.000	0.00E+00	-
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	8.808E-04	4.875E-07	1.534E-04	2.009E-04	YES!!	7.192E-05	6.106E-03	0.000	4.42E-07	0.00
Phthalic anhydride	85-44-9	Class III	0.000E+00	0.000E+00	1.328E-04	8.840E-07	YES!!	2.739E-07	3.768E-04	0.000	0.00E+00	-
Polynuclear Aromatic Hydrocarbons (Ger	206-44-0	Class II	1.504E+01	8.323E-03	8.213E-05	1.352E-05	YES!!	2.591E-06	1.159E-03	0.004	1.43E-03	3.16
Propoxur (Baygon, 0-Isopropoxyphenyl m	114-26-01	Class III	0.000E+00	0.000E+00	5.108E-05	1.013E-05	YES!!	1.208E-06	7.912E-04	0.000	0.00E+00	-
Pyridine	110-86-1	Class III	7.169E-04	3.968E-07	1.703E-04	1.179E-02	YES!!	4.682E-03	4.926E-02	0.000	2.90E-06	0.01
Styrene (Vinylbenzene)	100-42-5	Class II	0.000E+00	0.000E+00	1.328E-04	4.301E-03	YES!!	1.333E-03	2.629E-02	0.000	0.00E+00	-
Tetrachloroethane (Acetylene tetrachlorid	79-34-5	Class II	0.000E+00	0.000E+00	1.328E-04	3.830E-03	YES!!	1.187E-03	2.481E-02	0.000	0.00E+00	-
Tetrachloroethylene (Antisol 1, Carbon di	127-18-4	Class II	9.000E-01	4.981E-04	1.347E-04	1.120E-02	YES!!	3.518E-03	4.271E-02	0.000	3.16E-03	6.96
Toluene (Methylbenzene)	108-88-3	Class III	1.355E+01	7.500E-03	1.628E-04	1.768E-02	YES!!	6.712E-03	5.899E-02	0.004	6.57E-02	144.79
Toluene-2,4-diisocyanate	584-84-9	Class II	0.000E+00	0.000E+00	1.141E-04	4.714E-05	YES!!	1.255E-05	2.551E-03	0.000	0.00E+00	-
Toxaphene (Chlorinated camphene)	8001-35-2	Class II	0.000E+00	0.000E+00	2.170E-05	1.768E-04	YES!!	8.949E-06	2.154E-03	0.000	0.00E+00	-
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	6.021E-01	3.332E-04	1.478E-04	4.419E-02	YES!!	1.524E-02	8.888E-02	0.000	4.40E-03	9.69
Vinyl acetate	108-05-4	Class III	0.000E+00	0.000E+00	1.590E-04	6.776E-02	YES!!	2.514E-02	1.142E-01	0.000	0.00E+00	-
Vinyl chloride (Chloroethene, Monochlorid	75-01-4	Class I	1.003E-02	5.554E-06	1.983E-04	1.567E+00	NO!!	7.252E-01	6.131E-01	0.000	5.05E-04	1.11
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II	0.000E+00	0.000E+00	1.684E-04	3.712E-01	YES!!	1.458E-01	2.749E-01	0.000	0.00E+00	-
Xylene (mixed isomers)	1330-20-7	Class II	1.026E+01	5.677E-03	1.336E-04	5.007E-03	YES!!	1.560E-03	2.844E-02	0.003	2.40E-02	52.84
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II	0.000E+00	0.000E+00	7.559E-05	5.889E-04	YES!!	1.038E-04	7.337E-03	0.000	0.00E+00	-
Benzyl Chloride (Totyl chloride)	100-44-7	II	0.000E+00	0.000E+00	1.403E-04	7.129E-04	YES!!	2.334E-04	1.100E-02	0.000	0.00E+00	-
4,6-Dinitro-o-cresol	534-52-1	II	0.000E+00	0.000E+00	5.482E-05	1.061E-05	YES!!	1.357E-06	8.387E-04	0.000	0.00E+00	-
Triethylamine	121-44-8	III	0.000E+00	0.000E+00	7.989E-05	5.893E-06	YES!!	1.098E-06	7.546E-04	0.000	0.00E+00	-
Carbaryl	63-25-2	II	0.000E+00	0.000E+00	5.201E-05	2.356E-08	YES!!	2.858E-09	3.849E-05	0.000	0.00E+00	-
o-Toluidine	95-53-4	II	0.000E+00	0.000E+00	1.336E-04	1.424E-04	YES!!	4.438E-05	4.797E-03	0.000	0.00E+00	-
Hydrazine	302-01-2	II	0.000E+00	0.000E+00	7.791E-04	8.486E-03	YES!!	1.542E-02	8.942E-02	0.000	0.00E+00	-
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	1.715E+03	9.493E-01	3.274E-05	2.416E-06	YES!!	1.846E-07	3.093E-04	0.452	4.36E-02	96.09
2-Nitropropane	79-46-9	II	0.000E+00	0.000E+00	1.727E-04	5.983E-02	YES!!	2.410E-02	1.118E-01	0.000	0.00E+00	-
Cumene (isopropyl benzene)	98-82-8	III	0.000E+00	0.000E+00	1.216E-04	2.711E-03	YES!!	7.692E-04	1.997E-02	0.000	0.00E+00	-

Chemical Name	*CAS No.*	*Class*	*Average Concentration* (ppm, by weight)	*Chemical Weight Fraction* (unitless)	*Effective Diffusivity* D_e (cm^2/s)	*Partition Coefficient* K_{eq}	*Rate Equation Validity Test* <0.25?	*Emission Rate Factor* K_{dt}	*Fraction Emitted* F_t	*Mass Avb'l for Emission* M_o (g/cm^2)	*Total Mass Emitted* $E_{timeperiod}$ (Megagram	*Total Mass Emitted* $E_{timeperiod}$ (Pounds)
Acenaphthene	83-32-9	Class II	0.000E+00	0.000E+00	7.877E-05	2.947E-06	YES!!	5.415E-07	5.298E-04	0.000	0.00E+00	-
Acenaphthylene	208-96-8	Class II	0.000E+00	0.000E+00	8.019E-05	1.352E-05	YES!!	2.530E-06	1.145E-03	0.000	0.00E+00	-
Acrolein	107-02-8	Class II	0.000E+00	0.000E+00	1.964E-04	1.438E-01	YES!!	6.590E-02	1.848E-01	0.000	0.00E+00	-
Aldrin	309-00-2	Class II	0.000E+00	0.000E+00	2.470E-05	3.536E-09	YES!!	2.037E-10	1.028E-05	0.000	0.00E+00	-
Anthracene	120-12-7	Class II	1.603E+00	8.875E-04	6.062E-05	7.658E-10	YES!!	1.083E-10	7.493E-06	0.000	9.87E-07	0.00
Benz (a) anthracene	56-55-3	Class II	0.000E+00	0.000E+00	9.542E-05	1.178E-10	YES!!	2.622E-11	3.687E-06	0.000	0.00E+00	-
Benzal Chloride 2	98-87-3	Class II	0.000E+00	0.000E+00	1.403E-04	7.129E-04	YES!!	2.334E-04	1.100E-02	0.000	0.00E+00	-
Benzo (b) flouranthene 4	205-66-2	Class II	0.000E+00	0.000E+00	4.228E-05	2.947E-10	YES!!	2.907E-11	3.882E-06	0.000	0.00E+00	-
Benzo (k) flouranthene 4	207-08-9	Class II	0.000E+00	0.000E+00	4.228E-05	5.643E-14	YES!!	5.566E-15	5.372E-08	0.000	0.00E+00	-
Benzo (a) pyrene	50-32-8	Class II	0.000E+00	0.000E+00	8.045E-05	3.345E-07	YES!!	6.278E-08	1.804E-04	0.000	0.00E+00	-
BHC - Lindane	58-89-9	Class II	0.000E+00	0.000E+00	3.031E-05	1.822E-05	YES!!	1.288E-06	8.172E-04	0.000	0.00E+00	-
Chlorobenzilate	510-15-6	Class II	0.000E+00	0.000E+00	3.143E-05	1.572E-12	YES!!	1.153E-13	2.444E-07	0.000	0.00E+00	-
2-Chloronaphthalene	91-58-7	Class II	0.000E+00	0.000E+00	6.492E-05	1.002E-05	YES!!	1.517E-06	8.869E-04	0.000	0.00E+00	-
Chrysene	218-01-9	Class II	0.000E+00	0.000E+00	4.640E-05	3.394E-13	YES!!	3.674E-14	1.380E-07	0.000	0.00E+00	-
Dibenz (a, h) anthracene	53-70-3	Class II	0.000E+00	0.000E+00	9.355E-05	5.911E-14	YES!!	1.290E-14	8.178E-08	0.000	0.00E+00	-
Dieldrin	60-57-1	Class II	0.000E+00	0.000E+00	2.339E-05	1.178E-10	YES!!	6.426E-12	1.825E-06	0.000	0.00E+00	-
Diphenyl amine 4	122-39-4	Class 2	0.000E+00	0.000E+00	5.613E-05	5.893E-04	YES!!	7.717E-05	6.325E-03	0.000	0.00E+00	-
1,2-Diphenylhydrazine	122-66-7	Class II	0.000E+00	0.000E+00	5.931E-05	1.473E-08	YES!!	2.039E-09	3.251E-05	0.000	0.00E+00	-
Endrin	72-20-8	Class II	0.000E+00	0.000E+00	2.339E-05	1.178E-10	YES!!	6.426E-12	1.825E-06	0.000	0.00E+00	-
Endrin aldehyde	7421-93-4	Class II	0.000E+00	0.000E+00	5.613E-05	5.893E-02	YES!!	7.717E-03	6.325E-02	0.000	0.00E+00	-
Ethylene oxide	75-21-8	Class II	0.000E+00	0.000E+00	1.946E-04	7.367E-01	YES!!	3.344E-01	4.164E-01	0.000	0.00E+00	-
Fluoranthene	206-44-0	Class II	0.000E+00	0.000E+00	5.650E-05	1.043E-05	YES!!	1.375E-06	8.442E-04	0.000	0.00E+00	-
Fluorene	86-737-7	Class II	0.000E+00	0.000E+00	9.355E-05	1.885E-07	YES!!	4.114E-08	1.460E-04	0.000	0.00E+00	-
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II	0.000E+00	0.000E+00	3.555E-05	5.911E-13	YES!!	4.902E-14	1.594E-07	0.000	0.00E+00	-
3-Methylcholanthrene	56-49-5	Class II	0.000E+00	0.000E+00	3.910E-05	4.473E-07	YES!!	4.080E-08	1.454E-04	0.000	0.00E+00	-
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0.000E+00	0.000E+00	3.274E-05	2.418E-06	YES!!	1.847E-07	3.094E-04	0.000	0.00E+00	-
Penthachlorobenzene	608-93-5	Class II	0.000E+00	0.000E+00	1.066E-04	2.709E-06	YES!!	6.741E-07	5.911E-04	0.000	0.00E+00	-
Phenathrene	85-01-8	Class II	5.537E+00	3.064E-03	9.355E-05	3.045E-04	YES!!	6.646E-05	5.870E-03	0.001	2.67E-03	5.89
Pyrene	129-00-0	Class II	0.000E+00	0.000E+00	9.355E-05	1.120E-06	YES!!	2.443E-07	3.559E-04	0.000	0.00E+00	-
1,1,2,2-Tetrachloroethane	79-34-5	Class II	0.000E+00	0.000E+00	1.328E-04	3.829E-03	YES!!	1.187E-03	2.480E-02	0.000	0.00E+00	-
Trichloroethene	79-01-6	Class II	0.000E+00	0.000E+00	1.459E-04	1.473E-02	YES!!	5.016E-03	5.099E-02	0.000	0.00E+00	-
Tetrachloroethene	127-18-4	Class II	0.000E+00	0.000E+00	1.347E-04	1.120E-02	YES!!	3.518E-03	4.271E-02	0.000	0.00E+00	-
1,3 Butadiene (Biethylene)	106-99-0	Class II	0.000E+00	0.000E+00	4.659E-04	1.236E+00	NO!!	1.343E+00	8.345E-01	0.000	0.00E+00	-
2-Methylnapthalene	91-57-6	Class II	0.000E+00	0.000E+00	8.981E-05	3.991E-05	YES!!	8.361E-06	2.082E-03	0.000	0.00E+00	-
1-Methylnaphthalene	90-12-0	Class III	0.000E+00	0.000E+00	8.981E-05	3.175E-05	YES!!	6.652E-06	1.857E-03	0.000	0.00E+00	-
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III	0.000E+00	0.000E+00	1.916E-04	1.133E-01	YES!!	5.064E-02	1.620E-01	0.000	0.00E+00	-
Acetaldehyde	75-07-0	Class II	0.000E+00	0.000E+00	2.320E-04	5.127E-01	YES!!	2.775E-01	3.793E-01	0.000	0.00E+00	-
Diethanolamine	111-42-2	Class III	0.000E+00	0.000E+00	1.317E-04	3.219E-07	YES!!	9.892E-08	2.265E-04	0.000	0.00E+00	-
Chloroprene	126-99-8	Class II	0.000E+00	0.000E+00	1.946E-04	1.608E-01	YES!!	7.298E-02	1.945E-01	0.000	0.00E+00	-
Lindane	58-89-9	Class II	0.000E+00	0.000E+00	3.031E-05	1.823E-05	YES!!	1.289E-06	8.174E-04	0.000	0.00E+00	-
Benzidine	92-87-5	Class I	0.000E+00	0.000E+00	6.361E-05	1.791E-07	YES!!	2.658E-08	1.174E-04	0.000	0.00E+00	-
p-Phenylenediamine	106-50-3	Class III	0.000E+00	0.000E+00	1.338E-04	2.732E-06	YES!!	8.525E-07	6.648E-04	0.000	0.00E+00	-
benzo(ghi)perylene	191-24-2	Class	1.431E-01	7.921E-05	3.761E-05	5.911E-14	YES!!	5.186E-15	5.185E-08	0.000	6.10E-10	0.00
2,4-Dimethylphenol	105-67-9	Class	4.813E-03	2.664E-06	1.093E-04	5.956E-03	YES!!	1.518E-03	2.805E-02	0.000	1.11E-05	0.02
p-phenylenediamine	106-50-3	Class	1.137E-02	6.292E-06	1.338E-04	2.732E-06	YES!!	8.525E-07	6.648E-04	0.000	6.21E-07	0.00
Mercury	7439-97-6	Class	2.584E-02	1.430E-05	5.744E-05	7.613E-07	YES!!	1.020E-07	2.300E-04	0.000	4.88E-07	0.00
1,2,4-Trimethylbenzene	CAS No.	Class	1.270E-03	7.029E-07	1.141E-04	2.687E-03	YES!!	7.154E-04	1.926E-02	0.000	2.01E-06	0.00

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Non-Hazardous VOCs (Generic Oil)	N/A	N/A	0.0433	0.940	190.00	5.500E-06
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A	0.0800	0.900	147.00	5.000E-04
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	0.0780	1.330	133.40	1.618E-01
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	0.0780	1.300	133.40	3.289E-02
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	Class II	0.0300	1.410	181.50	2.368E-04
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II	0.0212	1.410	236.36	1.053E-03
1,2-Dibromoethane (Ethylene bromide, Ethylene dibromide)	106-93-4	Class I	0.0287	1.410	187.88	1.550E-02
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	Class II	0.1040	1.260	98.96	1.053E-01
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Class II	0.0782	1.156	112.99	5.263E-02
1,3-Dichloropropylene (1,3-dichloropropene, DCP)	542-75-6	Class II	0.0626	1.200	110.97	5.658E-02
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	Class II	0.0690	1.290	147.00	1.579E-03
1,4-Dioxane (Diethylene dioxide, p-Dioxane)	123-91-1	Class II	0.2290	1.030	88.20	4.868E-02
2,3-Toluene diamine (MTD, Toluene-2,4-diamine)	25376-45-8	Class II	0.0569	1.110	122.17	2.092E-03
2,4,5-Trichlorophenol	95-95-4	Class III	0.0291	1.180	197.45	5.251E-05
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II	0.0314	1.000	197.46	9.605E-06
2,4-Dinitrophenol	51-28-5	Class II	0.0273	1.680	184.00	1.842E-05
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II	0.2030	1.310	182.14	6.710E-06
2,6-Dinitrotoluene	606-20-2	Class II	0.0327	1.150	182.14	7.894E-03
2-Acetylaminofluorene (N-flouren-2-yl-acetamide)	53-96-3	Class II	0.0265	1.020	223.27	1.579E-05
4,4'-Methylene-bis(2-chloroaniline) (MOCA, MBOCA)	101-14-4	Class II	0.0199	1.150	267.15	9.100E-08
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III	0.0430	1.400	139.11	1.320E-07
Acetonitrile (Cyanomethane, Methyl cyanide)	75-05-8	Class II	0.1280	0.780	41.03	1.184E-01
Acetophenone	98-86-2	Class III	0.0600	1.030	120.16	3.908E-04
Acrylamide (Acrylic amide)	79-06-1	Class II	0.0970	1.120	71.09	1.579E-05
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III	0.0980	0.970	72.07	6.842E-03
Acrylonitrile	107-13-1	Class I	0.1220	0.810	53.10	1.500E-01
Allyl chloride (3-Chloropropene)	107-05-1	Class II	0.1008	1.410	75.60	4.750E-01
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II	0.0700	1.020	93.10	1.316E-03
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	0.0880	0.870	78.10	1.253E-01
bis(2-Chloroethyl) ether (Dichloroethyl ether)	111-44-4	Class I	0.0692	1.220	143.00	1.842E-03
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	117-81-7	Class II	0.0351	1.000	390.56	2.632E-10
Bromoform (Tribromomethane)	75-25-2	Class II	0.0149	2.890	252.77	7.368E-03
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	0.1040	1.260	76.10	4.816E-01
Carbon tetrachloride (Tetrachloromethane)	56-23-5	Class II	0.0780	1.590	153.80	1.487E-01

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Chlordane	57-74-9	Class II	0.0118	1.110	409.80	1.300E-08
Chlorobenzene (Benzene chloride)	108-90-7	Class II	0.0730	1.110	112.60	1.553E-02
Chloroethane (Ethyl chloride)	75-00-3	Class II	0.2710	1.410	64.51	1.579E+00
Chloroform (Trichloromethane)	67-66-3	Class II	0.1040	1.490	119.38	2.737E-01
Chloromethane (Methyl chloride)	74-87-3	Class II	0.1260	0.950	50.49	5.039E+00
Cresol - mixed isomers	1319-77-3	Class III	0.0694	1.030	108.10	3.947E-04
DDE (p,p'-dichlorodiphenyldichloroethylene)	72-55-9	Class II	0.0144	1.410	318.03	9.000E-09
Dibutyl phthalate (DBP)	84-74-2	Class II	0.0438	1.043	278.30	1.300E-07
Dichloromethane (Methylene chloride, DCM)	75-09-2	Class II	0.1010	1.340	85.00	5.763E-01
Dimethyl phthalate (Phthalic acid methyl ester)	131-11-3	Class II	0.0568	1.190	194.20	2.630E-07
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II	0.0770	0.920	100.00	5.263E-02
Ethyl benzene (Phenylethane)	100-41-4	Class II	0.0750	0.870	106.20	1.145E-03
Ethylene glycol	107-21-1	Class III	0.1080	1.110	62.08	1.658E-04
Ethylene oxide	75-21-8	Class I	0.1040	0.870	44.00	1.645E+00
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII	0.0742	1.170	98.96	7.778E-01
Formaldehyde (methylene oxide)	50-00-0	Class I	0.1780	0.970	30.00	4.605E+00
Glycol ethers	109-86-4	Class II	0.0700	0.978	134.14	4.526E-03
Heptachlor (3-Chlorochlordene)	76-44-8	Class II	0.0112	1.570	373.35	3.950E-07
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	87-68-3	Class II	0.0561	1.670	260.80	1.974E-04
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II	0.0542	2.040	284.80	6.316E-06
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III	0.0161	1.700	272.77	1.066E-04
Hexachloroethane (Perchloroethane)	67-72-1	Class II	0.0025	2.090	237.00	8.553E-04
Methanol (Methyl alcohol)	67-56-1	Class III	0.1500	0.790	32.00	1.500E-01
Methoxychlor (Methoxy DDT, DMDT, Dimethoxy-DDT)	72-43-5	Class II	0.0156	0.970	345.65	2.040E-07
Methyl Bromide (Bromomethane)	74-83-9	Class III	0.0149	1.410	94.95	2.092E+00
Methyl ethyl ketone (MEK)	78-93-3	Class III	0.0808	1.150	72.10	1.316E-01
Methyl iodide (Iodomethane)	74-88-4	Class II	0.0390	1.650	141.94	5.263E-01
Methyl isobutyl ketone (MIBK)	108-10-1	Class III	0.0750	0.800	100.20	2.066E-02
Methyl methacrylate	80-62-6	Class III	0.0770	0.950	100.10	4.737E-02
n-Butyl alcohol (n-Butanol)	71-36-3	Class III	0.0800	0.810	74.14	8.553E-03
n-Hexane	110-54-3	Class III	0.2000	0.660	86.20	1.974E-01
n-Nitrosodimethylamine (DMN, dimethylnitrosoamine)	62-75-9	Class I	0.1126	1.150	74.08	1.053E-02
n-Nitrosomorpholine (4-Nitrosomorpholine)	59-89-2	Class II	0.0590	1.150	116.14	1.309E-04
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	0.0590	1.140	128.20	3.026E-04

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Nitrobenzene (Nitrobenzol)	98-95-3	Class II	0.0760	1.200	123.10	3.947E-04
Parathion (AATP, ethyl parathion)	56-38-2	Class II	0.0170	1.260	291.30	5.000E-08
Pentachloronitrobenzene (Quintobenzene, PCNB)	82-68-8	Class II	0.0159	1.410	295.36	1.300E-07
Pentachlorophenol (PCP)	87-86-5	Class II	0.0560	1.980	266.40	6.579E-06
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	0.0820	1.070	94.10	4.487E-04
Phthalic anhydride	85-44-9	Class III	0.0710	1.330	148.10	1.974E-06
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	Class II	0.0439	1.020	147.00	3.020E-05
Propoxur (Baygon, 0-Isopropoxyphenyl methylcarbamate)	114-26-01	Class III	0.0273	1.150	209.24	2.263E-05
Pyridine	110-86-1	Class III	0.0910	0.980	79.10	2.632E-02
Styrene (Vinylbenzene)	100-42-5	Class II	0.0710	0.900	104.20	9.605E-03
Tetrachloroethane (Acetylene tetrachloride)	79-34-5	Class II	0.0710	1.590	168.00	8.553E-03
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	127-18-4	Class II	0.0720	1.624	165.83	2.500E-02
Toluene (Methylbenzene)	108-88-3	Class III	0.0870	0.870	92.40	3.947E-02
Toluene-2,4-diisocyanate	584-84-9	Class II	0.0610	1.200	174.16	1.053E-04
Toxaphene (Chlorinated camphene)	8001-35-2	Class II	0.0116	1.110	414.00	3.947E-04
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	0.0790	1.400	131.40	9.868E-02
Vinyl acetate	108-05-4	Class III	0.0850	0.930	86.09	1.513E-01
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	Class I	0.1060	0.910	62.60	3.500E+00
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II	0.0900	1.213	96.94	8.289E-01
Xylene (mixed isomers)	1330-20-7	Class II	0.0714	0.880	106.16	1.118E-02
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II	0.0404	1.180	154.20	1.315E-03
Benzyl Chloride (Totyl chloride)	100-44-7	II	0.0750	1.100	126.60	1.592E-03
4,6-Dinitro-o-cresol	534-52-1	II	0.0293	1.150	198.00	2.369E-05
Triethylamine	121-44-8	III	0.0427	1.150	149.19	1.316E-05
Carbaryl	63-25-2	II	0.0278	1.232	201.22	5.260E-08
o-Toluidine	95-53-4	II	0.0714	0.989	107.17	3.180E-04
Hydrazine	302-01-2	II	0.4164	1.008	32.06	1.895E-02
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	0.0175	1.190	292.00	5.396E-06
2-Nitropropane	79-46-9	II	0.0923	0.988	89.09	1.336E-01
Cumene (isopropyl benzene)	98-82-8	III	0.0650	0.860	120.20	6.054E-03
Acenaphthene	83-32-9	Class II	0.0421	1.070	154.21	6.580E-06
Acenaphthylene	208-96-8	Class II	0.0429	1.020	152.21	3.020E-05
Acrolein	107-02-8	Class II	0.1050	0.840	56.10	3.211E-01
Aldrin	309-00-2	Class II	0.0132	1.180	364.93	7.896E-09

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Anthracene	120-12-7	Class II	0.0324	1.250	178.23	1.710E-09
Benz (a) anthracene	56-55-3	Class II	0.0510	1.110	228.30	2.630E-10
Benzal Chloride 2	98-87-3	Class II	0.0750	1.100	126.60	1.592E-03
Benzo (b) flouranthene 4	205-66-2	Class II	0.0226	1.020	252.32	6.580E-10
Benzo (k) flouranthene 4	207-08-9	Class II	0.0226	1.020	252.32	1.260E-13
Benzo (a) pyrene	50-32-8	Class II	0.0430	1.110	252.30	7.470E-07
BHC - Lindane	58-89-9	Class II	0.0162	1.410	290.85	4.068E-05
Chlorobenzilate	510-15-6	Class II	0.0168	0.970	325.20	3.510E-12
2-Chloronaphthalene	91-58-7	Class II	0.0347	1.410	162.62	2.237E-05
Chrysene	218-01-9	Class II	0.0248	1.110	228.20	7.580E-13
Dibenz (a, h) anthracene	53-70-3	Class II	0.0500	1.282	278.35	1.320E-13
Dieldrin	60-57-1	Class II	0.0125	1.180	380.93	2.630E-10
Diphenyl amine 4	122-39-4	Class 2	0.0300	1.160	169.24	1.316E-03
1,2-Diphenylhydrazine	122-66-7	Class II	0.0317	1.190	184.23	3.290E-08
Endrin	72-20-8	Class II	0.0125	1.800	380.93	2.630E-10
Endrin aldehyde	7421-93-4	Class II	0.0300	1.790	382.93	1.316E-01
Ethylene oxide	75-21-8	Class II	0.1040	0.870	44.00	1.645E+00
Fluoranthene	206-44-0	Class II	0.0302	1.020	202.00	2.329E-05
Fluorene	86-737-7	Class II	0.0500	1.203	166.32	4.210E-07
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II	0.0190	1.150	276.34	1.320E-12
3-Methylcholanthrene	56-49-5	Class II	0.0209	1.020	268.36	9.988E-07
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0.0175	1.190	292.00	5.400E-06
Penthachlorobenzene	608-93-5	Class II	0.0570	1.610	250.34	6.050E-06
Phenathrene	85-01-8	Class II	0.0500	0.980	178.23	6.800E-04
Pyrene	129-00-0	Class II	0.0500	1.271	202.25	2.500E-06
1,1,2,2-Tetrachloroethane	79-34-5	Class II	0.0710	1.590	168.00	8.550E-03
Trichloroethene	79-01-6	Class II	0.0780	1.300	133.40	3.290E-02
Tetrachloroethene	127-18-4	Class II	0.0720	1.624	165.83	2.500E-02
1,3 Butadiene (Biethylene)	106-99-0	Class II	0.2490	0.760	54.09	2.760E+00
2-Methylnapthalene	91-57-6	Class II	0.0480	1.020	142.19	8.912E-05
1-Methylnaphthalene	90-12-0	Class III	0.0480	1.020	142.19	7.090E-05
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III	0.1024	0.970	83.10	2.530E-01
Acetaldehyde	75-07-0	Class II	0.1240	0.788	45.06	1.145E+00
Diethanolamine	111-42-2	Class III	0.0704	1.088	105.14	7.189E-07

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Chloroprene	126-99-8	Class II	0.1040	0.958	88.50	3.590E-01
Lindane	58-89-9	Class II	0.0162	1.410	290.85	4.070E-05
Benzidine	92-87-5	Class I	0.0340	1.250	184.24	4.000E-07
p-Phenylenediamine	106-50-3	Class III	0.0715	1.140	108.14	6.100E-06

Landfill Data for Emissions Calculations

Open Fill Area	*Average Fill Depth*	*Air Porosity*	*Total Porosity*	*Landfill Density*	*Landfill Temp.*
(Acres)	(Feet)	(unitless)	(unitless)	(lb/ft^3)	(°C)
7.7	6.0	0.100	0.500	90.0	25

Time Period Modeled	
Start Date	1/1/2016
End Date	#########
Total Days	366

Calculated Landfill Data	
Total Organic Loading, L *(g/cm^3)*	0.00260
Average Organic Molecular Weight	285.4

ENCLOSURE NO. 2
AIR STATE FACILITY PERMIT MODIFICATION
ADDITION OF RMU-2

Revised/Updated Emissions Inventory – Addition of RMU-2

Emissions Inventory – RMU-2 Landfill

CWM Chemical Services Model City Site
Model City, New York

CWM Chemical Services, LLC

1550 Balmer Road

Model City, NY 14107

2055 Niagara Falls Boulevard Niagara Falls New York 14304 USA

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Table 5 Facultative Pond 5 Emissions

Attachments

Attachment 1 Calculation of Fugitive PM-10 Emissions

Attachment 2 Calculation of Fugitive PM2.5 Emissions

Attachment 3 USEPA Paper *"Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions"*

Attachment 4 Historical Sampling Results for RMU-1 Leachate

Attachment 5 VOC and HAP Emissions from Landfill Open Face

Attachment 6 Select Drawings of RMU-2 Landfill

1. Introduction

GHD Services Inc. (GHD) has been retained by CWM Chemical Services, LLC (CWM) to prepare this revised emissions inventory of the proposed RMU-2 area at the Model City Facility (Facility or Site). The purpose of this revision is to update the February 2015 emission inventory for the facility taking into account current conditions at the facility and to incorporate comments provided by the New York State Department of Environmental Conservation (NYSDEC). The Inventory will also be used as a basis for the Air State Facility Permit Application as well as to develop appropriate air permitting strategies for the Facility.

The CWM facility is an existing commercial hazardous waste treatment, storage, and disposal facility (TSDF) in Model City, Niagara County, New York. This TSDF began operation in 1972 as ChemTrol Pollution Services, Inc. Due to corporate acquisitions and name changes, CWM, a subsidiary of Waste Management, Inc., is the present owner and operator of the facility.

Based on the previous quantification of air emissions from the facility, in accordance with the guidance and regulations presented in 6 NYCRR Part 201, of the New York Code of Rules and Regulations (NYCRR), the facility had not historically qualified as a potential Title V or Air State Facility source. Therefore, prior to 2013, emissions from sources not identified as Exempt or Trivial under 6 NYCRR Part 201-3, had been previously permitted with the New York State Department of Environmental Conservation (NYSDEC) Division of Air Resources in accordance with 6 NYCRR Part 201-4 (Minor Facility Registrations).

The recent promulgation of 6 NYCRR Part 201-9 presented the new 'Significant Mass Emission Rates for Persistent, Bioaccumulative and Toxic Compounds' that took effect on February 22, 2013. Any facility that has total emissions greater than the thresholds listed in the table for any compound must apply for an Air State Facility Permit or a Title V Permit within six months of receipt of the department's determination to submit a complete permit application. As a result, GHD representatives conducted a thorough review of CWM facility operations and existing permit documentation in order to ascertain the level of air permitting required for the CWM Facility going forward. Based on this review, GHD determined that an Air State Facility Permit Application was required for the Facility. The Air State Facility Permit Application for the existing facility was submitted to NYSDEC in January 2014. The Air State Facility Permit for the facility was issued on October 24, 2014. A request to modify the Air State Facility Permit, including a revised inventory, was submitted to the NYSDEC by CWM on February 5, 2015 for the facility expansion to construct RMU-2 and related units. By letter dated March 20, 2015, NYSDEC staff deemed the permit modification application complete and circulated, among other documents, a modified draft Air State Facility permit which incorporated conditions for the proposed RMU-2 landfill. Based on the documents provided by the petitioners following the RMU-2 Issues Conference, the NYSDEC reversed its decision on the completeness of CWM's permit modification application for the Air State Facility permit. In a December 1, 2015 letter from NYSDEC to the Honorable Daniel P. O'Connell regarding the proposed expansion at the CWM Facility, the NYSDEC indicated that a supplemental emissions inventory and clarification of certain calculations contained in the February 2015 permit modification application is required from CWM to render the modification application complete and for staff to determine if the draft Air State Facility permit for the proposed RMU-2 project needs to be modified.

This emissions inventory includes additional information requested in the December 1, 2015 letter from NYSDEC to the Honorable Daniel P. O'Connell regarding the proposed expansion at the CWM Facility.

2. Facility Description

The CWM Chemical Services, LLC (CWM), Model City Facility is located within the Erie-Niagara Region in the western section of New York State. The facility is situated on the boundary between the Towns of Lewiston and Porter in Niagara County. All hazardous waste management units are located within the Town of Porter. The facility's operations are authorized by a RCRA hazardous waste permit issued by NYSDEC and a TSCA (PCB) Approval issued by USEPA. The facility uses a number of processes for the proper storage, treatment and disposal of a variety of liquid and solid organic and inorganic hazardous waste and industrial non-hazardous waste. Storage, treatment and disposal capabilities include an aqueous waste treatment system, which includes phase separation, oxidation/reduction, neutralization, solids precipitation and filtration, biological treatment and carbon filtration. The treated effluent is stored in a facultative (fac) pond, qualified and discharged pursuant to the facility's State Pollutant Discharge Elimination System (SPDES) Permit. Other operations include waste stabilization; secure landfilling of approved solid waste, including PCBs; solvent and fuel blending processes; RCRA and TSCA container storage and transfer; landfill leachate collection, storage and treatment. As a RCRA permitted TSDF, CWM is subject to the hazardous waste regulations in 6 NYCRR Parts 370-376. This includes several regulations focused on minimizing the release of hazardous waste contaminants to the air: 373-2.28, Air Emission Standards for Equipment Leaks, and 373-2.29, Air Emission Standards for Tanks, Containers and Surface Impoundments.

The Model City Facility began operations in 1971 as Chem-Trol Pollution Services, Inc. Activities included fuels blending of waste oils, distillation of spent solvents, aqueous waste treatment, and land disposal. In 1973, the stock of Chem-Trol was purchased by SCA Services, Inc. The Chem-Trol name was retained until late 1978 at which time the corporate name changed to SCA Chemical Waste Services, Inc., and in 1981, was renamed SCA Chemical Services, Inc.

In October 1984, WM Acquiring Corp., owned jointly by Waste Management, Inc. (WMI), and Genstar, Inc., acquired SCA Services, Inc., of which SCA Chemical Services, Inc. was a subsidiary. Through a corporate reorganization in October 1986, SCA Chemical Services, Inc. became a wholly owned subsidiary of Chemical Waste Management, Inc. (CWM), itself majority-owned by Waste Management, Inc. In July 1988, the corporate name SCA Chemical Services, Inc. was changed to CWM Chemical Services, Inc. CWM Chemical Services, Inc., became a limited liability company in January 1998 and became CWM Chemical Services, LLC. CWM Chemical Services, LLC, is the owner and operator of the Model City Facility.

The fuels blending tanks and solvent distillation operation were eliminated in the 1980s. The Aqueous Treatment facility continues to operate. The following summarizes the closed and active landfill units at the Facility:

Landfill Area	Status
SLF 1-6	Closed
SLF 7	Closed
SLF 10	Closed

Landfill Area	Status
SLF 11	Closed
SLF 12	Closed
RMU-1	Waste Receiving Completed (Nov. 2015)
RMU-2	Proposed

The area encompassed by the proposed RMU-2 area is approximately 43.5 acres and will contain a total of six cells. The proposed waste area of RMU-2 is approximately 38.5 acres. The RMU-2 project also includes the replacement of existing facultative (Fac) ponds, namely Fac Ponds 3 and 8. Fac Pond 8 is currently out of service and in the process of being closed in accordance with the Part 373 Permit. RMU-2 will include the areas currently occupied by Fac Ponds 3 and 8. Proposed Fac Pond 5 will be constructed to replace the storage capacity for treated wastewater lost by the closure of Fac Ponds 3 and 8.

3. Facility Emission Unit Descriptions

The following sections present discussions of the emissions estimated for the sources identified at the Facility for the addition of RMU-2. Supporting calculations are provided as referenced.

3.1 Fugitive Dust Emissions: RMU-2

Off-road particulate matter (PM) emissions are primarily caused by the moving and handling of soil by heavy equipment such as loaders and bulldozers. The emissions were calculated based on the equipment and hours of operation for both operational and construction vehicles, and include such activities as soil handling and waste placement.

Operational vehicles and waste hauling vehicles also generate particulate emissions from traveling on both the paved and unpaved roads at the Facility. These emissions differ from those discussed above since they consider PM that is stirred up by vehicle tires on the road surface as opposed to the actual movement of soil. PM emissions to determine road dust were calculated based on information provided by the Facility, which include vehicle traffic, such as types of equipment and roads/paths traveled, as well as distances traveled and hours of operation. Figures 1 through 10 provide a description of the road segments and vehicle traffic routes for the different truck types that operate at the Facility. These routes have been modified from the current routes used for RMU-1 based on the expected routing for the RMU-2 expansion.

GHD utilized a series of United States Environmental Protection Agency (USEPA) published emission factors and emission factor equations in the performance of this work. Emissions are based on routine operations for a typical year of landfill operation. Attachment 1 presents the revised calculations of fugitive PM-10 dust emissions for the Facility with the RMU-2 Area included during construction and operations. Attachment 2 presents the revised calculations of fugitive PM-2.5 dust emissions for the Facility with the RMU-2 Area included during construction and operations. For conservatism, the calculations included in Attachments 1 and 2 include the construction of a phase (first or second cell) of RMU-2 and the construction of Fac Pond 5 in the same year.

GHD estimated wind erosion calculations from soil stockpiles at the CWM Model City that will be utilized during construction/operation of the RMU-2 landfill. Calculations were performed according

to the methodology given in USEPA AP-42 (Compilation of Air Pollutant Emission Factors), Section 13.2.5: Industrial Wind Erosion (November 2006). The following data was referenced for the calculation methodology:

- The maximum surface area of the stockpile (2.86 acres) was referenced from Appendix H of the RMU-2 Draft Environmental Impact Statement (November 2013)
- The maximum wind speed for each day was obtained from the on-site meteorological weather station (data validated by O'Brien & Gere)
- The wind data for 2011 was selected for the analysis as it represents worst-case emissions for the 5-year period of 2010 through 2014

The following assumptions were utilized in the work:

- Disturbances of the soil stockpile occur daily during construction season which occurs from April 1 to October 31 during the year; therefore, the number of disturbances per year equals 214 (i.e., N=214 in the calculations)

Tables 2A and 2B provide the calculation sheets for PM_{10} and $PM_{2.5}$, respectively. The calculations are considered conservative since:

- It is assumed that the entire soil stockpile area is disturbed daily when only a small fraction is actually disturbed during any one day of operation
- Calculations were done assuming operation on Sunday, when the facility is actually closed on this day
- Fastest mile wind speed used is more conservative than required by AP-42

3.2 Landfill Emissions: RMU-2

This Section provides a summary of emissions from RMU-2, in addition to the emissions from the leachate collection standpipes presented in section 3.3.1.

3.2.1 Cover Diffusion

Emissions from diffusion of pollutants through the cover of the landfill unit were calculated using the methodology presented in Chapter 8.2 (Closed Landfills) of the USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. Cover diffusion calculations are based on the waste receiving data from RMU-1. Diffusion coefficients for the cover system were referenced from the paper *Transport of Volatile Organic Compounds Through PVC and LLDPE Geomembranes From Both Aqueous and Vapour Phases*, dated September 29, 2009. The table below summarizes the calculation methodology for landfill cover diffusion for the capped portion of RMU-2:

Landfill	Synthetic Liner	Cover Description	See Table
RMU-2	40-mil HDPE	0.5 ft general fill & Geosynthetic Clay Liner (below liner) 1.5 ft general fill & 0.5 ft topsoil above liner	3

Please note that diffusion coefficients for areas with a final cap were based on the geomembrane liner material only and did not take into account the soil cover above and below the liner material. Therefore, the effective diffusion coefficient is expected to be lower than what was presented in the calculations.

Worst-case emissions were calculated assuming maximum build out of the RMU-2 landfill (total acreage and final grade) with emissions occurring just prior to construction of the synthetic liner (40-mil HDPE). At that time, it is assumed that 19.5 acres of RMU-2 will have final cover installed while the remaining area (19 acres) is in the active (waste receiving) phase. The emissions shown in Table 3 reflect final cover areas. Emissions from the active areas are discussed in Section 3.2.3.

3.2.2 Barometric Pumping

According to RJ Pirkle, DE Wyatt, V Price, BB Looney (Barometric Pumping: The Connection Between The Vadose Zone and The Atmosphere, 1992) "the principal of barometric pumping is simple. During periods of falling barometric pressure, the pressure on the soil/atmosphere boundary is rapidly reduced. Soil gas from the sedimentary pore space flows vertically into the atmosphere in order to restore pressure equilibrium." This concept is well understood and documented in landfills with a vent system. This condition is common at municipal solid waste landfills (with gas collection or venting systems) and in some cases solid waste landfill personnel will increase the vacuum on a gas collection system during periods of a rapid barometric pressure loss.

One of the base assumptions in the EPA document entitled Air Emissions for Waste and Wastewater (EPA-453/R-94-080A, November 1994) is that "the landfill is assumed to be vented to the atmosphere. The volume of gas available for barometric pumping is assumed to consist of the total void volume of the waste bed." In a landfill with a vent system this makes complete sense. As barometric pressure drops, vapors would rise vertically through vents and/or a gas venting layer and be emitted. As pressure increases, the void spaces would be refilled with air from the atmosphere where it would mix with vapors from the waste – and then rise again to be vented when the barometric pressure drops (thus "barometric pumping").

However, RMU-2 will not have a venting system (refer to Attachment 6 for drawings). Therefore as barometric pressure drops, any vapors within the unsaturated zone of the landfill may rise, but they will be contained by the clay and synthetic cap (other than potentially by diffusion as described in Section 3.2.1). They will not be emitted through a venting system, since one does not exist. Further, since the vapors will not be emitted, they will not be replenished during a high pressure event and the “barometric pumping” effect will not occur as described in the referenced document.

The only possible pathway for vapors to be emitted to the atmosphere from barometric pumping is through the standpipes. However, this is an incomplete pathway for the following reasons:

1. As described above, a reduction in barometric pressure will cause gases to rise vertically in an attempt to reach pressure equilibrium. The stand pipe risers are only perforated at the very bottom in order to allow leachate to flow from the landfill and into the bottom of the standpipes where it is then pumped from the landfill. During a reduction in barometric pressure gasses would be moving away from these perforations as they rise vertically.
2. The material at the bottom of the landfills is saturated with leachate, meaning that there is near zero pore space for gases to migrate through in the event that a preferential pressure gradient did exist.
3. The standpipes are covered, inhibiting gases present inside them from escaping.

The emissions inventory for other landfills at CWM currently includes emissions from the leachate within the standpipes. This analysis is entirely consistent with NYSDEC’s September 12, 1990 letter to CWM allowing the removal/capping of gas vents from SLF-11. While we believe that the above

information provides evidence that barometric pumping does not occur, or occurs only to a very limited extent. In an effort to be conservative, the many background documents that the above EPA study was based on relative to barometric pumping were reviewed. Again, all of these documents were associated with landfills with a vent system. No references to barometric pumping without a gas venting system were found. One reference (Evaluation and Selection of Models for Estimating Air Emissions from Hazardous Waste Treatment, Storage and Disposal Facilities, EPA-450/3-84-020, December 1984) states that "for a landfill handling strictly hazardous waste, with no expected internal gas generation…an increase of 10-15 percent to emission release could be expected." Therefore, in order to be conservative, we propose to add 15 percent to our diffusion emission estimate to account for any limited effect barometric pumping may have.

3.2.3 Active Placement of Waste

Emissions from the open active area of waste disposal were estimated using a model developed for a similar hazardous waste landfill located in Louisiana. The model was developed based on equations presented in USEPA document *Air Emissions Models for Waste and Wastewater*, dated November 1994. The profile of waste used for the model is based on historical receipts for RMU-1 using the maximum amount of each compound received in a year for the period of 2005 through 2014 and the maximum annual amount of waste received during the corresponding time period. The area of half the RMU-2 area was input into the model (19 acres) and the depth of waste in the active zone is assumed to be 6 feet (approximate depth of one “lift “of waste). The output of the model is presented as Attachment 5. The emissions from active operations in RMU-2 are projected based on the types and quantities of waste received in RMU-1.

3.3 Leachate Collection, Transfer and Storage

This Section provides a summary of emissions from the collection, transfer and storage of leachate at the Facility.

3.3.1 Standpipes and Sideslope Risers

Emissions occur within the landfill standpipes and sideslope risers due to the evaporation of leachate to the atmosphere. The calculation methodology for leachate emissions from the landfill standpipes and sideslope risers was taken from the USEPA paper, "*Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions* (Guo, Z. and Roache, N.F., December 20, 2002)" [See Attachment 3 for paper]. The exposed leachate surface area for the RMU-2 standpipes was calculated by summing the following individual standpipe areas:

- Six (6) 24-inch HDPE vertical risers
- Six (6) 24-inch HDPE sideslope risers
- Twelve (12) 8-inch HDPE sideslope cleanouts

Table 4 presents a projected summary of VOC and HAP emissions from the RMU-2 standpipes. Individual VOC and HAP concentrations within the leachate in RMU-2 were based on the maximum detected value from the following historical sampling results from RMU-1 (see Attachment 4):

- Periodic sampling results for individual RMU-1 standpipes between May 2006 and February 2013

- Periodic sampling results for Tank T-102 between April 2012 and April 2013
- Periodic sampling results for Tank T-160 (lift station for RMU-1 Landfill) between January 31, 2012 and February 15, 2012

It is assumed, since the types and volume of wastes received is not proposed to change, that the leachate collected from the RMU-2 Landfill will have a similar composition and generation rate to that of the RMU-1 Landfill.

3.4 Facultative Ponds

As indicated in Section 2.0, Fac Pond 3 is in the footprint of RMU-2 and will be closed in accordance with the Part 373 Permit prior to constructing the second cell. To replace the wastewater storage capacity lost by the closure of Fac Pond a new impoundment will be constructed between SLF-7 and SLF-12, namely Fac Pond 5. Fac Pond 3 will be removed from the emissions inventory upon closure and Fac Pond 5 will need to be added to the inventory upon construction.

The laboratory analytical results for the treated wastewater discharged to the current facultative ponds (Fac Ponds 1 & 2 and 3) shows non-detects (NDs) for all Volatile Organic Compounds (VOCs) with the exception of acetone (which is not considered a VOC according to 6 NYCRR 200.1(cg)).

In order to obtain an estimate of potential emissions from the proposed Fac Pond 5, one half of the detection limit was assumed for each compound for a sample collected on December 2, 2015 from Fac Ponds 1 & 2. Table 4 presents potential emissions from proposed Facultative Pond 5. Proposed Fac Pond 5 is smaller than existing Fac Pond 3; therefore, the potential emissions from Fac Pond 5 are lower.

3.5 VOC Emissions From Construction: RMU-2

As stated in the December 1, 2015 letter from NYSDEC to the Honorable Daniel P. O'Connell, "due to the natural low permeability of the soils and flat groundwater flow gradients, groundwater contamination remains close to the source areas. In addition, there is no inhabitable structures on-site overlying residual shallow soil or groundwater contamination. As a reminder, CWM has performed 83 investigations at the solid waste management units and site-wide areas at the facility. The remedial work undertaken at the facility, performed pursuant to the Corrective Actions Study and Interim Corrective Measures, have met the goals of the corrective action program and are protective of human health and the environment…. The decades of monitoring at the facility have indicated that hydraulic control is maintained by the groundwater extraction systems and migration of contamination beyond previously established extents is not occurring."

As discussed with NYSDEC, emissions from contamination identified during RMU-2 construction do not need to be quantified, and thus, are not presented in this Application. This is consistent with how investigations and remedial actions are conducted in New York State. It should be noted however, that CWM has a plan in place for the radiological and chemical screening of soil that will be excavated as part of the RMU-2 project. The plan includes health and safety procedures as well as procedures for screening materials and how they will be properly managed. The daily data from the radiological and chemical contamination monitoring will be compiled, summarized and added to the project documentation. A copy of these daily summary reports will be included with the monthly

Environmental Report for the month in which the data is collected. In addition, the reports will be available for review by the NYSDEC On-Site Monitors.

CWM also has an Ambient Air Monitoring Program. This program determines the impact, if any, of the hazardous waste activities and other site activities on the surrounding air quality at the Model City facility. CWM is expanding the Ambient Air Monitoring Program for the RMU-2 Project, based on recommendations from NYSDEC.

4. Emission Discussion

Table 1 presents a summary of total emissions for the CWM Facility. A summary of select compounds is presented below:

Emission Source	***Emissions (TPY)***							
	VOCs	***HAPs***	***NO_X***	***CO***	***SO_2***	***PM_{10}***	***$PM_{2.5}$***	***Total GHG***
Existing Facility	**3.09**	**1.07**	**2.64**	**4.62**	**0.01**	**7.44**	**5.66**	**4,376.86**
RMU-2 Landfill	**0.52**	**0.53**	**0.00**	**0.00**	**0.00**	**8.46**	**2.69**	**0.00**
Totals (TPY)	**3.60**	**1.61**	**2.64**	**4.62**	**0.01**	**15.90**	**8.35**	**4,376.86**
Title V Threshold (TPY)	**50**	**25**	**100**	**100**	**100**	**100**	**100**	**100,000**

As shown in the table above, the facility is well below the thresholds for Title V applicability. The CWM Facility has applied for and obtained an Air State Facility Permit as described under 6 NYCRR 201-4.1. CWM is requesting a modification to the Air State Facility Permit to incorporate RMU-2.

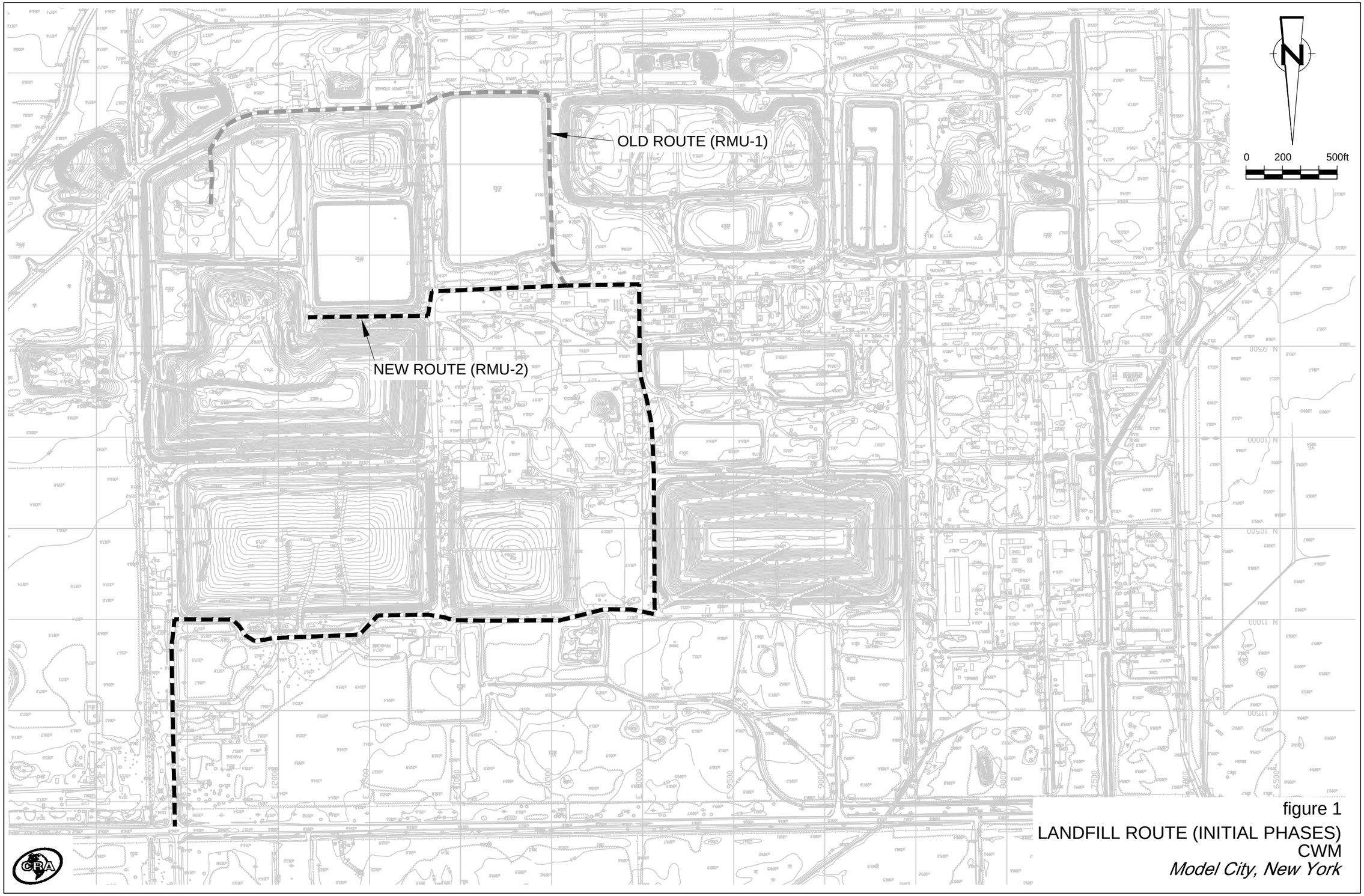


figure 1

LANDFILL ROUTE (INITIAL PHASES)
CWM
Model City, New York

80335-00(001)GN-NI001 JAN 12/2015

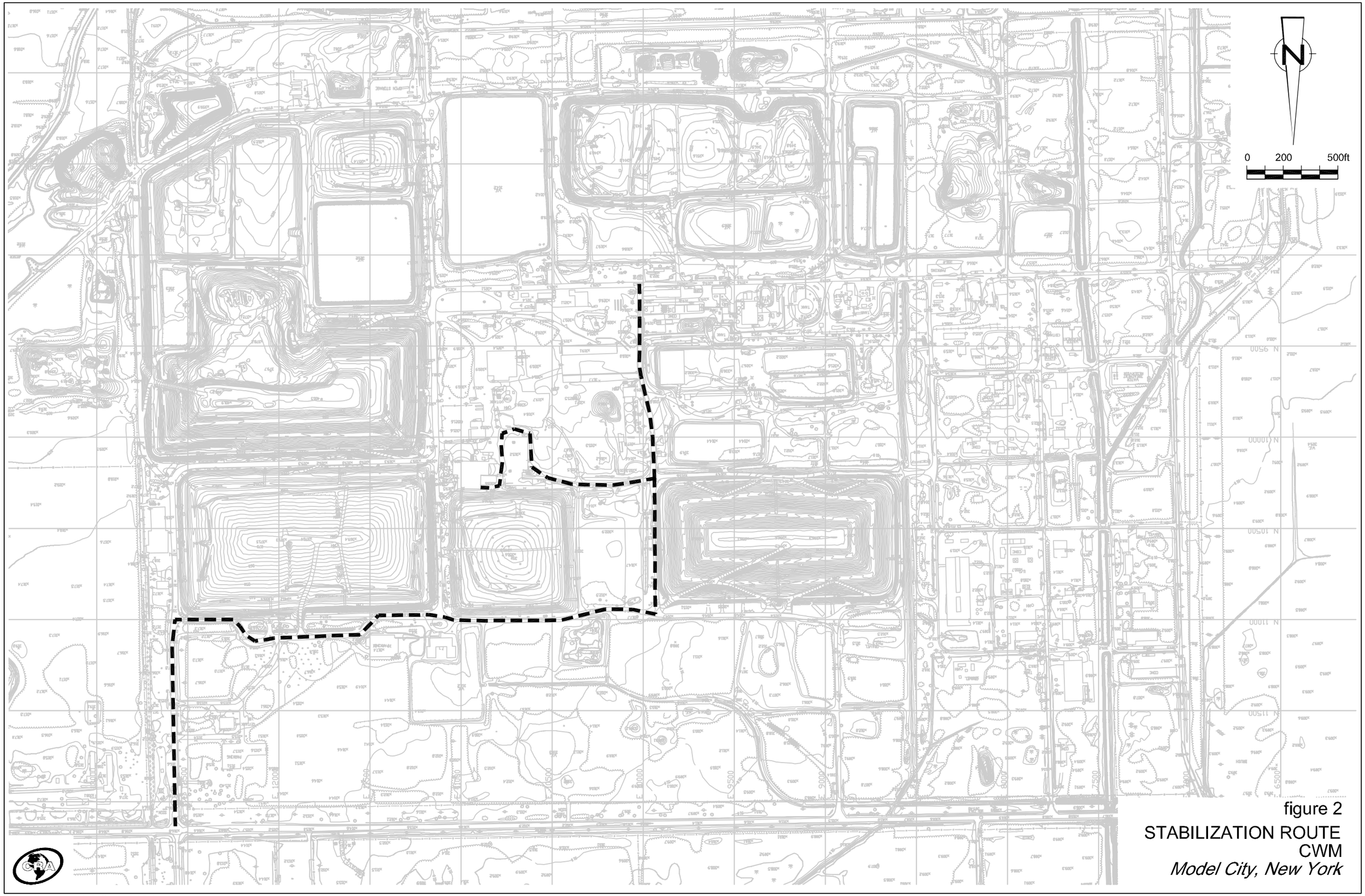


figure 2

STABILIZATION ROUTE

CWM

Model City, New York

48312-00(001)GN-NI002 OCT 29/2007

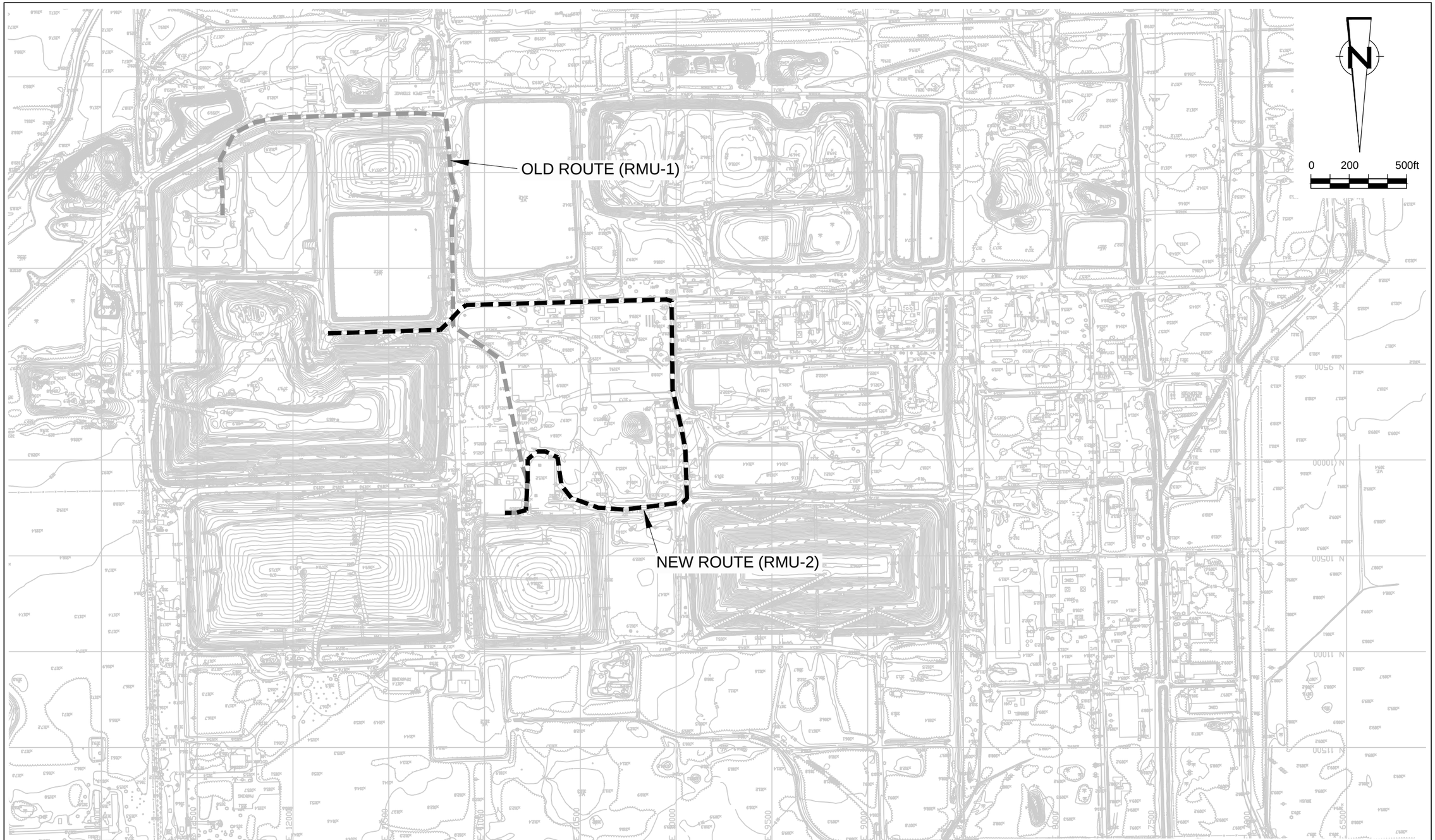


figure 3

POST-STABILIZATION ROUTE (INITIAL PHASES)
CWM
Model City, New York

80335-00(001)GN-NI003 JAN 12/2015

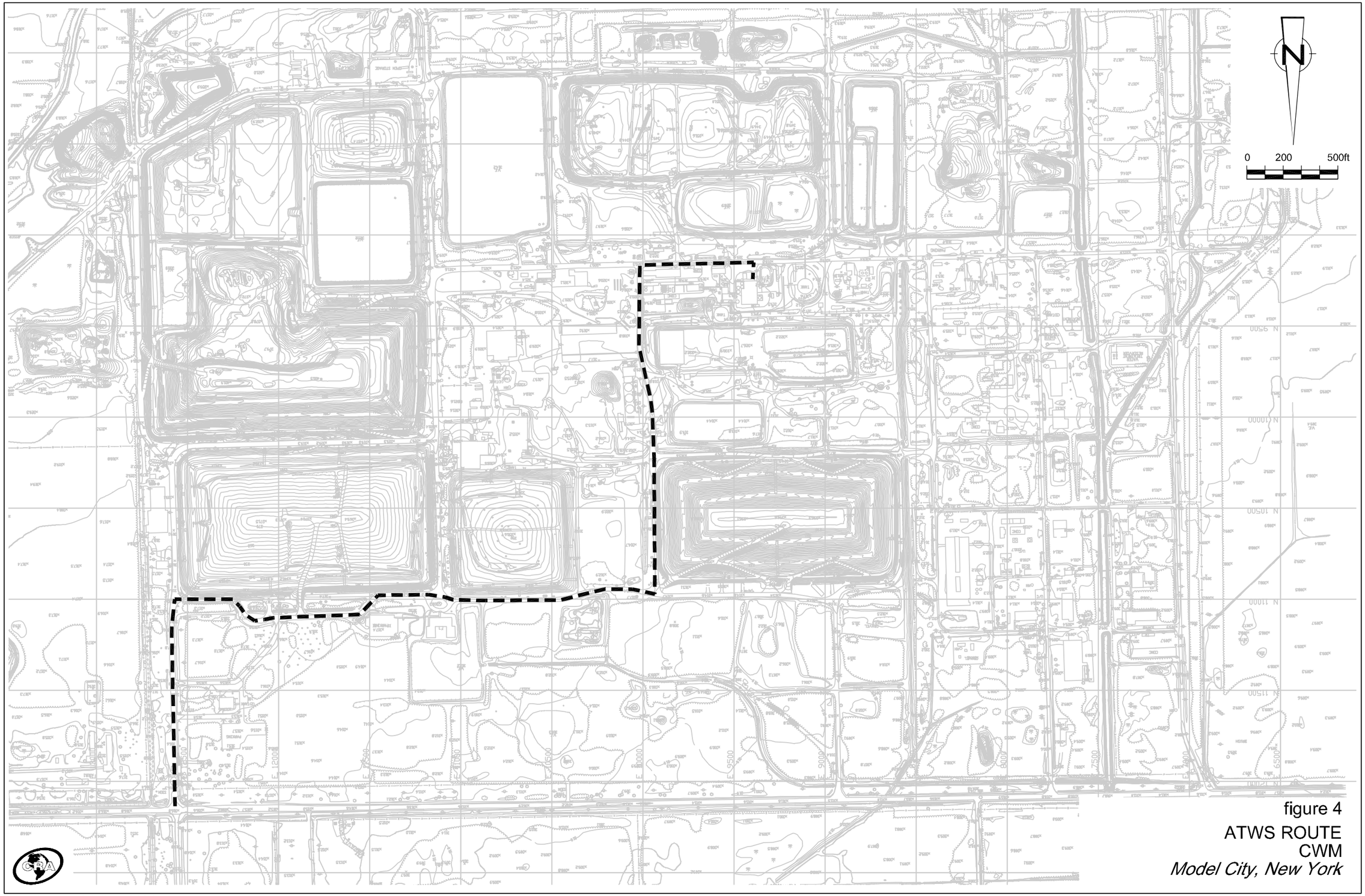


figure 4
ATWS ROUTE
CWM
Model City, New York

48312-00(001)GN-NI004 OCT 29/2007

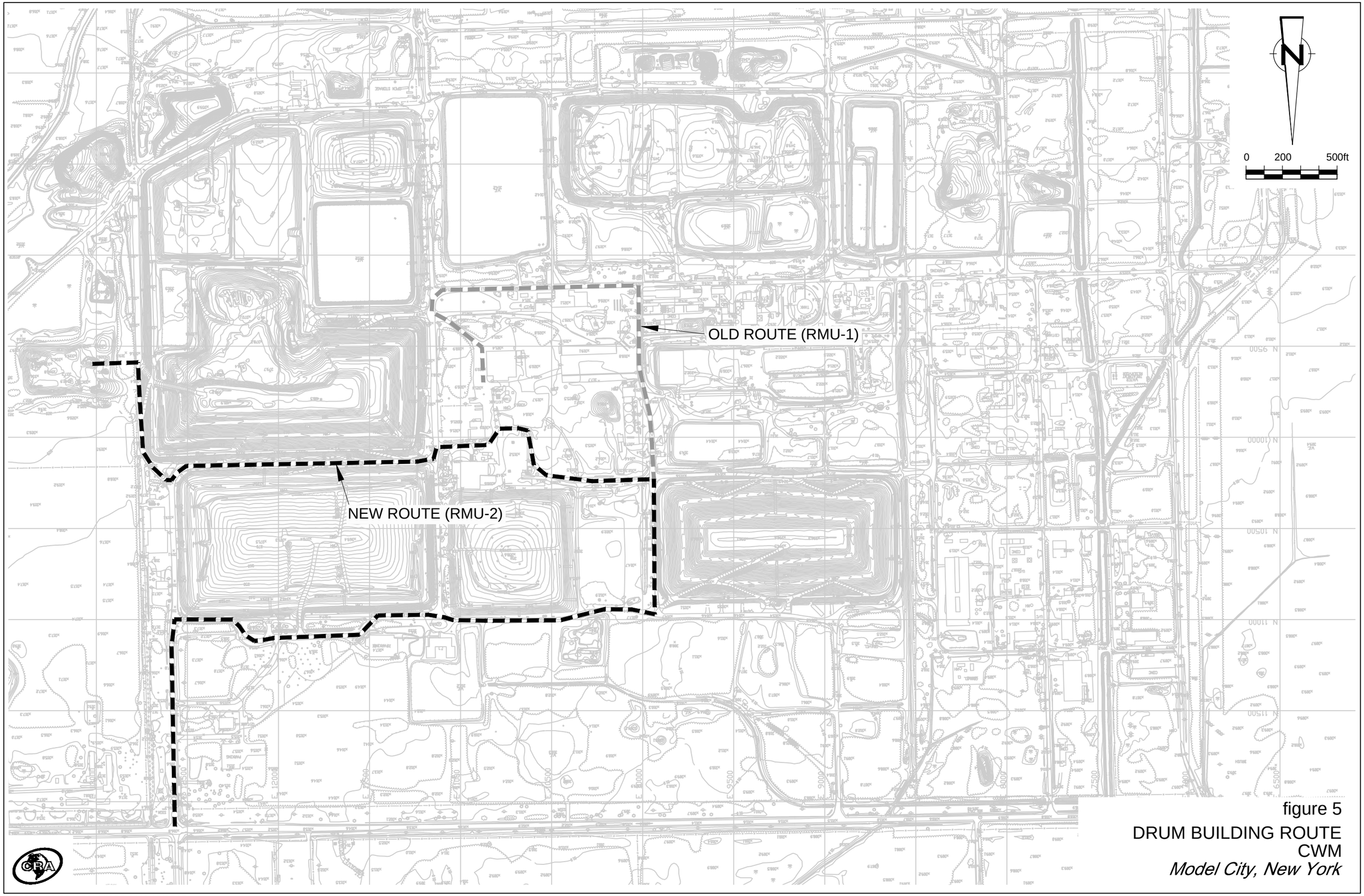


figure 5

DRUM BUILDING ROUTE
CWM
Model City, New York

80335-00(001)GN-NI005 JAN 19/2015

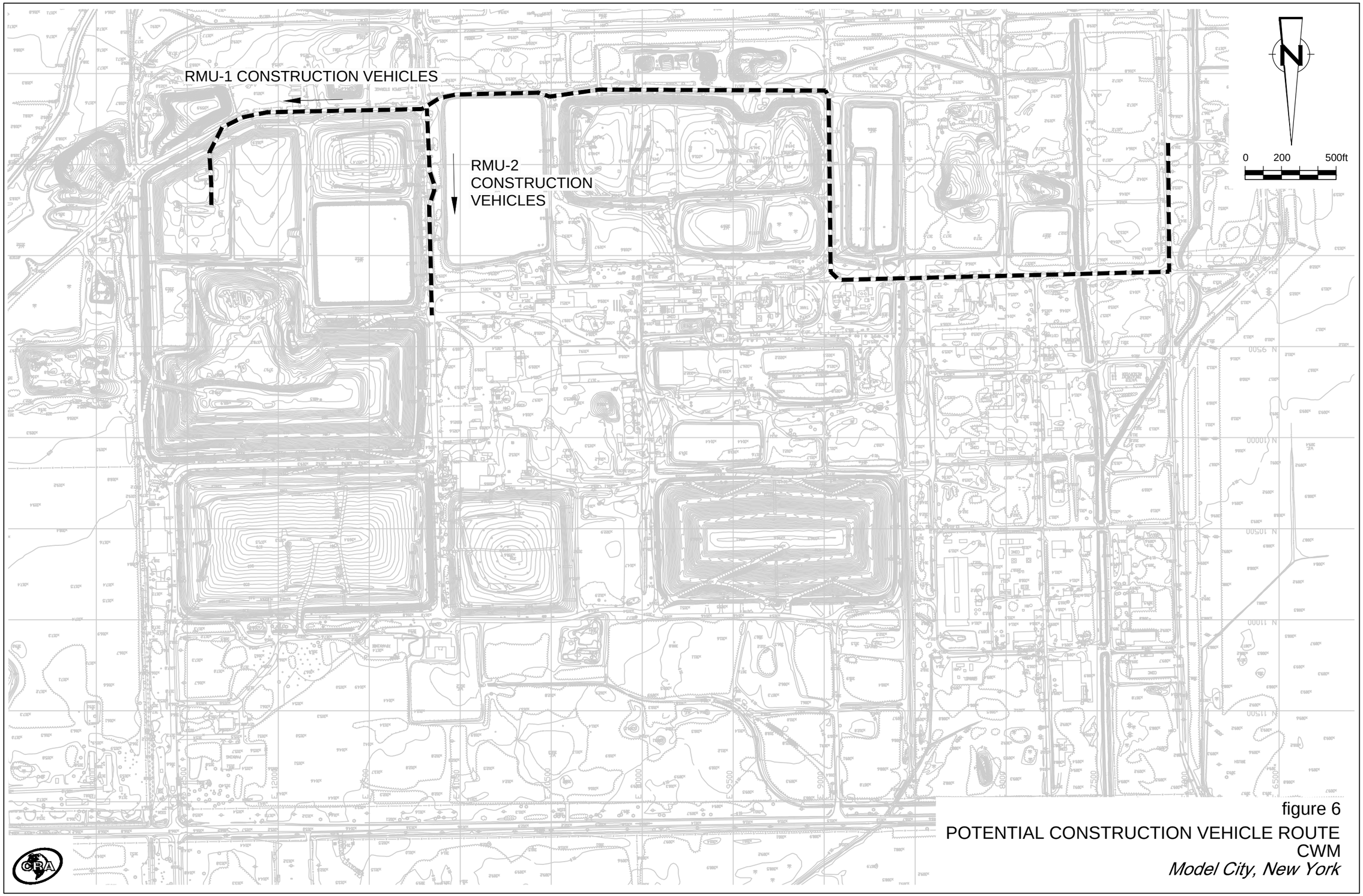


figure 6

POTENTIAL CONSTRUCTION VEHICLE ROUTE

CWM

Model City, New York

80335-00(001)GN-NI006 JAN 12/2015

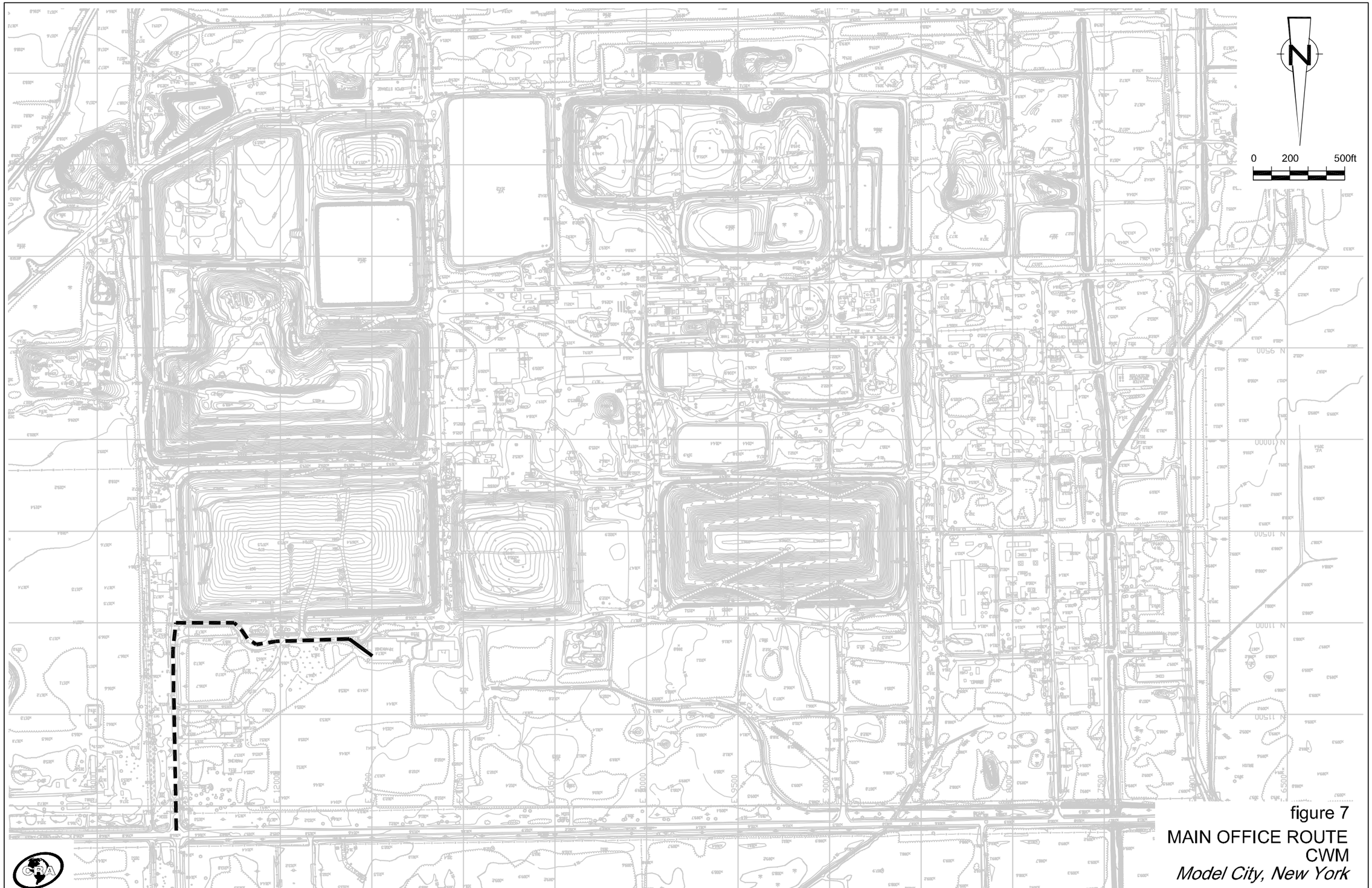


figure 7
MAIN OFFICE ROUTE
CWM
Model City, New York

48312-00(001)GN-NI007 OCT 29/2007

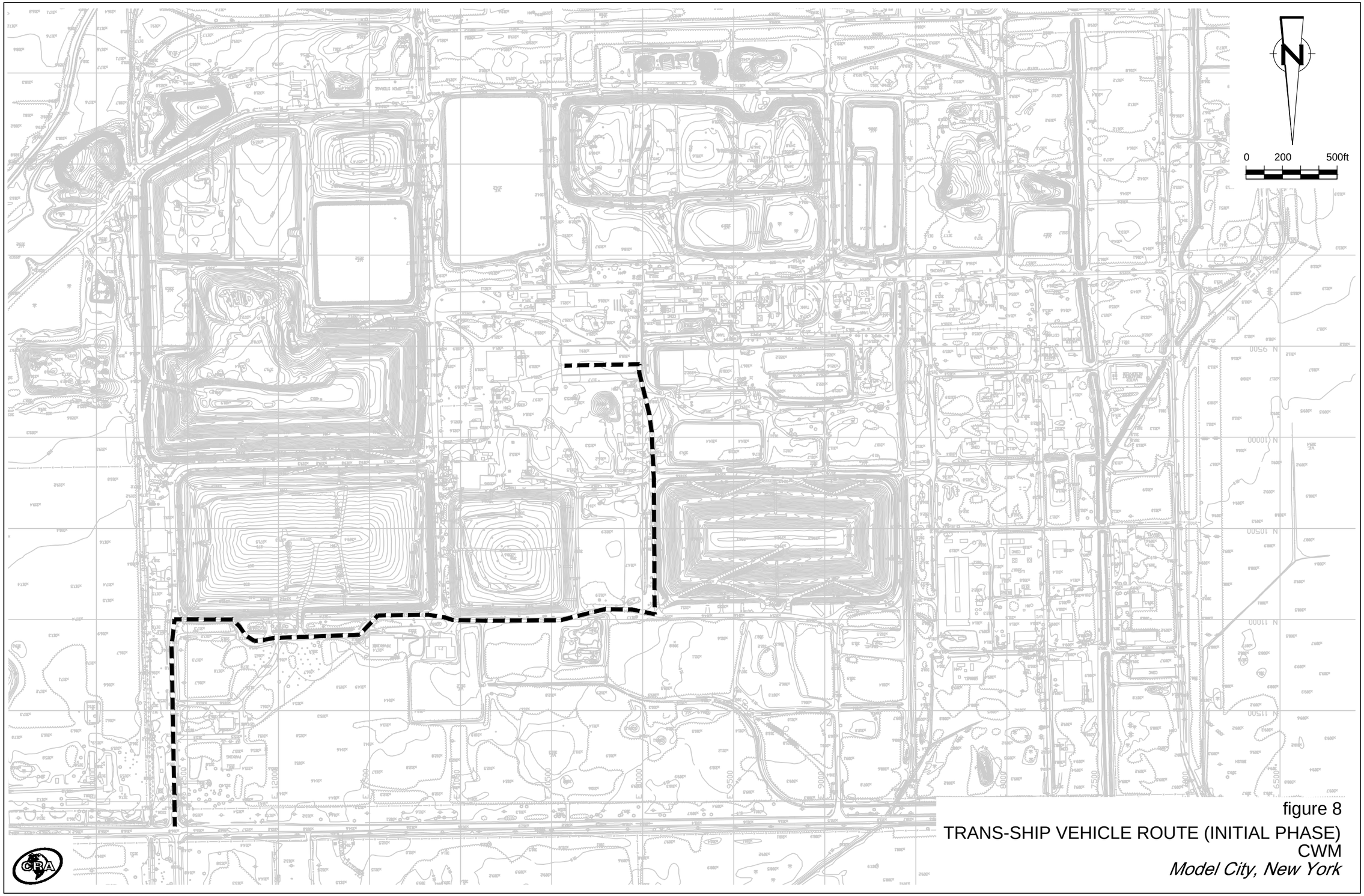


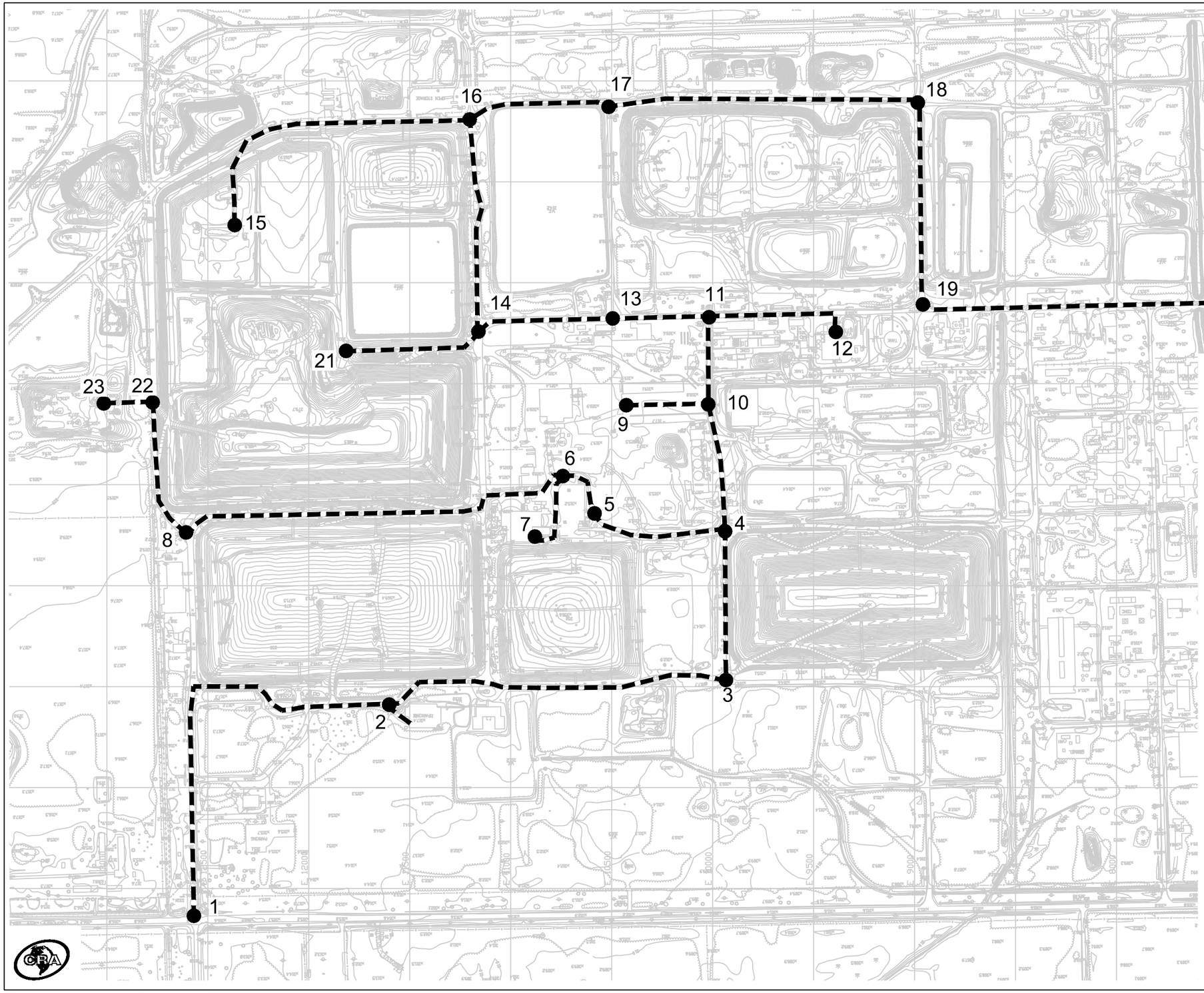
figure 8

TRANS-SHIP VEHICLE ROUTE (INITIAL PHASE)

CWM

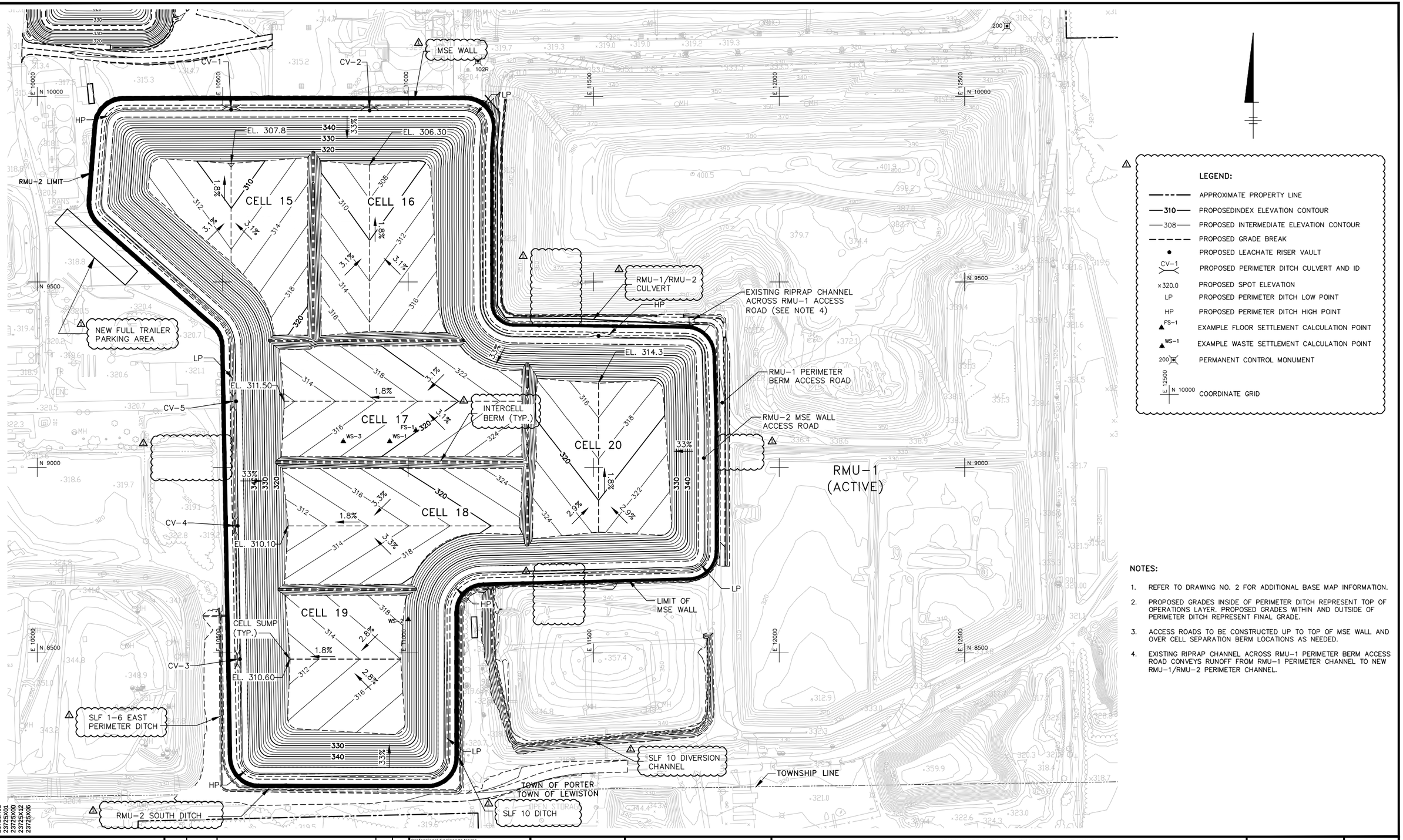
Model City, New York

80335-00(001)GN-NI008 JAN 12/2015



LINE SEGMENT	DISTANCE (FEET)
1-2	2,148
2-3	1,726
3-4	736
4-5	696
4-10	637
5-6	291
6-7	422
6-8	1,985
8-22	700
10-9	405
10-11	434
11-12	712
11-13	478
13-14	684
14-16	1,062
14-21	689
16-15	1,557
16-17	712
17-18	1,534
18-19	1,008
19-20	2,562
22-23	250

figure 9
ROUTE DISTANCES
CWM
Model City, New York



LEGEND:

- APPROXIMATE PROPERTY LINE
- 310 PROPOSEDINDEX ELEVATION CONTOUR
- 308 PROPOSED INTERMEDIATE ELEVATION CONTOUR
- PROPOSED GRADE BREAK
- PROPOSED LEACHATE RISER VAULT
- CV-1 PROPOSED PERIMETER DITCH CULVERT AND ID
- x320.0 PROPOSED SPOT ELEVATION
- LP PROPOSED PERIMETER DITCH LOW POINT
- HP PROPOSED PERIMETER DITCH HIGH POINT
- FS-1 EXAMPLE FLOOR SETTLEMENT CALCULATION POINT
- WS-1 EXAMPLE WASTE SETTLEMENT CALCULATION POINT
- 200 PERMANENT CONTROL MONUMENT
- E 12500 N 10000 COORDINATE GRID

NOTES:

1. REFER TO DRAWING NO. 2 FOR ADDITIONAL BASE MAP INFORMATION.
2. PROPOSED GRADES INSIDE OF PERIMETER DITCH REPRESENT TOP OF OPERATIONS LAYER. PROPOSED GRADES WITHIN AND OUTSIDE OF PERIMETER DITCH REPRESENT FINAL GRADE.
3. ACCESS ROADS TO BE CONSTRUCTED UP TO TOP OF MSE WALL AND OVER CELL SEPARATION BERM LOCATIONS AS NEEDED.
4. EXISTING RIPRAP CHANNEL ACROSS RMU-1 PERIMETER BERM ACCESS ROAD CONVEYS RUNOFF FROM RMU-1 PERIMETER CHANNEL TO NEW RMU-1/RMU-2 PERIMETER CHANNEL.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: K. DAVIS L. FORAKER K. DAVIS N.SMITHGALL LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVE\B0023725\2009\00006\DWG\CONTRACTIMPACT\23725G02.DWG LAYOUT: 2-4 SAVED: 2/11/2013 11:25 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 2/11/2013 11:25 AM BY: STEINBERGER, GEORGE
XREFS: IMAGES: PROJECTNAME: ----
23725X02 23725X01 23725X00 23725X12 23725X06

1"=120' (120' 0 120' 240')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	2/2013	REVISED CALLOUTS	GNG	TJF

THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: | Project Mgr.: WAR
Designed by: BMS/PTO | Drawn by: LAF | Checked by: BMS

ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC Ô MODEL CITY, NEW YORK
RESIDUALS MANAGEMENT UNIT 2 DRAFT ENVIRONMENTAL IMPACT STATEMENT

TOP OF OPERATIONS LAYER GRADES

GENERAL

ARCADIS Project No. B0023725.2009.00006
Date OCTOBER 2009

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.91220

2-4

TABLE 1

FACILITY EMISSION SUMMARY
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Emission Source	Exempt/ Trivial	Exempt / Trivial Basis	VOC	HAP	CO	NOx	SO_2	PM-10	PM-2.5	Carbon Tetrachloride	Chloroform	Benzene	Methylene Chloride	TCE	Acrylonitrile
			Emissions (lb/year)												
EXISTING TOTALS (lb/year)			**6,172.48**	**2,146.13**	**5,279.12**	**9,237.64**	**23.20**	**14,876.32**	**11,321.67**	**0.72**	**8.35**	**23.51**	**541.14**	**90.47**	**0.08**
EXISTING TOTALS (TPY)			**3.09**	**1.07**	**2.64**	**4.62**	**0.01**	**7.44**	**5.66**	**0.00**	**0.00**	**0.01**	**0.27**	**0.05**	**0.00**
RMU-2 Standpipes	N	---	2.08	2.04	-	-	-	-	-	-	-	-	0.83	-	-
RMU-2 Cover Diffusion	N	---	0.00	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00
RMU-2 Barometric Pumping	N	---	0.00	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00
RMU-2 Landfill Operation	N	---	1,034.09	1,060.88	-	-	-	2,987.74	1,159.29	0.39	2.98	16.32	77.70	23.92	0.02
RMU-2 Construction	N	---	-	-	-	-	-	13,869.00	4,202.82	-	-	-	-	-	-
Facultative Pond 5	N	---	1.26	1.26	-	-	-	-	-	0.03	0.03	0.03	0.06	0.03	-
Soil Stockpile Wind Erosion	N	---	-	-	-	-	-	64.09	9.61	-	-	-	-	-	-
RMU-2 TOTALS (lb/yr)			**1,037.43**	**1,064.18**	**0.00**	**0.00**	**0.00**	**16,920.83**	**5,371.72**	**0.42**	**3.01**	**16.35**	**78.60**	**23.95**	**0.02**
RMU-2 TOTALS (TPY)			**0.52**	**0.53**	**0.00**	**0.00**	**0.00**	**8.46**	**2.69**	**0.00**	**0.00**	**0.01**	**0.04**	**0.01**	**0.00**
FACILITY TOTALS (lb/yr)			**7,209.91**	**3,210.30**	**5,279.12**	**9,237.64**	**23.20**	**31,797.15**	**16,693.40**	**1.15**	**11.36**	**39.86**	**619.74**	**114.42**	**0.10**
FACILITY TOTALS (TPY)			**3.60**	**1.61**	**2.64**	**4.62**	**0.01**	**15.90**	**8.35**	**0.00**	**0.01**	**0.02**	**0.31**	**0.06**	**0.00**
Title V Thresholds (TPY)			**50**	**25**	**100**	**100**	**100**	**100**	**100**	**10**	**10**	**10**	**10**	**10**	**10**
% of Title V Threshold			**7.21%**	**6.42%**	**2.64%**	**4.62%**	**0.01%**	**15.90%**	**8.35%**	**0.01%**	**0.06%**	**0.20%**	**3.10%**	**0.57%**	**0.00%**

General Note: The numbers presented on this table have been rounded to 2 decimal places. Therefore, a value of '0.00' means less than 0.005 pounds per year, not necessarily that zero emissions are present. Emissions were reported to two significant digits past the decimal fro consistency, a

TABLE 1

FACILITY EMISSION SUMMARY
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Pesticides, Herbicides, Insecticides	PCBs	POM	CO_2	CH_4	N_2O	Arsenic	Cadmium	Chromium	Manganese	Nickel	Lead
0.16	**113.35**	**15.66**	**8,753,729.88**	**139.98**	**629.90**	**0.00**	**0.00**	**0.24**	**0.03**	**1.19**	**0.83**
0.00	**0.06**	**0.01**	**4,376.86**	**0.07**	**0.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
-	0.04	-	-	-	-	-	-	-	-	-	-
-	0.00	-	-	-	-	-	-	-	-	-	-
-	0.00	-	-	-	-	-	-	-	-	-	-
-	237.11	32.54	-	-	-	0.00	0.00	0.10	0.02	0.23	0.34
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.00	**237.15**	**32.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.10**	**0.02**	**0.23**	**0.34**
0.00	**0.12**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
0.16	**350.49**	**48.20**	**8,753,729.88**	**139.98**	**629.90**	**0.00**	**0.00**	**0.34**	**0.05**	**1.41**	**1.17**
0.00	**0.18**	**0.02**	**4,376.86**	**0.07**	**0.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
-	**-**	**-**	**100,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
-	**-**	**-**	**4.38%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

ınd since this level is orders of magnitude below applicable thresholds.

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

Wind Erosion

Fugitive dust emissions from the soil stockpile will use emission factor equations in AP-42 Section 13.2.5 for Industrial Wind erosion

Equation 2:

$$\text{Emission factor} = k \sum_{i=1}^{N} P_i$$

where:

k = particle size multiplier PM10 k=0.5

N = number of disturbances of soil pile per year = 214 (daily during April 1 to October 31 construction season)

P_i = erosion potential corresponding to observed (or probable) fastest mile of wind for ith period between disturbances, g/m^2

For PM_{10}, k = 0.5

The erosion potential function for a dry, exposed surface is: $P = 58 * (u^* - u_t^*)^2 + 25 * (u^* - u_t^*)$ [P = 0 for $u^* < u_t^*$]

where:

u^* = friction velocity (m/s)

u_t^* = threshold friction velocity (m/s)

which = 1.02 m/s, as referenced from Table 13.2.5-2 of AP-42 Section 13.2.5 for overburden materials

$u^* = (0.053)*(u_{10}^+)$ where: u_{10}^+ = fastest mile of reference anemometer at 10m for period between disturbances

(This equation is used for relatively large flat piles with a height-to-base ratio less than 0.2).

total area =	2.86	acres	=	11,574	m^2
disturbed area =	2.86	acres	=	11,574	m^2 (maximum amount of disturbed area in any one day)

Wind speed data from on-site meteorological station (anemometer height = 10 meters)

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
1	APR	1	**16.47**	**16.5**	7.36	0.39	0.00	0.00	0.00	0.00	0.00
2	APR	2	**23.43**	**23.4**	10.47	0.56	0.00	0.00	0.00	0.00	0.00
3	APR	3	**16.43**	**16.4**	7.34	0.39	0.00	0.00	0.00	0.00	0.00
4	APR	4	**28.23**	**28.2**	12.62	0.67	0.00	0.00	0.00	0.00	0.00
5	APR	5	**23.95**	**24.0**	10.71	0.57	0.00	0.00	0.00	0.00	0.00
6	APR	6	**17.15**	**17.2**	7.67	0.41	0.00	0.00	0.00	0.00	0.00
7	APR	7	**10.60**	**10.6**	4.74	0.25	0.00	0.00	0.00	0.00	0.00
8	APR	8	**11.66**	**11.7**	5.21	0.28	0.00	0.00	0.00	0.00	0.00
9	APR	9	**13.94**	**13.9**	6.23	0.33	0.00	0.00	0.00	0.00	0.00
10	APR	10	**26.03**	**26.0**	11.64	0.62	0.00	0.00	0.00	0.00	0.00
11	APR	11	**38.95**	**39.0**	17.41	0.92	0.00	0.00	0.00	0.00	0.00
12	APR	12	**19.60**	**19.6**	8.76	0.46	0.00	0.00	0.00	0.00	0.00
13	APR	13	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
14	APR	14	**13.99**	**14.0**	6.25	0.33	0.00	0.00	0.00	0.00	0.00
15	APR	15	**20.9**	**20.9**	9.34	0.50	0.00	0.00	0.00	0.00	0.00
16	APR	16	**19.55**	**19.6**	8.74	0.46	0.00	0.00	0.00	0.00	0.00
17	APR	17	**32.39**	**32.4**	14.48	0.77	0.00	0.00	0.00	0.00	0.00
18	APR	18	**15.67**	**15.7**	7.01	0.37	0.00	0.00	0.00	0.00	0.00
19	APR	19	**17.68**	**17.7**	7.90	0.42	0.00	0.00	0.00	0.00	0.00
20	APR	20	**29.71**	**29.7**	13.28	0.70	0.00	0.00	0.00	0.00	0.00
21	APR	21	**23.67**	**23.7**	10.58	0.56	0.00	0.00	0.00	0.00	0.00
22	APR	22	**16.03**	**16.0**	7.17	0.38	0.00	0.00	0.00	0.00	0.00
23	APR	23	**24.92**	**24.9**	11.14	0.59	0.00	0.00	0.00	0.00	0.00
24	APR	24	**12.55**	**12.6**	5.61	0.30	0.00	0.00	0.00	0.00	0.00
25	APR	25	**11.96**	**12.0**	5.35	0.28	0.00	0.00	0.00	0.00	0.00
26	APR	26	**15.6**	**15.6**	6.97	0.37	0.00	0.00	0.00	0.00	0.00
27	APR	27	**30.07**	**30.1**	13.44	0.71	0.00	0.00	0.00	0.00	0.00
28	APR	28	**49.35**	**49.4**	22.06	1.17	5.02	58141.67	29070.84	64.09	0.03
29	APR	29	**20.11**	**20.1**	8.99	0.48	0.00	0.00	0.00	0.00	0.00
30	APR	30	**12.17**	**12.2**	5.44	0.29	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
31	MAY	1	**22.77**	**22.8**	10.18	0.54	0.00	0.00	0.00	0.00	0.00
32	MAY	2	**16.36**	**16.4**	7.31	0.39	0.00	0.00	0.00	0.00	0.00
33	MAY	3	**13.94**	**13.9**	6.23	0.33	0.00	0.00	0.00	0.00	0.00
34	MAY	4	**13.14**	**13.1**	5.87	0.31	0.00	0.00	0.00	0.00	0.00
35	MAY	5	**17.35**	**17.4**	7.76	0.41	0.00	0.00	0.00	0.00	0.00
36	MAY	6	**24.92**	**24.9**	11.14	0.59	0.00	0.00	0.00	0.00	0.00
37	MAY	7	**11.58**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
38	MAY	8	**12.81**	**12.8**	5.73	0.30	0.00	0.00	0.00	0.00	0.00
39	MAY	9	**14.45**	**14.5**	6.46	0.34	0.00	0.00	0.00	0.00	0.00
40	MAY	10	**16.55**	**16.6**	7.40	0.39	0.00	0.00	0.00	0.00	0.00
41	MAY	11	**13.81**	**13.8**	6.17	0.33	0.00	0.00	0.00	0.00	0.00
42	MAY	12	**10.1**	**10.1**	4.52	0.24	0.00	0.00	0.00	0.00	0.00
43	MAY	13	**12.86**	**12.9**	5.75	0.30	0.00	0.00	0.00	0.00	0.00
44	MAY	14	**19.48**	**19.5**	8.71	0.46	0.00	0.00	0.00	0.00	0.00
45	MAY	15	**19.76**	**19.8**	8.83	0.47	0.00	0.00	0.00	0.00	0.00
46	MAY	16	**14.05**	**14.1**	6.28	0.33	0.00	0.00	0.00	0.00	0.00
47	MAY	17	**19.44**	**19.4**	8.69	0.46	0.00	0.00	0.00	0.00	0.00
48	MAY	18	**13.34**	**13.3**	5.96	0.32	0.00	0.00	0.00	0.00	0.00
49	MAY	19	**12.34**	**12.3**	5.52	0.29	0.00	0.00	0.00	0.00	0.00
50	MAY	20	**8.06**	**8.1**	3.60	0.19	0.00	0.00	0.00	0.00	0.00
51	MAY	21	**10.05**	**10.1**	4.49	0.24	0.00	0.00	0.00	0.00	0.00
52	MAY	22	**15.74**	**15.7**	7.04	0.37	0.00	0.00	0.00	0.00	0.00
53	MAY	23	**25.88**	**25.9**	11.57	0.61	0.00	0.00	0.00	0.00	0.00
54	MAY	24	**18.09**	**18.1**	8.09	0.43	0.00	0.00	0.00	0.00	0.00
55	MAY	25	**16.94**	**16.9**	7.57	0.40	0.00	0.00	0.00	0.00	0.00
56	MAY	26	**20.33**	**20.3**	9.09	0.48	0.00	0.00	0.00	0.00	0.00
57	MAY	27	**11.57**	**11.6**	5.17	0.27	0.00	0.00	0.00	0.00	0.00
58	MAY	28	**19.59**	**19.6**	8.76	0.46	0.00	0.00	0.00	0.00	0.00
59	MAY	29	**15.26**	**15.3**	6.82	0.36	0.00	0.00	0.00	0.00	0.00
60	MAY	30	**23.28**	**23.3**	10.41	0.55	0.00	0.00	0.00	0.00	0.00
61	MAY	31	**17.2**	**17.2**	7.69	0.41	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
62	JUN	1	**23.74**	**23.7**	10.61	0.56	0.00	0.00	0.00	0.00	0.00
63	JUN	2	**19.71**	**19.7**	8.81	0.47	0.00	0.00	0.00	0.00	0.00
64	JUN	3	**10.35**	**10.4**	4.63	0.25	0.00	0.00	0.00	0.00	0.00
65	JUN	4	**25.19**	**25.2**	11.26	0.60	0.00	0.00	0.00	0.00	0.00
66	JUN	5	**11.33**	**11.3**	5.06	0.27	0.00	0.00	0.00	0.00	0.00
67	JUN	6	**8.29**	**8.3**	3.71	0.20	0.00	0.00	0.00	0.00	0.00
68	JUN	7	**29.09**	**29.1**	13.00	0.69	0.00	0.00	0.00	0.00	0.00
69	JUN	8	**18.3**	**18.3**	8.18	0.43	0.00	0.00	0.00	0.00	0.00
70	JUN	9	**18.51**	**18.5**	8.27	0.44	0.00	0.00	0.00	0.00	0.00
71	JUN	10	**14.08**	**14.1**	6.29	0.33	0.00	0.00	0.00	0.00	0.00
72	JUN	11	**12.56**	**12.6**	5.61	0.30	0.00	0.00	0.00	0.00	0.00
73	JUN	12	**16.26**	**16.3**	7.27	0.39	0.00	0.00	0.00	0.00	0.00
74	JUN	13	**13.55**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
75	JUN	14	**14.9**	**14.9**	6.66	0.35	0.00	0.00	0.00	0.00	0.00
76	JUN	15	**10.52**	**10.5**	4.70	0.25	0.00	0.00	0.00	0.00	0.00
77	JUN	16	**18.13**	**18.1**	8.10	0.43	0.00	0.00	0.00	0.00	0.00
78	JUN	17	**13.11**	**13.1**	5.86	0.31	0.00	0.00	0.00	0.00	0.00
79	JUN	18	**8.24**	**8.2**	3.68	0.20	0.00	0.00	0.00	0.00	0.00
80	JUN	19	**14.93**	**14.9**	6.67	0.35	0.00	0.00	0.00	0.00	0.00
81	JUN	20	**13.56**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
82	JUN	21	**12.79**	**12.8**	5.72	0.30	0.00	0.00	0.00	0.00	0.00
83	JUN	22	**11.38**	**11.4**	5.09	0.27	0.00	0.00	0.00	0.00	0.00
84	JUN	23	**17.84**	**17.8**	7.98	0.42	0.00	0.00	0.00	0.00	0.00
85	JUN	24	**16.38**	**16.4**	7.32	0.39	0.00	0.00	0.00	0.00	0.00
86	JUN	25	**15.74**	**15.7**	7.04	0.37	0.00	0.00	0.00	0.00	0.00
87	JUN	26	**9.8**	**9.8**	4.38	0.23	0.00	0.00	0.00	0.00	0.00
88	JUN	27	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
89	JUN	28	**22.73**	**22.7**	10.16	0.54	0.00	0.00	0.00	0.00	0.00
90	JUN	29	**18.18**	**18.2**	8.13	0.43	0.00	0.00	0.00	0.00	0.00
91	JUN	30	**11.71**	**11.7**	5.23	0.28	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
92	JUL	1	**10.34**	**10.3**	4.62	0.24	0.00	0.00	0.00	0.00	0.00
93	JUL	2	**16.11**	**16.1**	7.20	0.38	0.00	0.00	0.00	0.00	0.00
94	JUL	3	**15.44**	**15.4**	6.90	0.37	0.00	0.00	0.00	0.00	0.00
95	JUL	4	**16.03**	**16.0**	7.17	0.38	0.00	0.00	0.00	0.00	0.00
96	JUL	5	**16.23**	**16.2**	7.26	0.38	0.00	0.00	0.00	0.00	0.00
97	JUL	6	**12.65**	**12.7**	5.66	0.30	0.00	0.00	0.00	0.00	0.00
98	JUL	7	**9.8**	**9.8**	4.38	0.23	0.00	0.00	0.00	0.00	0.00
99	JUL	8	**9.4**	**9.4**	4.20	0.22	0.00	0.00	0.00	0.00	0.00
100	JUL	9	**10.54**	**10.5**	4.71	0.25	0.00	0.00	0.00	0.00	0.00
101	JUL	10	**13.1**	**13.1**	5.86	0.31	0.00	0.00	0.00	0.00	0.00
102	JUL	11	**21.8**	**21.8**	9.75	0.52	0.00	0.00	0.00	0.00	0.00
103	JUL	12	**16.67**	**16.7**	7.45	0.39	0.00	0.00	0.00	0.00	0.00
104	JUL	13	**15.84**	**15.8**	7.08	0.38	0.00	0.00	0.00	0.00	0.00
105	JUL	14	**12.95**	**13.0**	5.79	0.31	0.00	0.00	0.00	0.00	0.00
106	JUL	15	**16.28**	**16.3**	7.28	0.39	0.00	0.00	0.00	0.00	0.00
107	JUL	16	**8.95**	**9.0**	4.00	0.21	0.00	0.00	0.00	0.00	0.00
108	JUL	17	**17**	**17.0**	7.60	0.40	0.00	0.00	0.00	0.00	0.00
109	JUL	18	**14.5**	**14.5**	6.48	0.34	0.00	0.00	0.00	0.00	0.00
110	JUL	19	**13.66**	**13.7**	6.11	0.32	0.00	0.00	0.00	0.00	0.00
111	JUL	20	**14.44**	**14.4**	6.46	0.34	0.00	0.00	0.00	0.00	0.00
112	JUL	21	**20.27**	**20.3**	9.06	0.48	0.00	0.00	0.00	0.00	0.00
113	JUL	22	**10.23**	**10.2**	4.57	0.24	0.00	0.00	0.00	0.00	0.00
114	JUL	23	**13.79**	**13.8**	6.16	0.33	0.00	0.00	0.00	0.00	0.00
115	JUL	24	**12.07**	**12.1**	5.40	0.29	0.00	0.00	0.00	0.00	0.00
116	JUL	25	**13.2**	**13.2**	5.90	0.31	0.00	0.00	0.00	0.00	0.00
117	JUL	26	**19.32**	**19.3**	8.64	0.46	0.00	0.00	0.00	0.00	0.00
118	JUL	27	**9.47**	**9.5**	4.23	0.22	0.00	0.00	0.00	0.00	0.00
119	JUL	28	**10.99**	**11.0**	4.91	0.26	0.00	0.00	0.00	0.00	0.00
120	JUL	29	**16.26**	**16.3**	7.27	0.39	0.00	0.00	0.00	0.00	0.00
121	JUL	30	**8.74**	**8.7**	3.91	0.21	0.00	0.00	0.00	0.00	0.00
122	JUL	31	**15.26**	**15.3**	6.82	0.36	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
123	AUG	1	**13.42**	**13.4**	6.00	0.32	0.00	0.00	0.00	0.00	0.00
124	AUG	2	**16.2**	**16.2**	7.24	0.38	0.00	0.00	0.00	0.00	0.00
125	AUG	3	**13.55**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
126	AUG	4	**12.6**	**12.6**	5.63	0.30	0.00	0.00	0.00	0.00	0.00
127	AUG	5	**14.18**	**14.2**	6.34	0.34	0.00	0.00	0.00	0.00	0.00
128	AUG	6	**10.33**	**10.3**	4.62	0.24	0.00	0.00	0.00	0.00	0.00
129	AUG	7	**15.14**	**15.1**	6.77	0.36	0.00	0.00	0.00	0.00	0.00
130	AUG	8	**11.68**	**11.7**	5.22	0.28	0.00	0.00	0.00	0.00	0.00
131	AUG	9	**11.4**	**11.4**	5.10	0.27	0.00	0.00	0.00	0.00	0.00
132	AUG	10	**21.76**	**21.8**	9.73	0.52	0.00	0.00	0.00	0.00	0.00
133	AUG	11	**18.46**	**18.5**	8.25	0.44	0.00	0.00	0.00	0.00	0.00
134	AUG	12	**13.84**	**13.8**	6.19	0.33	0.00	0.00	0.00	0.00	0.00
135	AUG	13	**13.07**	**13.1**	5.84	0.31	0.00	0.00	0.00	0.00	0.00
136	AUG	14	**9.15**	**9.2**	4.09	0.22	0.00	0.00	0.00	0.00	0.00
137	AUG	15	**13.26**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
138	AUG	16	**11**	**11.0**	4.92	0.26	0.00	0.00	0.00	0.00	0.00
139	AUG	17	**16.78**	**16.8**	7.50	0.40	0.00	0.00	0.00	0.00	0.00
140	AUG	18	**16.07**	**16.1**	7.18	0.38	0.00	0.00	0.00	0.00	0.00
141	AUG	19	**11.93**	**11.9**	5.33	0.28	0.00	0.00	0.00	0.00	0.00
142	AUG	20	**13.86**	**13.9**	6.20	0.33	0.00	0.00	0.00	0.00	0.00
143	AUG	21	**18.25**	**18.3**	8.16	0.43	0.00	0.00	0.00	0.00	0.00
144	AUG	22	**17.38**	**17.4**	7.77	0.41	0.00	0.00	0.00	0.00	0.00
145	AUG	23	**15.08**	**15.1**	6.74	0.36	0.00	0.00	0.00	0.00	0.00
146	AUG	24	**26.77**	**26.8**	11.97	0.63	0.00	0.00	0.00	0.00	0.00
147	AUG	25	**20.75**	**20.8**	9.28	0.49	0.00	0.00	0.00	0.00	0.00
148	AUG	26	**9.14**	**9.1**	4.09	0.22	0.00	0.00	0.00	0.00	0.00
149	AUG	27	**9.04**	**9.0**	4.04	0.21	0.00	0.00	0.00	0.00	0.00
150	AUG	28	**21.74**	**21.7**	9.72	0.52	0.00	0.00	0.00	0.00	0.00
151	AUG	29	**16.14**	**16.1**	7.22	0.38	0.00	0.00	0.00	0.00	0.00
152	AUG	30	**13.33**	**13.3**	5.96	0.32	0.00	0.00	0.00	0.00	0.00
153	AUG	31	**8.64**	**8.6**	3.86	0.20	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
154	SEP	1	**12.85**	**12.9**	5.74	0.30	0.00	0.00	0.00	0.00	0.00
155	SEP	2	**11.87**	**11.9**	5.31	0.28	0.00	0.00	0.00	0.00	0.00
156	SEP	3	**8.66**	**8.7**	3.87	0.21	0.00	0.00	0.00	0.00	0.00
157	SEP	4	**39.62**	**39.6**	17.71	0.94	0.00	0.00	0.00	0.00	0.00
158	SEP	5	**14.14**	**14.1**	6.32	0.34	0.00	0.00	0.00	0.00	0.00
159	SEP	6	**14.12**	**14.1**	6.31	0.33	0.00	0.00	0.00	0.00	0.00
160	SEP	7	**18.44**	**18.4**	8.24	0.44	0.00	0.00	0.00	0.00	0.00
161	SEP	8	**13.03**	**13.0**	5.82	0.31	0.00	0.00	0.00	0.00	0.00
162	SEP	9	**12.52**	**12.5**	5.60	0.30	0.00	0.00	0.00	0.00	0.00
163	SEP	10	**11.9**	**11.9**	5.32	0.28	0.00	0.00	0.00	0.00	0.00
164	SEP	11	**8.43**	**8.4**	3.77	0.20	0.00	0.00	0.00	0.00	0.00
165	SEP	12	**16.45**	**16.5**	7.35	0.39	0.00	0.00	0.00	0.00	0.00
166	SEP	13	**27.69**	**27.7**	12.38	0.66	0.00	0.00	0.00	0.00	0.00
167	SEP	14	**16.31**	**16.3**	7.29	0.39	0.00	0.00	0.00	0.00	0.00
168	SEP	15	**20.67**	**20.7**	9.24	0.49	0.00	0.00	0.00	0.00	0.00
169	SEP	16	**11.81**	**11.8**	5.28	0.28	0.00	0.00	0.00	0.00	0.00
170	SEP	17	**13.67**	**13.7**	6.11	0.32	0.00	0.00	0.00	0.00	0.00
171	SEP	18	**10.97**	**11.0**	4.90	0.26	0.00	0.00	0.00	0.00	0.00
172	SEP	19	**15.81**	**15.8**	7.07	0.37	0.00	0.00	0.00	0.00	0.00
173	SEP	20	**11.94**	**11.9**	5.34	0.28	0.00	0.00	0.00	0.00	0.00
174	SEP	21	**16.23**	**16.2**	7.26	0.38	0.00	0.00	0.00	0.00	0.00
175	SEP	22	**14.07**	**14.1**	6.29	0.33	0.00	0.00	0.00	0.00	0.00
176	SEP	23	**12.11**	**12.1**	5.41	0.29	0.00	0.00	0.00	0.00	0.00
177	SEP	24	**10.86**	**10.9**	4.85	0.26	0.00	0.00	0.00	0.00	0.00
178	SEP	25	**12.15**	**12.2**	5.43	0.29	0.00	0.00	0.00	0.00	0.00
179	SEP	26	**8.81**	**8.8**	3.94	0.21	0.00	0.00	0.00	0.00	0.00
180	SEP	27	**13.39**	**13.4**	5.99	0.32	0.00	0.00	0.00	0.00	0.00
181	SEP	28	**8.01**	**8.0**	3.58	0.19	0.00	0.00	0.00	0.00	0.00
182	SEP	29	**14.73**	**14.7**	6.58	0.35	0.00	0.00	0.00	0.00	0.00
183	SEP	30	**23.9**	**23.9**	10.68	0.57	0.00	0.00	0.00	0.00	0.00

TABLE 2A

SOIL STOCKPILE WIND EROSION PM-10 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.5 for* PM_{10} *(g)*	*(lbs)*	*(tons)*
184	OCT	1	**20.99**	**21.0**	9.38	0.50	0.00	0.00	0.00	0.00	0.00
185	OCT	2	**20.32**	**20.3**	9.08	0.48	0.00	0.00	0.00	0.00	0.00
186	OCT	3	**13.27**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
187	OCT	4	**11.73**	**11.7**	5.24	0.28	0.00	0.00	0.00	0.00	0.00
188	OCT	5	**13.4**	**13.4**	5.99	0.32	0.00	0.00	0.00	0.00	0.00
189	OCT	6	**8.23**	**8.2**	3.68	0.19	0.00	0.00	0.00	0.00	0.00
190	OCT	7	**6.942**	**6.9**	3.10	0.16	0.00	0.00	0.00	0.00	0.00
191	OCT	8	**11.65**	**11.7**	5.21	0.28	0.00	0.00	0.00	0.00	0.00
192	OCT	9	**10.01**	**10.0**	4.47	0.24	0.00	0.00	0.00	0.00	0.00
193	OCT	10	**7.628**	**7.6**	3.41	0.18	0.00	0.00	0.00	0.00	0.00
194	OCT	11	**8.97**	**9.0**	4.01	0.21	0.00	0.00	0.00	0.00	0.00
195	OCT	12	**11.49**	**11.5**	5.14	0.27	0.00	0.00	0.00	0.00	0.00
196	OCT	13	**11.54**	**11.5**	5.16	0.27	0.00	0.00	0.00	0.00	0.00
197	OCT	14	**19.13**	**19.1**	8.55	0.45	0.00	0.00	0.00	0.00	0.00
198	OCT	15	**28.92**	**28.9**	12.93	0.69	0.00	0.00	0.00	0.00	0.00
199	OCT	16	**25.05**	**25.1**	11.20	0.59	0.00	0.00	0.00	0.00	0.00
200	OCT	17	**29.02**	**29.0**	12.97	0.69	0.00	0.00	0.00	0.00	0.00
201	OCT	18	**15.49**	**15.5**	6.92	0.37	0.00	0.00	0.00	0.00	0.00
202	OCT	19	**24.66**	**24.7**	11.02	0.58	0.00	0.00	0.00	0.00	0.00
203	OCT	20	**21.97**	**22.0**	9.82	0.52	0.00	0.00	0.00	0.00	0.00
204	OCT	21	**19.27**	**19.3**	8.61	0.46	0.00	0.00	0.00	0.00	0.00
205	OCT	22	**12.57**	**12.6**	5.62	0.30	0.00	0.00	0.00	0.00	0.00
206	OCT	23	**13.32**	**13.3**	5.95	0.32	0.00	0.00	0.00	0.00	0.00
207	OCT	24	**19.28**	**19.3**	8.62	0.46	0.00	0.00	0.00	0.00	0.00
208	OCT	25	**14.9**	**14.9**	6.66	0.35	0.00	0.00	0.00	0.00	0.00
209	OCT	26	**15.36**	**15.4**	6.87	0.36	0.00	0.00	0.00	0.00	0.00
210	OCT	27	**13.27**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
211	OCT	28	**10.35**	**10.4**	4.63	0.25	0.00	0.00	0.00	0.00	0.00
212	OCT	29	**8.06**	**8.1**	3.60	0.19	0.00	0.00	0.00	0.00	0.00
213	OCT	30	**11.75**	**11.8**	5.25	0.28	0.00	0.00	0.00	0.00	0.00
214	OCT	31	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
										TOTAL	**0.03**	**TPY**

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

Wind Erosion

Fugitive dust emissions from the soil stockpile will use emission factor equations in AP-42 Section 13.2.5 for Industrial Wind erosion

Equation 2:

$$\text{Emission factor} = k \sum_{i=1}^{N} P_i$$

where:

k = particle size multiplier PM2.5 k=0.075

N = number of disturbances of soil pile per year = 214 (daily during April 1 to October 31 construction season)

P_i = erosion potential corresponding to observed (or probable) fastest mile of wind for ith period between disturbances, g/m^2

For $PM_{2.5}$, k = 0.075

The erosion potential function for a dry, exposed surface is: $P = 58 * (u^* - u_t^*)^2 + 25 * (u^* - u_t^*)$ [P = 0 for $u^* < u_t^*$]

where:

u^* = friction velocity (m/s)

u_t^* = threshold friction velocity (m/s)

which = 1.02 m/s, as referenced from Table 13.2.5-2 of AP-42 Section 13.2.5 for overburden materials

$u^* = (0.053)*(u_{10}^+)$ where: u_{10}^+ = fastest mile of reference anemometer at 10m for period between disturbances
(This equation is used for relatively large flat piles with a height-to-base ratio less than 0.2).

total area =	2.86	acres	=	11,574	m^2
disturbed area =	2.86	acres	=	11,574	m^2 (maximum amount of disturbed area in any one day)

Wind speed data from on-site meteorological station (anemometer height = 10 meters)

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
1	APR	1	**16.47**	**16.5**	7.36	0.39	0.00	0.00	0.00	0.00	0.00
2	APR	2	**23.43**	**23.4**	10.47	0.56	0.00	0.00	0.00	0.00	0.00
3	APR	3	**16.43**	**16.4**	7.34	0.39	0.00	0.00	0.00	0.00	0.00
4	APR	4	**28.23**	**28.2**	12.62	0.67	0.00	0.00	0.00	0.00	0.00
5	APR	5	**23.95**	**24.0**	10.71	0.57	0.00	0.00	0.00	0.00	0.00
6	APR	6	**17.15**	**17.2**	7.67	0.41	0.00	0.00	0.00	0.00	0.00
7	APR	7	**10.60**	**10.6**	4.74	0.25	0.00	0.00	0.00	0.00	0.00
8	APR	8	**11.66**	**11.7**	5.21	0.28	0.00	0.00	0.00	0.00	0.00
9	APR	9	**13.94**	**13.9**	6.23	0.33	0.00	0.00	0.00	0.00	0.00
10	APR	10	**26.03**	**26.0**	11.64	0.62	0.00	0.00	0.00	0.00	0.00
11	APR	11	**38.95**	**39.0**	17.41	0.92	0.00	0.00	0.00	0.00	0.00
12	APR	12	**19.60**	**19.6**	8.76	0.46	0.00	0.00	0.00	0.00	0.00
13	APR	13	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
14	APR	14	**13.99**	**14.0**	6.25	0.33	0.00	0.00	0.00	0.00	0.00
15	APR	15	**20.9**	**20.9**	9.34	0.50	0.00	0.00	0.00	0.00	0.00
16	APR	16	**19.55**	**19.6**	8.74	0.46	0.00	0.00	0.00	0.00	0.00
17	APR	17	**32.39**	**32.4**	14.48	0.77	0.00	0.00	0.00	0.00	0.00
18	APR	18	**15.67**	**15.7**	7.01	0.37	0.00	0.00	0.00	0.00	0.00
19	APR	19	**17.68**	**17.7**	7.90	0.42	0.00	0.00	0.00	0.00	0.00
20	APR	20	**29.71**	**29.7**	13.28	0.70	0.00	0.00	0.00	0.00	0.00
21	APR	21	**23.67**	**23.7**	10.58	0.56	0.00	0.00	0.00	0.00	0.00
22	APR	22	**16.03**	**16.0**	7.17	0.38	0.00	0.00	0.00	0.00	0.00
23	APR	23	**24.92**	**24.9**	11.14	0.59	0.00	0.00	0.00	0.00	0.00
24	APR	24	**12.55**	**12.6**	5.61	0.30	0.00	0.00	0.00	0.00	0.00
25	APR	25	**11.96**	**12.0**	5.35	0.28	0.00	0.00	0.00	0.00	0.00
26	APR	26	**15.6**	**15.6**	6.97	0.37	0.00	0.00	0.00	0.00	0.00
27	APR	27	**30.07**	**30.1**	13.44	0.71	0.00	0.00	0.00	0.00	0.00
28	APR	28	**49.35**	**49.4**	22.06	1.17	5.02	58141.67	4360.63	9.61	0.00
29	APR	29	**20.11**	**20.1**	8.99	0.48	0.00	0.00	0.00	0.00	0.00
30	APR	30	**12.17**	**12.2**	5.44	0.29	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
31	MAY	1	**22.77**	**22.8**	10.18	0.54	0.00	0.00	0.00	0.00	0.00
32	MAY	2	**16.36**	**16.4**	7.31	0.39	0.00	0.00	0.00	0.00	0.00
33	MAY	3	**13.94**	**13.9**	6.23	0.33	0.00	0.00	0.00	0.00	0.00
34	MAY	4	**13.14**	**13.1**	5.87	0.31	0.00	0.00	0.00	0.00	0.00
35	MAY	5	**17.35**	**17.4**	7.76	0.41	0.00	0.00	0.00	0.00	0.00
36	MAY	6	**24.92**	**24.9**	11.14	0.59	0.00	0.00	0.00	0.00	0.00
37	MAY	7	**11.58**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
38	MAY	8	**12.81**	**12.8**	5.73	0.30	0.00	0.00	0.00	0.00	0.00
39	MAY	9	**14.45**	**14.5**	6.46	0.34	0.00	0.00	0.00	0.00	0.00
40	MAY	10	**16.55**	**16.6**	7.40	0.39	0.00	0.00	0.00	0.00	0.00
41	MAY	11	**13.81**	**13.8**	6.17	0.33	0.00	0.00	0.00	0.00	0.00
42	MAY	12	**10.1**	**10.1**	4.52	0.24	0.00	0.00	0.00	0.00	0.00
43	MAY	13	**12.86**	**12.9**	5.75	0.30	0.00	0.00	0.00	0.00	0.00
44	MAY	14	**19.48**	**19.5**	8.71	0.46	0.00	0.00	0.00	0.00	0.00
45	MAY	15	**19.76**	**19.8**	8.83	0.47	0.00	0.00	0.00	0.00	0.00
46	MAY	16	**14.05**	**14.1**	6.28	0.33	0.00	0.00	0.00	0.00	0.00
47	MAY	17	**19.44**	**19.4**	8.69	0.46	0.00	0.00	0.00	0.00	0.00
48	MAY	18	**13.34**	**13.3**	5.96	0.32	0.00	0.00	0.00	0.00	0.00
49	MAY	19	**12.34**	**12.3**	5.52	0.29	0.00	0.00	0.00	0.00	0.00
50	MAY	20	**8.06**	**8.1**	3.60	0.19	0.00	0.00	0.00	0.00	0.00
51	MAY	21	**10.05**	**10.1**	4.49	0.24	0.00	0.00	0.00	0.00	0.00
52	MAY	22	**15.74**	**15.7**	7.04	0.37	0.00	0.00	0.00	0.00	0.00
53	MAY	23	**25.88**	**25.9**	11.57	0.61	0.00	0.00	0.00	0.00	0.00
54	MAY	24	**18.09**	**18.1**	8.09	0.43	0.00	0.00	0.00	0.00	0.00
55	MAY	25	**16.94**	**16.9**	7.57	0.40	0.00	0.00	0.00	0.00	0.00
56	MAY	26	**20.33**	**20.3**	9.09	0.48	0.00	0.00	0.00	0.00	0.00
57	MAY	27	**11.57**	**11.6**	5.17	0.27	0.00	0.00	0.00	0.00	0.00
58	MAY	28	**19.59**	**19.6**	8.76	0.46	0.00	0.00	0.00	0.00	0.00
59	MAY	29	**15.26**	**15.3**	6.82	0.36	0.00	0.00	0.00	0.00	0.00
60	MAY	30	**23.28**	**23.3**	10.41	0.55	0.00	0.00	0.00	0.00	0.00
61	MAY	31	**17.2**	**17.2**	7.69	0.41	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
62	JUN	1	**23.74**	**23.7**	10.61	0.56	0.00	0.00	0.00	0.00	0.00
63	JUN	2	**19.71**	**19.7**	8.81	0.47	0.00	0.00	0.00	0.00	0.00
64	JUN	3	**10.35**	**10.4**	4.63	0.25	0.00	0.00	0.00	0.00	0.00
65	JUN	4	**25.19**	**25.2**	11.26	0.60	0.00	0.00	0.00	0.00	0.00
66	JUN	5	**11.33**	**11.3**	5.06	0.27	0.00	0.00	0.00	0.00	0.00
67	JUN	6	**8.29**	**8.3**	3.71	0.20	0.00	0.00	0.00	0.00	0.00
68	JUN	7	**29.09**	**29.1**	13.00	0.69	0.00	0.00	0.00	0.00	0.00
69	JUN	8	**18.3**	**18.3**	8.18	0.43	0.00	0.00	0.00	0.00	0.00
70	JUN	9	**18.51**	**18.5**	8.27	0.44	0.00	0.00	0.00	0.00	0.00
71	JUN	10	**14.08**	**14.1**	6.29	0.33	0.00	0.00	0.00	0.00	0.00
72	JUN	11	**12.56**	**12.6**	5.61	0.30	0.00	0.00	0.00	0.00	0.00
73	JUN	12	**16.26**	**16.3**	7.27	0.39	0.00	0.00	0.00	0.00	0.00
74	JUN	13	**13.55**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
75	JUN	14	**14.9**	**14.9**	6.66	0.35	0.00	0.00	0.00	0.00	0.00
76	JUN	15	**10.52**	**10.5**	4.70	0.25	0.00	0.00	0.00	0.00	0.00
77	JUN	16	**18.13**	**18.1**	8.10	0.43	0.00	0.00	0.00	0.00	0.00
78	JUN	17	**13.11**	**13.1**	5.86	0.31	0.00	0.00	0.00	0.00	0.00
79	JUN	18	**8.24**	**8.2**	3.68	0.20	0.00	0.00	0.00	0.00	0.00
80	JUN	19	**14.93**	**14.9**	6.67	0.35	0.00	0.00	0.00	0.00	0.00
81	JUN	20	**13.56**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
82	JUN	21	**12.79**	**12.8**	5.72	0.30	0.00	0.00	0.00	0.00	0.00
83	JUN	22	**11.38**	**11.4**	5.09	0.27	0.00	0.00	0.00	0.00	0.00
84	JUN	23	**17.84**	**17.8**	7.98	0.42	0.00	0.00	0.00	0.00	0.00
85	JUN	24	**16.38**	**16.4**	7.32	0.39	0.00	0.00	0.00	0.00	0.00
86	JUN	25	**15.74**	**15.7**	7.04	0.37	0.00	0.00	0.00	0.00	0.00
87	JUN	26	**9.8**	**9.8**	4.38	0.23	0.00	0.00	0.00	0.00	0.00
88	JUN	27	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
89	JUN	28	**22.73**	**22.7**	10.16	0.54	0.00	0.00	0.00	0.00	0.00
90	JUN	29	**18.18**	**18.2**	8.13	0.43	0.00	0.00	0.00	0.00	0.00
91	JUN	30	**11.71**	**11.7**	5.23	0.28	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
92	JUL	1	**10.34**	**10.3**	4.62	0.24	0.00	0.00	0.00	0.00	0.00
93	JUL	2	**16.11**	**16.1**	7.20	0.38	0.00	0.00	0.00	0.00	0.00
94	JUL	3	**15.44**	**15.4**	6.90	0.37	0.00	0.00	0.00	0.00	0.00
95	JUL	4	**16.03**	**16.0**	7.17	0.38	0.00	0.00	0.00	0.00	0.00
96	JUL	5	**16.23**	**16.2**	7.26	0.38	0.00	0.00	0.00	0.00	0.00
97	JUL	6	**12.65**	**12.7**	5.66	0.30	0.00	0.00	0.00	0.00	0.00
98	JUL	7	**9.8**	**9.8**	4.38	0.23	0.00	0.00	0.00	0.00	0.00
99	JUL	8	**9.4**	**9.4**	4.20	0.22	0.00	0.00	0.00	0.00	0.00
100	JUL	9	**10.54**	**10.5**	4.71	0.25	0.00	0.00	0.00	0.00	0.00
101	JUL	10	**13.1**	**13.1**	5.86	0.31	0.00	0.00	0.00	0.00	0.00
102	JUL	11	**21.8**	**21.8**	9.75	0.52	0.00	0.00	0.00	0.00	0.00
103	JUL	12	**16.67**	**16.7**	7.45	0.39	0.00	0.00	0.00	0.00	0.00
104	JUL	13	**15.84**	**15.8**	7.08	0.38	0.00	0.00	0.00	0.00	0.00
105	JUL	14	**12.95**	**13.0**	5.79	0.31	0.00	0.00	0.00	0.00	0.00
106	JUL	15	**16.28**	**16.3**	7.28	0.39	0.00	0.00	0.00	0.00	0.00
107	JUL	16	**8.95**	**9.0**	4.00	0.21	0.00	0.00	0.00	0.00	0.00
108	JUL	17	**17**	**17.0**	7.60	0.40	0.00	0.00	0.00	0.00	0.00
109	JUL	18	**14.5**	**14.5**	6.48	0.34	0.00	0.00	0.00	0.00	0.00
110	JUL	19	**13.66**	**13.7**	6.11	0.32	0.00	0.00	0.00	0.00	0.00
111	JUL	20	**14.44**	**14.4**	6.46	0.34	0.00	0.00	0.00	0.00	0.00
112	JUL	21	**20.27**	**20.3**	9.06	0.48	0.00	0.00	0.00	0.00	0.00
113	JUL	22	**10.23**	**10.2**	4.57	0.24	0.00	0.00	0.00	0.00	0.00
114	JUL	23	**13.79**	**13.8**	6.16	0.33	0.00	0.00	0.00	0.00	0.00
115	JUL	24	**12.07**	**12.1**	5.40	0.29	0.00	0.00	0.00	0.00	0.00
116	JUL	25	**13.2**	**13.2**	5.90	0.31	0.00	0.00	0.00	0.00	0.00
117	JUL	26	**19.32**	**19.3**	8.64	0.46	0.00	0.00	0.00	0.00	0.00
118	JUL	27	**9.47**	**9.5**	4.23	0.22	0.00	0.00	0.00	0.00	0.00
119	JUL	28	**10.99**	**11.0**	4.91	0.26	0.00	0.00	0.00	0.00	0.00
120	JUL	29	**16.26**	**16.3**	7.27	0.39	0.00	0.00	0.00	0.00	0.00
121	JUL	30	**8.74**	**8.7**	3.91	0.21	0.00	0.00	0.00	0.00	0.00
122	JUL	31	**15.26**	**15.3**	6.82	0.36	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
123	AUG	1	**13.42**	**13.4**	6.00	0.32	0.00	0.00	0.00	0.00	0.00
124	AUG	2	**16.2**	**16.2**	7.24	0.38	0.00	0.00	0.00	0.00	0.00
125	AUG	3	**13.55**	**13.6**	6.06	0.32	0.00	0.00	0.00	0.00	0.00
126	AUG	4	**12.6**	**12.6**	5.63	0.30	0.00	0.00	0.00	0.00	0.00
127	AUG	5	**14.18**	**14.2**	6.34	0.34	0.00	0.00	0.00	0.00	0.00
128	AUG	6	**10.33**	**10.3**	4.62	0.24	0.00	0.00	0.00	0.00	0.00
129	AUG	7	**15.14**	**15.1**	6.77	0.36	0.00	0.00	0.00	0.00	0.00
130	AUG	8	**11.68**	**11.7**	5.22	0.28	0.00	0.00	0.00	0.00	0.00
131	AUG	9	**11.4**	**11.4**	5.10	0.27	0.00	0.00	0.00	0.00	0.00
132	AUG	10	**21.76**	**21.8**	9.73	0.52	0.00	0.00	0.00	0.00	0.00
133	AUG	11	**18.46**	**18.5**	8.25	0.44	0.00	0.00	0.00	0.00	0.00
134	AUG	12	**13.84**	**13.8**	6.19	0.33	0.00	0.00	0.00	0.00	0.00
135	AUG	13	**13.07**	**13.1**	5.84	0.31	0.00	0.00	0.00	0.00	0.00
136	AUG	14	**9.15**	**9.2**	4.09	0.22	0.00	0.00	0.00	0.00	0.00
137	AUG	15	**13.26**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
138	AUG	16	**11**	**11.0**	4.92	0.26	0.00	0.00	0.00	0.00	0.00
139	AUG	17	**16.78**	**16.8**	7.50	0.40	0.00	0.00	0.00	0.00	0.00
140	AUG	18	**16.07**	**16.1**	7.18	0.38	0.00	0.00	0.00	0.00	0.00
141	AUG	19	**11.93**	**11.9**	5.33	0.28	0.00	0.00	0.00	0.00	0.00
142	AUG	20	**13.86**	**13.9**	6.20	0.33	0.00	0.00	0.00	0.00	0.00
143	AUG	21	**18.25**	**18.3**	8.16	0.43	0.00	0.00	0.00	0.00	0.00
144	AUG	22	**17.38**	**17.4**	7.77	0.41	0.00	0.00	0.00	0.00	0.00
145	AUG	23	**15.08**	**15.1**	6.74	0.36	0.00	0.00	0.00	0.00	0.00
146	AUG	24	**26.77**	**26.8**	11.97	0.63	0.00	0.00	0.00	0.00	0.00
147	AUG	25	**20.75**	**20.8**	9.28	0.49	0.00	0.00	0.00	0.00	0.00
148	AUG	26	**9.14**	**9.1**	4.09	0.22	0.00	0.00	0.00	0.00	0.00
149	AUG	27	**9.04**	**9.0**	4.04	0.21	0.00	0.00	0.00	0.00	0.00
150	AUG	28	**21.74**	**21.7**	9.72	0.52	0.00	0.00	0.00	0.00	0.00
151	AUG	29	**16.14**	**16.1**	7.22	0.38	0.00	0.00	0.00	0.00	0.00
152	AUG	30	**13.33**	**13.3**	5.96	0.32	0.00	0.00	0.00	0.00	0.00
153	AUG	31	**8.64**	**8.6**	3.86	0.20	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
154	SEP	1	**12.85**	**12.9**	5.74	0.30	0.00	0.00	0.00	0.00	0.00
155	SEP	2	**11.87**	**11.9**	5.31	0.28	0.00	0.00	0.00	0.00	0.00
156	SEP	3	**8.66**	**8.7**	3.87	0.21	0.00	0.00	0.00	0.00	0.00
157	SEP	4	**39.62**	**39.6**	17.71	0.94	0.00	0.00	0.00	0.00	0.00
158	SEP	5	**14.14**	**14.1**	6.32	0.34	0.00	0.00	0.00	0.00	0.00
159	SEP	6	**14.12**	**14.1**	6.31	0.33	0.00	0.00	0.00	0.00	0.00
160	SEP	7	**18.44**	**18.4**	8.24	0.44	0.00	0.00	0.00	0.00	0.00
161	SEP	8	**13.03**	**13.0**	5.82	0.31	0.00	0.00	0.00	0.00	0.00
162	SEP	9	**12.52**	**12.5**	5.60	0.30	0.00	0.00	0.00	0.00	0.00
163	SEP	10	**11.9**	**11.9**	5.32	0.28	0.00	0.00	0.00	0.00	0.00
164	SEP	11	**8.43**	**8.4**	3.77	0.20	0.00	0.00	0.00	0.00	0.00
165	SEP	12	**16.45**	**16.5**	7.35	0.39	0.00	0.00	0.00	0.00	0.00
166	SEP	13	**27.69**	**27.7**	12.38	0.66	0.00	0.00	0.00	0.00	0.00
167	SEP	14	**16.31**	**16.3**	7.29	0.39	0.00	0.00	0.00	0.00	0.00
168	SEP	15	**20.67**	**20.7**	9.24	0.49	0.00	0.00	0.00	0.00	0.00
169	SEP	16	**11.81**	**11.8**	5.28	0.28	0.00	0.00	0.00	0.00	0.00
170	SEP	17	**13.67**	**13.7**	6.11	0.32	0.00	0.00	0.00	0.00	0.00
171	SEP	18	**10.97**	**11.0**	4.90	0.26	0.00	0.00	0.00	0.00	0.00
172	SEP	19	**15.81**	**15.8**	7.07	0.37	0.00	0.00	0.00	0.00	0.00
173	SEP	20	**11.94**	**11.9**	5.34	0.28	0.00	0.00	0.00	0.00	0.00
174	SEP	21	**16.23**	**16.2**	7.26	0.38	0.00	0.00	0.00	0.00	0.00
175	SEP	22	**14.07**	**14.1**	6.29	0.33	0.00	0.00	0.00	0.00	0.00
176	SEP	23	**12.11**	**12.1**	5.41	0.29	0.00	0.00	0.00	0.00	0.00
177	SEP	24	**10.86**	**10.9**	4.85	0.26	0.00	0.00	0.00	0.00	0.00
178	SEP	25	**12.15**	**12.2**	5.43	0.29	0.00	0.00	0.00	0.00	0.00
179	SEP	26	**8.81**	**8.8**	3.94	0.21	0.00	0.00	0.00	0.00	0.00
180	SEP	27	**13.39**	**13.4**	5.99	0.32	0.00	0.00	0.00	0.00	0.00
181	SEP	28	**8.01**	**8.0**	3.58	0.19	0.00	0.00	0.00	0.00	0.00
182	SEP	29	**14.73**	**14.7**	6.58	0.35	0.00	0.00	0.00	0.00	0.00
183	SEP	30	**23.9**	**23.9**	10.68	0.57	0.00	0.00	0.00	0.00	0.00

TABLE 2B

SOIL STOCKPILE WIND EROSION PM-2.5 CALCULATIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

i	*MONTH*	*DAY*	*DAILY FASTEST MILE*	u_{10}^{+} *(in mph at 10m)*	*(m/s)*	*u* (m/s)*	*P* (g/m^2)	*(g)*	*k=0.075 for* $PM_{2.5}$ *(g)*	*(lbs)*	*(tons)*
184	OCT	1	**20.99**	**21.0**	9.38	0.50	0.00	0.00	0.00	0.00	0.00
185	OCT	2	**20.32**	**20.3**	9.08	0.48	0.00	0.00	0.00	0.00	0.00
186	OCT	3	**13.27**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
187	OCT	4	**11.73**	**11.7**	5.24	0.28	0.00	0.00	0.00	0.00	0.00
188	OCT	5	**13.4**	**13.4**	5.99	0.32	0.00	0.00	0.00	0.00	0.00
189	OCT	6	**8.23**	**8.2**	3.68	0.19	0.00	0.00	0.00	0.00	0.00
190	OCT	7	**6.942**	**6.9**	3.10	0.16	0.00	0.00	0.00	0.00	0.00
191	OCT	8	**11.65**	**11.7**	5.21	0.28	0.00	0.00	0.00	0.00	0.00
192	OCT	9	**10.01**	**10.0**	4.47	0.24	0.00	0.00	0.00	0.00	0.00
193	OCT	10	**7.628**	**7.6**	3.41	0.18	0.00	0.00	0.00	0.00	0.00
194	OCT	11	**8.97**	**9.0**	4.01	0.21	0.00	0.00	0.00	0.00	0.00
195	OCT	12	**11.49**	**11.5**	5.14	0.27	0.00	0.00	0.00	0.00	0.00
196	OCT	13	**11.54**	**11.5**	5.16	0.27	0.00	0.00	0.00	0.00	0.00
197	OCT	14	**19.13**	**19.1**	8.55	0.45	0.00	0.00	0.00	0.00	0.00
198	OCT	15	**28.92**	**28.9**	12.93	0.69	0.00	0.00	0.00	0.00	0.00
199	OCT	16	**25.05**	**25.1**	11.20	0.59	0.00	0.00	0.00	0.00	0.00
200	OCT	17	**29.02**	**29.0**	12.97	0.69	0.00	0.00	0.00	0.00	0.00
201	OCT	18	**15.49**	**15.5**	6.92	0.37	0.00	0.00	0.00	0.00	0.00
202	OCT	19	**24.66**	**24.7**	11.02	0.58	0.00	0.00	0.00	0.00	0.00
203	OCT	20	**21.97**	**22.0**	9.82	0.52	0.00	0.00	0.00	0.00	0.00
204	OCT	21	**19.27**	**19.3**	8.61	0.46	0.00	0.00	0.00	0.00	0.00
205	OCT	22	**12.57**	**12.6**	5.62	0.30	0.00	0.00	0.00	0.00	0.00
206	OCT	23	**13.32**	**13.3**	5.95	0.32	0.00	0.00	0.00	0.00	0.00
207	OCT	24	**19.28**	**19.3**	8.62	0.46	0.00	0.00	0.00	0.00	0.00
208	OCT	25	**14.9**	**14.9**	6.66	0.35	0.00	0.00	0.00	0.00	0.00
209	OCT	26	**15.36**	**15.4**	6.87	0.36	0.00	0.00	0.00	0.00	0.00
210	OCT	27	**13.27**	**13.3**	5.93	0.31	0.00	0.00	0.00	0.00	0.00
211	OCT	28	**10.35**	**10.4**	4.63	0.25	0.00	0.00	0.00	0.00	0.00
212	OCT	29	**8.06**	**8.1**	3.60	0.19	0.00	0.00	0.00	0.00	0.00
213	OCT	30	**11.75**	**11.8**	5.25	0.28	0.00	0.00	0.00	0.00	0.00
214	OCT	31	**11.59**	**11.6**	5.18	0.27	0.00	0.00	0.00	0.00	0.00
										TOTAL	**0.00** **TPY**

TABLE 3

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-2 LANDFILL (FINAL COVER AREAS ONLY)
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	MW_i (g/mol)	Waste Concentration [1] (ppm)	C_i	C_i / MW_i	X_i	P_i* (atm)	P_i (atm)	C_{si} (g/cm^3)	J_i (g/cm^2-s)	E_{1i} (g/s)	Diffusion E_{1i} (lb/yr)	Diffusion VOC Emissions (lb/yr)	Diffusion HAP Emissions (lb/yr)	Total VOC Emissions (lb/yr)	Total HAP Emissions (lb/yr)
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6		X	133.4	1.15	1.15E-06	8.60E-09	2.45E-06	1.62E-01	3.97E-07	2.17E-09	2.03E-18	1.60E-09	1.11E-04		0.00		0.00
1,1,2-Trichloroethane (Cloroethene)	79-00-5	X	X	133.4	0.01	1.10E-08	8.27E-11	2.36E-08	3.29E-02	7.76E-10	4.23E-12	3.97E-21	3.13E-12	2.18E-07	0.00	0.00	0.00	0.00
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	X	X	181.5	9.99	9.99E-06	5.50E-08	1.57E-05	2.37E-04	3.72E-09	2.76E-11	2.59E-20	2.04E-11	1.42E-06	0.00	0.00	0.00	0.00
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	X	X	98.96	0.03	2.90E-08	2.93E-10	8.35E-08	1.05E-01	8.80E-09	3.56E-11	3.34E-20	2.63E-11	1.83E-06	0.00	0.00	0.00	0.00
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	X	X	147	0.35	3.52E-07	2.39E-09	6.83E-07	1.58E-03	1.08E-09	6.49E-12	6.08E-21	4.80E-12	3.34E-07	0.00	0.00	0.00	0.00
Acrylonitrile	107-13-1	X	X	53.1	0.00	3.10E-10	5.84E-12	1.67E-09	1.50E-01	2.50E-10	5.43E-13	5.09E-22	4.02E-13	2.79E-08	0.00	0.00	0.00	0.00
Benzene (Benzol, Coal naphhtha)	71-43-2	X	X	78.1	0.35	3.46E-07	4.42E-09	1.26E-06	1.25E-01	1.58E-07	5.05E-10	4.74E-19	3.74E-10	2.60E-05	0.00	0.00	0.00	0.00
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	117-81-7	X	X	390.56	7.33	7.33E-06	1.88E-08	5.36E-06	2.63E-10	1.41E-15	2.25E-17	2.11E-26	1.67E-17	1.16E-12	0.00	0.00	0.00	0.00
Carbon disulfide (Carbon bisulfide)	75-15-0	X	X	76.1	0.12	1.20E-07	1.57E-09	4.49E-07	4.82E-01	2.16E-07	6.73E-10	6.31E-19	4.98E-10	3.46E-05	0.00	0.00	0.00	0.00
Carbon tetrachloride (Tetrachloromethane)	56-23-5	X	X	153.8	0.01	8.09E-09	5.26E-11	1.50E-08	1.49E-01	2.23E-09	1.40E-11	1.32E-20	1.04E-11	7.22E-07	0.00	0.00	0.00	0.00
Chlordane	57-74-9	X	X	409.8	0.05	5.43E-08	1.32E-10	3.78E-08	1.30E-08	4.91E-16	8.23E-18	7.72E-27	6.09E-18	4.23E-13	0.00	0.00	0.00	0.00
Chlorobenzene (Benzene chloride)	108-90-7	X	X	112.6	6.77	6.77E-06	6.01E-08	1.71E-05	1.55E-02	2.66E-07	1.23E-09	1.15E-18	9.07E-10	6.31E-05	0.00	0.00	0.00	0.00
Chloroform (Trichloromethane)	67-66-3	X	X	119.38	0.04	3.93E-08	3.29E-10	9.39E-08	2.74E-01	2.57E-08	1.25E-10	1.18E-19	9.28E-11	6.45E-06	0.00	0.00	0.00	0.00
Cresol - mixed isomers	1319-77-3	X	X	108.1	0.00	9.42E-10	8.72E-12	2.49E-09	3.95E-04	9.82E-13	4.34E-15	4.07E-24	3.21E-15	2.23E-10	0.00	0.00	0.00	0.00
Dibutyl phthalate (DBP)	84-74-2	X	X	278.3	6.01	6.01E-06	2.16E-08	6.17E-06	1.30E-07	8.02E-13	9.12E-15	8.55E-24	6.75E-15	4.69E-10	0.00	0.00	0.00	0.00
Dichloromethane (Methylene chloride, DCM)	75-09-2		X	85	0.72	7.16E-07	8.42E-09	2.40E-06	5.76E-01	1.39E-06	4.82E-09	4.51E-18	3.56E-09	2.48E-04		0.00		0.00
Ethyl benzene (Phenylethane)	100-41-4	X	X	106.2	3.48	3.48E-06	3.27E-08	9.34E-06	1.15E-03	1.07E-08	4.65E-11	4.35E-20	3.44E-11	2.39E-06	0.00	0.00	0.00	0.00
Ethylene glycol	107-21-1	X	X	62.08	0.27	2.68E-07	4.32E-09	1.23E-06	1.66E-04	2.04E-10	5.19E-13	4.87E-22	3.84E-13	2.67E-08	0.00	0.00	0.00	0.00
Methyl ethyl ketone (MEK)	78-93-3	X		72.1	1.99	1.99E-06	2.76E-08	7.88E-06	1.32E-01	1.04E-06	3.06E-09	2.87E-18	2.26E-09	1.57E-04	0.00		0.00	
Naphthalene (and Methylnaphthalenes)	91-20-3	X	X	128.2	5.26	5.26E-06	4.11E-08	1.17E-05	3.03E-04	3.55E-09	1.86E-11	1.74E-20	1.38E-11	9.56E-07	0.00	0.00	0.00	0.00
Phenol (Benzenol, Carbolic acid)	108-95-2	X	X	94.1	0.00	8.81E-10	9.36E-12	2.67E-09	4.49E-04	1.20E-12	4.61E-15	4.32E-24	3.41E-15	2.37E-10	0.00	0.00	0.00	0.00
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	X	X	147	15.04	1.50E-05	1.02E-07	2.92E-05	3.02E-05	8.82E-10	5.30E-12	4.97E-21	3.92E-12	2.73E-07	0.00	0.00	0.00	0.00
Pyridine	110-86-1	X		79.1	0.00	7.17E-10	9.06E-12	2.59E-09	2.63E-02	6.81E-11	2.20E-13	2.06E-22	1.63E-13	1.13E-08	0.00		0.00	
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	127-18-4	X	X	165.83	0.90	9.00E-07	5.43E-09	1.55E-06	2.50E-02	3.87E-08	2.63E-10	2.46E-19	1.94E-10	1.35E-05	0.00	0.00	0.00	0.00
Toluene (Methylbenzene)	108-88-3	X	X	92.4	13.55	1.36E-05	1.47E-07	4.19E-05	3.95E-02	1.65E-06	6.24E-09	5.85E-18	4.62E-09	3.21E-04	0.00	0.00	0.00	0.00
Trichloroethylene (Acetylene trichloride)	79-01-6	X	X	131.4	0.60	6.02E-07	4.58E-09	1.31E-06	9.87E-02	1.29E-07	6.93E-10	6.50E-19	5.13E-10	3.57E-05	0.00	0.00	0.00	0.00
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	X	X	62.6	0.01	1.00E-08	1.60E-10	4.57E-08	3.50E+00	1.60E-07	4.10E-10	3.84E-19	3.03E-10	2.11E-05	0.00	0.00	0.00	0.00
Xylene (mixed isomers)	1330-20-7	X	X	106.16	10.26	1.03E-05	9.66E-08	2.76E-05	1.12E-02	3.08E-07	1.34E-09	1.25E-18	9.90E-10	6.88E-05	0.00	0.00	0.00	0.00
Polychlorinated Biphenyls (PCB's)	1336-36-3	X	X	292	1,715.17	1.72E-03	5.87E-06	1.68E-03	5.40E-06	9.04E-09	1.08E-10	1.01E-19	7.99E-11	5.56E-06	0.00	0.00	0.00	0.00
Anthracene	120-12-7	X		178.23	1.60	1.60E-06	9.00E-09	2.57E-06	1.71E-09	4.39E-15	3.20E-17	3.00E-26	2.37E-17	1.65E-12	0.00		0.00	
Phenathrene	85-01-8	X		178.23	5.54	5.54E-06	3.11E-08	8.87E-06	6.80E-04	6.03E-09	4.39E-11	4.12E-20	3.25E-11	2.26E-06	0.00		0.00	
benzo(ghi)perylene	191-24-2	X		276.33	0.14	1.43E-07	5.18E-10	1.48E-07	1.32E-13	1.95E-20	2.20E-22	2.07E-31	1.63E-22	1.13E-17	0.00		0.00	
2,4-Dimethylphenol	105-67-9	X		122.16	0.00	4.81E-09	3.94E-11	1.12E-08	1.33E-02	1.50E-10	7.47E-13	7.01E-22	5.53E-13	3.84E-08	0.00		0.00	
p-phenylenediamine	106-50-3	X	X	108.14	0.01	1.14E-08	1.05E-10	3.00E-08	6.10E-06	1.83E-13	8.09E-16	7.59E-25	5.99E-16	4.16E-11	0.00	0.00	0.00	0.00
Mercury	7439-97-6	X	X	200.59	0.03	2.58E-08	1.29E-10	3.68E-08	1.70E-06	6.25E-14	5.13E-16	4.81E-25	3.79E-16	2.64E-11	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	95-63-6	X		120.19	0.00	1.27E-09	1.06E-11	3.02E-09	6.00E-03	1.81E-11	8.89E-14	8.34E-23	6.58E-14	4.57E-09	0.00		0.00	
														TOTALS	0.001	0.001	0.001	0.001

Variables of Interest

D_{ei} = 3.75E-09 cm^2/s (HDPE liner)
l = 4.0 cm (GCL + 40-mil HDPE liner)
A = 19.5 acres = 7.9E+08 cm^2 (final cover area only, see Attachment 5 for open face area calculations)

V_{truck} = 21 m^3
P_t = 303 mmHg
N_v = 342.4 mol
Trucks / year = 52 ıce per week)

Notes:
1 Analytical results provided by CWM

TABLE 4

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-2 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Detected Compounds	CAS Number	VOC	HAP	Mol. Weight (g/mol)	Leachate Concentration [2] (µg/L)	Leachate Concentration ($\mu g/m^3$)	# Carbon Atoms	# Hydrogen Atoms	# Oxygen Atoms	# Chloride Atoms	# Fluorine Atoms	# Sulfur Atoms	# Bromine Atoms	# Nitrogen Atoms	Atomic Diffusion Volume for D_a Calculation [3]	Gas Diffusion Coefficient D_a [4] (m^2/h)	Atomic Volume for D_l Calculation [5] (cm^3/mol)	Liquid Diffusion Coefficient D_l [6] (m^2/h)
Carbon disulfide	75-15-0	X	X	76.14	1090	1,090,000	1	0	0	0	0	2	0	0	50.5	3.96E-02	66.00	4.62E-06
Toluene [1]	108-88-3	X	X	92.14	1120	1,120,000	7	8	0	0	0	0	0	0	111.34	2.81E-02	118.2	3.28E-06
2-Butanone	78-93-3	X		72.11	4880	4,880,000	4	8	1	0	0	0	0	0	87.32	3.21E-02	96.2	3.70E-06
4-Methyl-2-pentanone	108-10-1	X	X	100.16	470	470,000	6	12	1	0	0	0	0	0	128.24	2.62E-02	140.6	2.96E-06
Acetone	67-64-1			58.08	114000	114,000,000	3	6	1	0	0	0	0	0	66.86	3.70E-02	74	4.32E-06
Methylene Chloride	75-09-2		X	84.93	1780	1,780,000	1	2	0	2	0	0	0	0	59.46	3.67E-02	65.4	4.65E-06
Vinyl Chloride	75-01-4	X	X	62.5	142	142,000	2	3	0	1	0	0	0	0	58.44	3.86E-02	62.3	4.78E-06
2,4-Dimethylphenol [1]	105-67-9	X		122.16	140	140,000	8	10	1	0	0	0	0	0	137.28	2.49E-02	147.8	2.87E-06
4-Nitrophenol	100-02-7	X	X	139.11	500	500,000	6	5	3	0	0	0	0	1	111.03	2.70E-02	130.1	3.10E-06
Phenol [1]	108-95-2	X	X	94.11	1200	1,200,000	6	6	1	0	0	0	0	0	96.36	2.98E-02	103.4	3.55E-06
Aroclor 1242 [1]	53469-21-9	X	X	291.99	29.6	29,600	12	6	0	4	0	0	0	0	267.88	1.73E-02	271.2	2.01E-06
Aroclor 1260 [1]	11096-82-5	X	X	395.33	112	112,000	12	3	0	7	0	0	0	0	320.44	1.57E-02	324.9	1.81E-06

Notes:

1 Deduction of 20 and 15 applied for calculation of atomic diffusion volumes for air and liquid, respectively (deduction applied for a hexagonal ring)

2 Analytical results from multiple samples taken from: 1.) RMU-1 standpipes over a period of May 2006 through February 2013; 2.) Tank T-160 (RMU-1 lift station) over a period of January 31, 2012 through February 15, 2012; and 3.) Tank T-102 over a period of April 3, 2012 through April 17, 2013 (applied highest detected value for each compound in this column)

3 Method for calculating total diffusion volume for air taken from Fuller et al., 1966

4 Calculation method for gas diffusion coefficient referenced from *Chemical Engineering Design, Principles, Practice and Economics of Plant and Process Design* , 2008

5 Method for calculating total diffusion volume for water was taken from the LeBas Method, 1915

6 Calculation method for liquid diffusion coefficient referenced from *Water Treatment Principles and Design, Third Edition* , 2012

7 Parameter was calculated using method presented in paper: "Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools Under Simulated Indoor Environmental Conditions," December 2002

8 Total surface area of all standpipes in RMU-2 calculated as follows: [(12 standpipes) x (Pi) x (0.305 m radius)^2] + [(12 cleanouts) x (Pi) x (0.102 m radius)^2] = 3.90 m^2

9 Characteristic length calculated as the square root of the total surface area

10 Referenced materials provided on USEPA website and CHEMFATE provided by SRC

TABLE 4

ESTIMATED VOC AND HAP EMISSIONS FROM RMU-2 STANDPIPES
EMISSIONS INVENTORY
CWM CHEMICAL SERVICES, LLC

Schmidt Number S_c [7]	Reynolds Number R_e [7]	Sherwood Number S_h [7]	Total Surface Area [8] (m^2)	Char. Length [9] (m)	k_G [7] (m/h)	k_L [7] (m/h)	K_{OL} [7] (m/h)	Henry's Constant [10]	K_{OG} [7] (m/h)	Emissions [7] (µg/hr)	Emissions (lb/hr)	Emissions (lb/yr)	VOC Emissions (lb/yr)	HAP Emissions (lb/yr)
1.4	18,835.9	102.6	3.90	1.97	2.06	6.43E-03	6.41E-03	1.24E+00	5.17E-03	2.73E+04	6.01E-05	0.53	0.53	0.53
2.0	18,835.9	115.1	3.90	1.97	1.64	5.41E-03	5.35E-03	2.71E-01	1.97E-02	2.34E+04	5.15E-05	0.45	0.45	0.45
1.8	18,835.9	110.1	3.90	1.97	1.79	5.75E-03	2.39E-03	2.28E-03	1.05E+00	4.54E+04	1.00E-04	0.88	0.88	
2.2	18,835.9	117.9	3.90	1.97	1.56	5.14E-03	3.25E-03	5.63E-03	5.77E-01	5.95E+03	1.31E-05	0.11	0.11	0.11
1.5	18,835.9	105.0	3.90	1.97	1.97	6.22E-03	2.08E-03	1.59E-03	1.31E+00	9.25E+05	2.04E-03	17.87		
1.5	18,835.9	105.3	3.90	1.97	1.96	6.45E-03	6.22E-03	8.93E-02	6.96E-02	4.31E+04	9.51E-05	0.83		0.83
1.5	18,835.9	103.6	3.90	1.97	2.02	6.54E-03	6.52E-03	1.11E+00	5.87E-03	3.61E+03	7.96E-06	0.07	0.07	0.07
2.3	18,835.9	119.8	3.90	1.97	1.51	5.07E-03	1.21E-04	8.20E-05	1.47E+00	6.60E+01	1.46E-07	0.00	0.00	
2.1	18,835.9	116.7	3.90	1.97	1.59	5.26E-03	2.71E-08	1.70E-08	1.59E+00	5.28E-02	1.16E-10	0.00	0.00	0.00
1.9	18,835.9	112.9	3.90	1.97	1.70	5.63E-03	2.76E-05	1.63E-05	1.69E+00	1.29E+02	2.85E-07	0.00	0.00	0.00
3.3	18,835.9	135.2	3.90	1.97	1.19	4.24E-03	3.63E-03	2.13E-02	1.70E-01	4.19E+02	9.24E-07	0.01	0.01	0.01
3.6	18,835.9	139.6	3.90	1.97	1.11	4.02E-03	3.94E-03	1.89E-01	2.09E-02	1.72E+03	3.80E-06	0.03	0.03	0.03
												TOTALS	**2.08**	**2.04**

TABLE 5

FACULTATIVE POND 5 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

The rate of vaporization of a liquid can be modeled as a function of several characteristic factors of the compound being considered. [Crowl & Louvar, 2002]

$$E_{n-i} = \frac{M_i K_i A\left(P_i^{sat} - P_i\right)}{RT_L} \qquad \text{Eq. 3-23}$$

Where E_n is the evaporation rate (mass/time).
M_i is the molecular weight of the volatile substance,
K_i is a mass transfer coefficient (length/time),
A is the evaporation surface area,
P_i^{sat} is the saturated solvent vapor pressure,
P_i is the actual vapor pressure near the liquid surface,
R is the ideal gas constant, and
T_L is the absolute temperature of the liquid.

For many cases, Psat >> p, and *Eq. 3-23* may be simplified to

$$E_{n-1} = \frac{M_i K_i A P_i^{sat}}{RT_L} \qquad \text{Eq. 3-24}$$

Eq. 3-24 may be used to estimate the vaporization rate of a volatile liquid from an open vessel or a liquid spill.

Combining *Eq. 3-25* and *Eq. 3-26* results in a relationship that can be used to estimate the mass transfer coefficient of a given volatile compound.

$$K_i = K_o \left(\frac{M_o}{M_i}\right)^{1/3} \qquad \text{Eq. 3-27}$$

Water is commonly used as a base reference for estimating the mass transfer coefficient for many compounds of interest. The mass transfer coefficient of water at 77 F and 760 mm Hg. is 0.83 cm/s.

MW_{mix} = 18.00 P_{mix} = 2,339 Pa
(mixture is essentially >99.99% water)
K = 0.8303 cm/sec = 0.0083 m/s
A = 19,520 m^2 (700 feet x 300 feet)
R = 8.31446 (m^3-Pa)/(K-mol)
T = 293.15 K
E_{H2O} = 2,799.6 g/s = 370.3 lb/min
168.0 L/min
E_{H2O} = 8.83E+07 L/yr (water)

TABLE 5

FACULTATIVE POND 5 EMISSIONS
EMISSION INVENTORY
CWM CHEMICAL SERVICES, LLC

Compound	MDL (µg/L)	0.5*MDL (µg/L)	E (µg/yr)	E (lb/yr)
Vinyl Chloride	0.3	0.15	1.32E+07	0.029
Diethyl ether	Not Analyzed	---	---	
1,1,2-Trichloro-1,2,2-triflourorethane	Not Analyzed	---	---	
Acetone	1.8	0.9	7.95E+07	0.175
Methylene chloride	0.65	0.325	2.87E+07	0.063
1,1-Dichloroethane	0.31	0.155	1.37E+07	0.03
2-Butanone	2.2	1.1	9.71E+07	0.214
Chloroform	0.29	0.145	1.28E+07	0.028
1,1,1-Trichloroethane	0.3	0.15	1.32E+07	0.029
Carbon Tetrachloride	0.33	0.165	1.46E+07	0.032
1,2-Dichloroethane	0.36	0.18	1.59E+07	0.035
Benzene	0.31	0.155	1.37E+07	0.03
Trichloroethene	0.33	0.165	1.46E+07	0.032
4-Methyl-2-Pentanone	2.4	1.2	1.06E+08	0.234
Toluene	0.35	0.175	1.55E+07	0.034
1,1,2-Trichloroethane	0.34	0.17	1.50E+07	0.033
Tetrachloroethene	0.38	0.19	1.68E+07	0.037
Chlorobenzene	0.32	0.16	1.41E+07	0.031
Xylenes (total)	Not Analyzed	---	---	
1,1,2,2-Tetrachloroethane	0.35	0.175	1.55E+07	0.034
1,4-Dichlorobenzene	0.85	0.425	3.75E+07	0.083
1,2-Dichlorobenzene	0.75	0.375	3.31E+07	0.073
			TOTAL	**1.3 lb/yr**

Attachments

Attachment 1
Calculation of Fugitive PM-10 Emissions

PM_{10} CALCULATIONS
TRUCK AND WASTE SUMMARY
CWM CHEMICAL SERVICES, LLC

Truck and Waste Summary

Vehicle Type	Code	Average Vehicle Weight (tons) Gross Weight	Empty Weight	Payload	Total Vehicles	Vehicle Route
Dump Truck	DT	43.9	17.0	26.8	3,454	Landfill
Rolloff Truck	CM	33.4	21.1	12.2	2,446	Landfill
Tanker Truck	TT	30.8	17.4	13.4	132	AWTS
Vacuum Tanker	VT	31.3	15.9	15.4	8	AWTS
Rolloff Truck	CM	32.1	21.7	10.3	1,023	Stabilization
Dump Truck	DT	39.9	17.1	22.9	634	Stabilization
Pneumatic Truck	PT	33.8	17.0	16.8	22	Stabilization
Tanker Truck	TT	27.6	17.7	9.9	4	Stabilization
Off-Road Truck	---	33.0	19.0	14.0	3,366	Post-Stabilization [a]
Rolloff Truck	CM	37.5	22.1	15.4	50	Transship [b]
Dump Truck	DT	38.8	16.8	22.0	4	Transship [b]
Tanker Truck	TT	25.5	17.8	7.7	34	Transship [b]
Vacuum Tanker	VT	20.4	17.5	2.9	4	Transship [b]
Drum Truck	---	26.4	17.5	8.9	833	Drum Building
Site Vehicles	---	2.5	2.5	---	5,200	AWTS
Delivery Trucks	---	5.0	5.0	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	5,200	Main Office

* Based on CWM waste tracking data and non-waste vehicle estimates for the 12-month period of July 2006 - June 2007

Notes:
a Assumes 2 loaded vehicles for each stabilization vehicle
b Total # vehicles equals twice the actual amount of vehicles since each transship load requires 2 round trips

Total Bulk Waste = (3,454 veh)(26.8 tons/veh) + (2,446 veh)(12.2 tons/veh) + (1,023 veh)(10.3 tons/veh) + (634 veh)(22.9 tons/veh) + (22 veh)(16.8 tons/veh) + (4 veh)(9.9 tons/veh)

Total Bulk Waste = 148,024.6 tpy

Fractions
Dump Trucks = 107,251.2 tons / 148,024.6 tons = 0.724
Rolloff Trucks = 40,795.0 tons / 148,024.6 tons = 0.273
Pneumatic Trucks = 368.8 tons / 148,024.6 tons = 0.002
Tanker Trucks = 39.6 tons / 148,024.6 tons = 0.0003

To be conservative, assume bulk waste increase of 10%

Total Bulk Waste = 162,827.0 tpy

Waste Densities (according to CWM facility records):

Truck	Density (lb/ft^3)
Dump	96
Rolloff	81.5

Volume Calculations

$$\text{Volume}_{(dump)} = \frac{(0.726)(162{,}827.0 \text{ tons})(1\text{ft3})(2000 \text{ lb})}{(1 \text{ yr})(96 \text{ lb})(1 \text{ ton})} = 2.46\text{E+06} \ ft^3$$

$$\text{Volume}_{(rolloff)} = \frac{(0.274)(162{,}827.07 \text{ tons})(1\text{ft3})(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.09\text{E+06} \ ft^3$$

$$\text{Volume}_{(pneumatic)} = \frac{(0.002)(162{,}827.0 \text{ tons})(1\text{ft3})(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 9.96\text{E+03} \ ft^3$$

$$\text{Volume}_{(tanker)} = \frac{(0.0003)(162{,}827.0 \text{ tons})(1\text{ft3})(2000 \text{ lb})}{(1 \text{ yr})(81.5 \text{ lb})(1 \text{ ton})} = 1.07\text{E+03} \ ft^3$$

Total Volume = 3.56E+06 ft^3 = 1.32E+05 yd^3

PM_{10} CALCULATIONS
LANDFILL OPERATIONS
CWM CHEMICAL SERVICES, LLC

Landfill Operation

Waste Unloading

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u/5)^{1.3}}{(M/2)^{1.4}}$$

where:
E = emission factor (lb/ton)
k = 0.35 (for PM_{10})
u = mean wind speed (mph) = 6.8 (2006 average wind speed - Model City, NY)
M = % moisture in clay/dirt mix = 14 (from AP-42, Table 13.2.4-1)

$$E = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(14/2)^{1.4}} = 1.089E\text{-}04 \text{ lb/ton}$$

Total Waste Unloaded =	166,645	tons/year	(Includes stabilization materials)
Total Emissions =	18.1	lb/year	
Total Emissions (90% Control)[1] =	1.81	lb/year	
Total Emissions (90% Control)[1] =	0.001	tons/year	

Waste Compaction

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.75)\,(1.0)\,(\text{silt}\%)^{1.5}}{(\text{moisture}\%)^{1.4}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay/dirt mix:
Silt % = 9.2
Moisture % = 14

$$E = \frac{(0.75)\,(1.0)\,(9.2)^{1.5}}{(14)^{1.4}} = 0.520 \text{ lb/hr}$$

Total Operation hours / year =	1560		(6 hours/day, 5 days/week, 52 weeks/year)
Total Bulldozers Operating =	2		
Total Emissions =	0.8	tons/year	
Total Emissions (90% Control)[1] =	0.08	tons/year	

Notes:
1 During disposal of identified dusty wastes, CWM Model City applies a water spray to minimize dust emissions. In addition, a dust suppressant material called Con-Cover is used to cover the waste on a daily basis. A 90% control efficiency, based on Figure 13.2.2-2 of AP-42, Section 13.2.2 (11/06), is used to account for the reduction in PM emissions due to these operational procedures which are required by the Facility's permit.

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Landfill Construction
Landfill Unit: RMU-1

Material Requirements

Cover Construction (GCL Design)

Material	Volume (yd^3)	Weight (tons)
Soils	157,280	154,999

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Coarse Stone	107
Soils	73

Cover Construction Materials Usage per Phase ***

Material	Volume (yd^3)	Weight (tons)
Soils	17,476	17,222

Landfill Activity Span = 9 phases of cover
Total Landfill Life = 22 years (1995 - 2016)

*** No more than one phase of cover is constructed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{17{,}222 \text{ tpy}}{20 \text{ tons / truck}} = 861.1 \text{ trucks/year} = 862 \text{ trucks/year}$$

Roadway Construction Inside Active Landfill

Each layer of landfill material is 6 ft high.
Uncapped landfill height = 115 ft
Total layers = 20 (Road surface on 1st 19 layers only)
Total Cells = 14

Assume length of roadway surface as 1/2 the diagonal across 1 RMU-1 cell, then multiplied by 19

RMU-1 Length = 330 ft
RMU-1 Width = 330 ft
Diagonal = 466.7 ft
1/2 Diagonal = 233.3 ft

$$\text{Length} = \frac{(233.3 \text{ ft})(14 \text{ cells})(19 \text{ lifts})}{(\text{cell-lift})} = 62{,}069.8 \text{ ft}$$

Length / year = 2,821.4 ft
Depth = 0.5 ft (6 inches)
Width = 40 ft

Volume (stone) = 56,427.1 ft^3/yr
Volume (stone) = 2,089.9 yd^3/yr
Trucks needed = 151 /year

Operations Stone

Assume 5 trucks per week or 260 trucks per year for miscellaneous stone usage

Total Stone = 5,200.0 tons/year
Total Stone = 97,196.3 ft^3/yr
Total Stone = 3,599.9 yd^3/yr

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u/5)^{1.3}}{(M/2)^{1.4}}$$

where:

E =	emission factor (lb/ton)		
k =	0.35 (for PM_{10})		
u =	mean wind speed (mph) =	6.8	(2006 average wind speed - Model City, NY)
M_{stone} =	% moisture in stone =	0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =	12	(from AP-42, Table 13.2.4-1)

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(0.7/2)^{1.4}} = 7.217E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(12/2)^{1.4}} = 1.351E\text{-}04 \text{ lb/ton}$$

Summary - Cover Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Soils	17,222	1.351E-04	2.3

Summary - Road Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Coarse Stone	3,019	7.217E-03	21.8

Summary - Miscellaneous Stone Usage

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Coarse Stone	5,200	7.217E-03	37.5

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.75)\ (1.0)\ (\text{silt\%})^{1.5}}{(\text{moisture\%})^{1.4}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Stone:
Silt % = 1.6
Moisture % = 0.7

Topsoil/Dirt:
Silt % = 9
Moisture % = 12

$$E_{(stone)} = \frac{(0.75)\ (1.0)\ (1.6)^{1.5}}{(0.7)^{1.4}} = 2.501E+00 \text{ lb/hr}$$

$$E_{(topsoil/dirt)} = \frac{(0.75)\ (1.0)\ (9)^{1.5}}{(12)^{1.4}} = 6.246E-01 \text{ lb/hr}$$

Total Cover Construction hours / year =	600	(10 hours/day, 5 days/week, 12 weeks/year)
Roadway Construction hours/year =	80	
Miscellaneous Stone operation hours/year =	100	
Total Bulldozers Operating / Activity =	2	

Summary - Cover Construction

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Soils	600	6.246E-01	749.5

Summary - Road Construction

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Coarse Stone	80	2.501E+00	400.2

Summary - Miscellaneous Stone Usage

Material	Hours/Year	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Coarse Stone	100	2.501E+00	500.2

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$E = (0.60)\ (0.51)\ (\text{veh speed})^2$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 16.711 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.017 lb PM_{10} / yd^3

Summary - Cover Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Soils	17,476	1.709E-02	298.7

Summary - Road Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Coarse Stone	2,090	1.709E-02	35.7

Summary - Miscellaneous Stone Usage

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Coarse Stone	3,600	1.709E-02	61.5

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES, LLC

Landfill Construction
Landfill Unit: RMU-2

Material Requirements

Cell Construction

Material	Volume (yd^3)	Weight (tons)
Clay	213,000	181,157
Coarse Stone	189,000	273,011
Soils	676,000	666,198

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Clay	63
Coarse Stone	107
Soils	73

Facultative Pond 5 Construction

Material	Volume (yd^3)	Weight (tons)
Clay	26,110	22,207
Coarse Stone	2,500	3,611
Soils	90,990	89,671

Landfill Activity Span = 6 phases of cell construction
Facultative Pond 5 Activity Span = 1 phase of pond construction

Years 1-13: Cell Construction
Year 1: Facultative Pond 5 Construction
Years 5-20: Cover Construction

Total Landfill Life = 20 years

[Year 1 represents worst case scenario]

*Cell Construction Materials Usage per Phase ****

Material	Volume (yd^3)	Weight (tons)
Clay	35,500	30,193
Coarse Stone	31,500	45,502
Soils	112,667	111,033
Total	**179,667**	**186,728**

*Facultative Pond 5 Construction Materials Usage per Phase ****

Material	Volume (yd^3)	Weight (tons)
Clay	26,110	22,207
Coarse Stone	2,500	3,611
Soils	90,990	89,671
Total	**119,600**	**115,488**

*** No more than one phase of cell construction or Facultative Pond 5 construction is completed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{(186{,}728 \text{ tpy}) + (115{,}488 \text{ tpy})}{20 \text{ tons / truck}} = 15{,}110.8 \text{ trucks/year}$$

$$= 15{,}111 \text{ trucks/year}$$

Cell Excavation

Total Area = 44 acres
Depth of cell = 7.5 ft
Density = 73 lb/ft^3 (moist common earth)

$$\text{Volume} = \frac{(44 \text{ acres})(43{,}560 \text{ ft}^2)(7.5 \text{ ft})}{(1 \text{ acre})} = 14{,}374{,}800 \text{ ft}^3$$

$= 2{,}395{,}800$ ft^3/year
$= 532{,}400$ yd^3
$= 88{,}733$ yd^3/year

Weight (excavated material) = 524,680.2 tons
Weight (excavated material) = 87,446.7 tons/year

- Assume each truckload of excavated material weighs 20 tons

$$\text{Traffic} = \frac{(2{,}395{,}800 \text{ ft}^3)(73 \text{ lb})(1 \text{ truckload})}{(1 \text{ yr})(1 \text{ft}^3)(40{,}000 \text{ lb})} = 4{,}373 \text{ truckloads/yr}$$

Faculatative Pond 5 Excavation

Total Area = 2.5 acres
Depth of pond = 7.5 ft
Density = 73 lb/ft^3 (moist common earth)

$$\text{Volume} = \frac{(2.5 \text{ acres})(43{,}560 \text{ ft}^2)(7.5 \text{ ft})}{(1 \text{ acre})} = 816{,}750 \text{ ft}^3$$

$= 816{,}750$ ft^3/year
$= 30{,}250$ yd^3
$= 30{,}250$ yd^3/year

Weight (excavated material) = 29,811.4 tons
Weight (excavated material) = 29,811.4 tons/year

- Assume each truckload of excavated material weighs 20 tons

$$\text{Traffic} = \frac{(816{,}750 \text{ ft}^3)(73 \text{ lb})(1 \text{ truckload})}{(1 \text{ yr})(1 \text{ft}^3)(40{,}000 \text{ lb})} = 1{,}491 \text{ truckloads/yr}$$

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES, LLC

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u/5)^{1.3}}{(M/2)^{1.4}}$$

where:

E =	emission factor (lb/ton)			
k =	0.35	(for PM_{10})		
u =	mean wind speed (mph) =		6.8	(2006 average wind speed - Model City, NY)
M_{clay} =	% moisture in clay =		10	(from AP-42, Table 13.2.4-1)
M_{stone} =	% moisture in stone =		0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =		12	(from AP-42, Table 13.2.4-1)

$$E_{(clay)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(10/2)^{1.4}} = 1.744E\text{-}04 \text{ lb/ton}$$

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(0.7/2)^{1.4}} = 7.217E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(12/2)^{1.4}} = 1.351E\text{-}04 \text{ lb/ton}$$

Summary - Cell Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Clay	30,193	1.744E-04	5.3
Coarse Stone	45,502	7.217E-03	328.4
Soils	111,033	1.351E-04	15.0

Summary - Facultative Pond 5 Construction

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Clay	22,207	1.744E-04	3.9
Coarse Stone	3,611	7.217E-03	26.1
Soils	89,671	1.351E-04	12.1

Summary - Excavation

Material	Usage/Year (tons)	EF (lb/ton)	PM_{10} Emissions (lb/yr)
Soils (Total)	117,258	1.351E-04	15.8

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES, LLC

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.75)\ (1.0)\ (\text{silt\%})^{1.5}}{(\text{moisture\%})^{1.4}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay:		Stone:	
Silt % =	6	Silt % =	1.6
Moisture % =	10	Moisture % =	0.7

Topsoil/Dirt:	
Silt % =	9
Moisture % =	12

$$E_{(clay)} = \frac{(0.75)\ (1.0)\ (6)^{1.5}}{(10)^{1.4}} = 4.388E\text{-}01 \text{ lb/hr}$$

$$E_{(stone)} = \frac{(0.75)\ (1.0)\ (1.6)^{1.5}}{(0.7)^{1.4}} = 2.501E+00 \text{ lb/hr}$$

$$E_{(topsoil/dirt)} = \frac{(0.75)\ (1.0)\ (9)^{1.5}}{(12)^{1.4}} = 6.246E\text{-}01 \text{ lb/hr}$$

Total Construction hours / year =	1,800	(For Cell Construction, Pond Construction and excavation)
Total Bulldozers (Cell Construction) =	3	
Total Bulldozers (Pond Construction) =	1	

- Proportion total hours by fraction of each material to get PM_{10} emissions for cell construction, cover construction, and excavation

Total Material = 186,728 tons + 115,448 tons + 87,447 tons + 29,811 tons = 419,474 tons

Summary - Cell Construction

Material	Usage/Year (tons)	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Clay	30,193	4.388E-01	170.6
Coarse Stone	45,502	2.501E+00	1,464.9
Soils	111,033	2.501E+00	3,574.7

Summary - Facultative Pond 5 Construction

Material	Usage/Year (tons)	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Clay	22,207	4.388E-01	41.8
Coarse Stone	3,611	2.501E+00	38.8
Soils	89,671	6.246E-01	240.3

Summary - Excavation

Material	Usage/Year (tons)	EF (lb/hr)	PM_{10} Emissions (lb/yr)
Soils (Cell)	87,447	6.246E-01	703.1
Soils (Pond)	29,811	6.246E-01	79.9

PM_{10} CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES, LLC

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$E = (0.60)\ (0.51)\ (\text{veh speed})^2$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 16.711 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.017 lb PM_{10} / yd^3

Summary - Cell Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Clay	35,500	1.709E-02	606.7
Coarse Stone	31,500	1.709E-02	538.4
Soils	112,667	1.709E-02	1,925.6

Summary - Facultative Pond 5 Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Clay	26,110	1.709E-02	446.2
Coarse Stone	2,500	1.709E-02	42.7
Soils	90,990	1.709E-02	1,555.1

Summary - Excavation

Material	Usage/Year (yd^3)	EF (lb/yd^3)	PM_{10} Emissions (lb/yr)
Soils (Total)	118,983	1.709E-02	2,033.6

PM_{10} CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Paved / Unpaved Roads

Road Segment #	*Vehicles on Segment*	*NO. OF VEHICLES [a] PER YEAR*	*AVERAGE FULL VEHICLE WEIGHT [b] (tons)*	*AVERAGE EMPTY VEHICLE WEIGHT [b] (tons)*	*ACTUAL MEAN VEHICLE WEIGHT [b] (tons)*	*MILES TRAVELED (c) (MILES)*	*SILT CONTENT [d] (g/m^2)*	*PM10 Emission Rate (lb/VMT) [e]*	*Uncontrolled PM10 (TPY)*	*Efficiency (%) [f] PM10 (TPY)*	*Controlled PM10 [g] (TPY)*
				PAVED							**PAVED**
1-2	Landfill Disposal	5,900	39.5	18.7	29.1	4,800.5	7.4				
	AWTS	140	30.8	17.3	24.0	113.9	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,369.4	7.4				
	Transship	92	32.4	20.1	26.2	74.9	7.4				
	Drums	833	26.4	17.5	22.0	677.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	4,230.9	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	1,057.7	7.4				
	Personal Veh.	6,500	1.5	1.5	1.5	5,288.6	7.4				
Total/Average		21,648			12.5	17,613.6	7.4	0.179	1.580	90	0.16
2-3	Landfill Disposal	5,900	39.5	18.7	29.1	3,857.3	7.4				
	AWTS	140	30.8	17.3	24.0	91.5	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,100.3	7.4				
	Transship	92	32.4	20.1	26.2	60.1	7.4				
	Drums	833	26.4	17.5	22.0	544.6	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	3,399.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	849.9	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	849.9	7.4				
Total/Average		16,448			16.0	10,753.5	7.4	0.230	1.239	90	0.12
4-10	Landfill Disposal	5,900	39.5	18.7	29.1	1,423.6	7.4				
	AWTS	140	30.8	17.3	24.0	33.8	7.4				
	Stabilization	1,683	35.1	19.9	27.5	406.1	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	812.2	7.4				
	Transship	92	32.4	20.1	26.2	22.2	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,254.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	313.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	313.7	7.4				
Total/Average		18,981			17.5	4,579.9	7.4	0.253	0.578	90	0.06
5-6	Stabilization	1,683	35.1	19.9	27.5	185.5	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	371.0	7.4				
	Drums	833	26.4	17.5	22.0	91.8	7.4				
Total/Average		5,882			25.9	648.4	7.4	0.375	0.122	90	0.01
6-7	Stabilization	1,683	35.1	19.9	27.5	269.0	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	538.1	7.4				
Total/Average		5,049			26.5	807.1	7.4	0.385	0.155	90	0.02
6-8	Drums	833	26.4	17.5	22.0	626.3	7.4				
Total/Average		833			22.0	626.3	7.4	0.318	0.099	90	0.01
22-23	Drums	833	26.4	17.5	22.0	78.9	7.4				
Total/Average		833			22.0	78.9	7.4	0.318	0.013	90	0.00
10-11	Landfill Disposal	5,900	39.5	18.7	29.1	969.9	7.4				
	AWTS	140	30.8	17.3	24.0	23.0	7.4				
	Stabilization	1,683	35.1	19.9	27.5	276.7	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	553.4	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	854.8	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	213.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	213.7	7.4				
Total/Average		18,889			17.5	3,105.2	7.4	0.252	0.391	90	0.04
11-12	AWTS	140	30.8	17.3	24.0	37.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,402.4	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	350.6	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	350.6	7.4				
Total/Average		7,940			3.1	2,141.4	7.4	0.043	0.047	90	0.00
11-13	Landfill Disposal	5,900	39.5	18.7	29.1	1,068.3	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	609.5	7.4				
Total/Average		9,266			28.0	1,677.7	7.4	0.407	0.341	90	0.03
15-16	RMU-1 Construction	1,273	36.8	16.8	26.8	750.8	7.4				
Total/Average		1,273			26.8	750.8	7.4	0.388	0.146	90	0.01
16-17	RMU-1 Construction	1,273	36.8	16.8	26.8	343.3	7.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	5,656.9	7.4				
Total/Average		22,248			26.8	6,000.2	7.4	0.388	1.165	90	0.12
18-19	RMU-1 Construction	1,273	36.8	16.8	26.8	486.1	7.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	8,008.6	7.4				
Total/Average		22,248			26.8	8,494.7	7.4	0.388	1.650	90	0.16
										Total	**0.75**

PM_{10} CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Road Segment #	Vehicles on Segment	NO. OF VEHICLES [a] PER YEAR	AVERAGE FULL VEHICLE WEIGHT [b] (tons)	AVERAGE EMPTY VEHICLE WEIGHT [b] (tons)	ACTUAL MEAN VEHICLE WEIGHT [b] (tons)	MILES TRAVELED (c) (MILES)	SILT CONTENT [d] (g/m^2)	PM10 Emission Rate (lb/VMT) [e]	Uncontrolled PM10 (TPY)	Efficiency (%) [f] PM10 (TPY)	Controlled PM10 [g] (TPY)
UNPAVED										**UNPAVED**	
3-4	Landfill Disposal	5,900	39.5	18.7	29.1	1,644.8	6.4				
	AWTS	140	30.8	17.3	24.0	39.0	6.4				
	Stabilization	1,683	35.1	19.9	27.5	469.2	6.4				
	Transship	92	32.4	20.1	26.2	25.6	6.4				
	Drums	833	26.4	17.5	22.0	232.2	6.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,449.7	6.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	362.4	6.4				
	Personal Veh.	1,300	1.5	1.5	1.5	362.4	6.4				
Total/Average		16,448			16.0	4,585.5	6.4	1.811	4.152	90	0.42
4-5	Stabilization	1,683	35.1	19.9	27.5	443.7	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	887.4	6.4				
	Drums	833	26.4	17.5	22.0	219.6	6.4				
Total/Average		5,882			25.9	1,550.7	6.4	2.246	1.741	90	0.17
9-10	Transship	92	32.4	20.1	26.2	14.1	6.4				
Total/Average		92			26.2	14.1	6.4	2.261	0.016	90	0.00
14-16	RMU-2 Construction	20,975	36.8	16.8	26.8	8,437.7	6.4				
Total/Average		20,975			26.8	8,437.7	6.4	2.280	9.620	90	0.96
17-18	RMU-1 Construction	1,273	36.8	16.8	26.8	739.7	6.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	12,187.7	6.4				
Total/Average		22,248			26.8	12,927.4	6.4	2.280	14.739	90	1.47
19-20	RMU-1 Construction	1,273	36.8	16.8	26.8	1,235.4	6.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	20,355.3	6.4				
Total/Average		22,248			26.8	21,590.7	6.4	2.280	24.616	90	2.46
8-22	Drums	833	26.4	17.5	22.0	220.9	6.4				
Total/Average		833			22.0	220.9	6.4	2.087	0.230	90	0.02
13-14	Landfill Disposal	5,900	39.5	18.7	29.1	1,528.6	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	872.1	6.4				
Total/Average		9,266			28.0	2,400.7	6.4	2.327	2.794	90	0.28
14-21	RMU-2 Construction	20,975	36.8	16.8	26.8	5,474.2	6.4				
	Landfill Disposal	5,900	39.5	18.7	29.1	1,539.8	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	878.5	6.4				
Total/Average		30,241			27.1	7,892.4	6.4	2.295	9.056	90	0.91
										Total	**6.70**

EQUATIONS:

A Fugitive emissions from paved site roads are based on emission factors from AP-42 Section 13.2.1.3 (Equation 1 for paved roads).
Constant 'k' (particle size multiplier) from AP-42 Table 13.2-1.1.

Calculations

$E\ (lb/VMT) = [k(sL)^{.91}(W)^{1.02}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/d)*(d/week)*(week/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
K(PM10) = 0.0022 lb/VMT
W = Average weight of vehicle in tons
sL = silt loading sL = 7.4 g/m^2

B Fugitive emissions from trucks driving on unpaved surfaces, will use emission factor equation in AP-42 Section 13.2.2.4
(Equation 1a for unpaved roads)

Calculations

$E\ (lb/VMT) = [k(s/12)^a(W/3)^b]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
k(PM10) = 1.5 lb/VMT

a = Constant a(PM10) = 0.9
b = Constant b(PM10) = 0.45
s = silt content (%)
(measured or estimated - varies for different sources/materials - see below)
s = 6.4 %

NOTES:

a Number of vehicles information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
b Vehicle weight information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
c The round-trip distance traveled on the roads determined from analysis of CAD drawing of site (See Below)
d Silt content was referenced from Section 13.2.1 or 13.2.2 from AP-42.
e PM emissions were calculated using equations as shown above.
f Control efficiencies for paved and unpaved roads (and surfaces treated as unpaved roads) were referenced from Figure 13.2.2-2 of AP-42, Section 13.2.2 (11/06); water trucks are used at the Facility to control dust emissions from paved and unpaved roads, and are required by the Facility's permit.
g Controlled PM emissions were calculated by applying the control efficiency to the calculated PM-TPY value.

Distances determined from AutoCAD analysis of Site Drawing

Segment	Length (ft)
1-2	2148
2-3	1726
4-10	637
5-6	291
6-7	422
6-8	1985
22-23	250
10-11	434
11-12	712
11-13	478
15-16	1557
16-17	712
18-19	1008
3-4	736
4-5	696
9-10	405
14-16	1062
17-18	1534
19-20	2562
8-22	700
13-14	684
14-21	689

PM_{10} CALCULATIONS
SILO LOADING / STABILIZATION BAGHOUSES
CWM CHEMICAL SERVICES, LLC

Cement Kiln Silo Loading

- Cement Kiln Silo

Total Waste Stabilized at Facility = 25,454.0 tons/year

- Assume that 15% CKD is added to treat waste

CKD Consumption = 3,818.1 tons/year

* Section 11.12 of AP-42 (6/06) lists controlled emission factor for cement loading to elevated storage silo (pneumatic) as 0.00099 lb/ton loaded (Table 11.12-2)

** Assume that all particulate matter is PM_{10} to be conservative

PM_{10} emissions = 3.78 lb/year
PM_{10} emissions = 0.002 TPY

Lime Silo (AWTS Facility)

From Facility Records:

2005 Lime Consumption = 110 tons
2006 Lime Consumption = 110 tons

* Section 11.17 of AP-42 (2/98) lists emission factor for lime loading (enclosed truck) as:
0.61 lb/ton (Table 11.17-4)

** Assume that all particulate matter is PM_{10} to be conservative

PM_{10} emissions = 67.10 lb/year
PM_{10} emissions = 0.03 TPY

Stabilization Baghouses

- 2 stabilization baghouses in operation

- Facility records indicate that approximately 200 lb of particulates are removed from hoppers every 2 weeks

Collected PM = 5,200 lb/year

- Assume 99 percent capture efficiency in stabilization baghouse
- Assume that all particulate matter is PM_{10}

PM_{10} Emissions = 52.5 lb/year (Controlled emissions)

Baghouse Flowrates:

			Fraction of Total
Baghouse 1 =	90,000	cfm	0.643
Baghouse 2 =	50,000	cfm	0.357

- Proportion emissions according to flowrate in each baghouse

Baghouse #1 Emissions = 33.8 lb/year
Baghouse #1 Emissions = 0.02 tons/year
Baghouse #2 Emissions = 18.8 lb/year
Baghouse #2 Emissions = 0.01 tons/year

PM_{10} CALCULATIONS
LANDFILL TOTALS
CWM CHEMICAL SERVICES, LLC

Totals

Process	**PM_{10} Emissions (lb/year)**	**PM_{10} Emissions (TPY)**
Landfill Operation		
Waste Unloading	1.8	0.00
Waste Compaction	162.3	0.08
Paved Roads	1,505.1	0.75
Unpaved Roads	13,392.9	6.70
Totals	**15,062.1**	**7.53**
Landfill Construction (RMU-1)		
Material Loading/Unloading	61.6	0.03
Bulldozing/Compaction	1,649.8	0.82
Grading	395.9	0.20
Totals	**2,107.4**	**1.05**
Landfill Construction (RMU-2)		
Material Loading/Unloading	406.5	0.20
Bulldozing/Compaction	6,314.1	3.16
Grading	7,148.4	3.57
Totals	**13,869.0**	**6.93**
Silo Loading		
Cement Kiln Silo	3.8	0.002
Lime Silo (AWTS Facility)	67.1	0.03
Totals	**70.9**	**0.04**
Stabilization Baghouses		
Baghouse # 1	33.8	0.02
Baghouse # 2	18.8	0.01
Totals	**52.5**	**0.03**
Facility Totals	**31,161.8**	**15.58**

Attachment 2
Calculation of Fugitive PM2.5 Emissions

$PM_{2.5}$ CALCULATIONS
TRUCK AND WASTE SUMMARY
CWM CHEMICAL SERVICES, LLC

Truck and Waste Summary

Vehicle Type	Code	Average Vehicle Weight (tons) Gross Weight	Empty Weight	Payload	Total Vehicles	Vehicle Route
Dump Truck	DT	43.9	17.0	26.8	3,454	Landfill
Rolloff Truck	CM	33.4	21.1	12.2	2,446	Landfill
Tanker Truck	TT	30.8	17.4	13.4	132	AWTS
Vacuum Tanker	VT	31.3	15.9	15.4	8	AWTS
Rolloff Truck	CM	32.1	21.7	10.3	1,023	Stabilization
Dump Truck	DT	39.9	17.1	22.9	634	Stabilization
Pneumatic Truck	PT	33.8	17.0	16.8	22	Stabilization
Tanker Truck	TT	27.6	17.7	9.9	4	Stabilization
Off-Road Truck	---	33.0	19.0	14.0	3,366	Post-Stabilization [a]
Rolloff Truck	CM	37.5	22.1	15.4	50	Transship [b]
Dump Truck	DT	38.8	16.8	22.0	4	Transship [b]
Tanker Truck	TT	25.5	17.8	7.7	34	Transship [b]
Vacuum Tanker	VT	20.4	17.5	2.9	4	Transship [b]
Drum Truck	---	26.4	17.5	8.9	833	Drum Building
Site Vehicles	---	2.5	2.5	---	5,200	AWTS
Delivery Trucks	---	5.0	5.0	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	1,300	AWTS
Personal Vehicles	---	1.5	1.5	---	5,200	Main Office

* Based on CWM waste tracking data and non-waste vehicle estimates for the 12-month period of July 2006 - June 2007

Notes:
- a Assumes 2 loaded vehicles for each stabilization vehicle
- b Total # vehicles equals twice the actual amount of vehicles since each transship load requires 2 round trips

Total Bulk Waste = (3,454 veh)(26.8 tons/veh) + (2,446 veh)(12.2 tons/veh) + (1,023 veh)(10.3 tons/veh) + (634 veh)(22.9 tons/veh) + (22 veh)(16.8 tons/veh) + (4 veh)(9.9 tons/veh)

Total Bulk Waste = 148,024.6 tpy

Fractions

Dump Trucks = 107,251.2 tons / 148,024.6 tons = 0.724
Rolloff Trucks = 40,795.0 tons / 148,024.6 tons = 0.273
Pneumatic Trucks = 368.8 tons / 148,024.6 tons = 0.002
Tanker Trucks = 39.6 tons / 148,024.6 tons = 0.0003

To be conservative, assume bulk waste increase of 10%

Total Bulk Waste = 162,827.0 tpy

Waste Densities (according to CWM facility records):

Truck	Density (lb/ft^3)
Dump	96
Rolloff	81.5

Volume Calculations

$$Volume_{(dump)} = \frac{(0.726)(162{,}827.0\ tons)(1ft3)(2000\ lb)}{(1\ yr)(96\ lb)(1\ ton)} = 2.46E{+}06\ ft^3$$

$$Volume_{(rolloff)} = \frac{(0.274)(162{,}827.07\ tons)(1ft3)(2000\ lb)}{(1\ yr)(81.5\ lb)(1\ ton)} = 1.09E{+}06\ ft^3$$

$$Volume_{(pneumatic)} = \frac{(0.002)(162{,}827.0\ tons)(1ft3)(2000\ lb)}{(1\ yr)(81.5\ lb)(1\ ton)} = 9.96E{+}03\ ft^3$$

$$Volume_{(tanker)} = \frac{(0.0003)(162{,}827.0\ tons)(1ft3)(2000\ lb)}{(1\ yr)(81.5\ lb)(1\ ton)} = 1.07E{+}03\ ft^3$$

Total Volume = 3.56E+06 ft^3 = 1.32E+05 yd^3

$PM_{2.5}$ CALCULATIONS
LANDFILL OPERATIONS
CWM CHEMICAL SERVICES, LLC

Landfill Operation

Waste Unloading

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u / 5)^{1.3}}{(M / 2)^{1.4}}$$

where:
E = emission factor (lb/ton)
k = 0.053 (for $PM_{2.5}$)
u = mean wind speed (mph) = 6.8 (2006 average wind speed - Model City, NY)
M = % moisture in clay/dirt mix = 14 (from AP-42, Table 13.2.4-1)

$$E = k\,(0.0032)\,\frac{(6.8 / 5)^{1.3}}{(14 / 2)^{1.4}} = 1.649E\text{-}05 \text{ lb/ton}$$

Total Waste Unloaded =	166,645	tons/year	(Includes stabilization materials)
Total Emissions =	2.7	lb/year	
Total Emissions (40% Control)[1] =	1.65	lb/year	
Total Emissions (40% Control)[1] =	0.001	tons/year	

Waste Compaction

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.105)\,(5.7)\,(\text{silt}\%)^{1.2}}{(\text{moisture}\%)^{1.3}}$$

where: E = Emission rate of $PM_{2.5}$ in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay/dirt mix:
Silt % = 9.2
Moisture % = 14

$$E = \frac{(0.105)\,(5.7)\,(9.2)^{1.2}}{(14)^{1.3}} = 0.278 \text{ lb/hr}$$

Total Operation hours / year =	1560	(6 hours/day, 5 days/week, 52 weeks/year)
Total Bulldozers Operating =	2	
Total Emissions =	0.4	tons/year
Total Emissions (40% Control)[1] =	0.26	tons/year

Notes:
1 During disposal of identified dusty wastes, CWM Model City applies a water spray to minimize dust emissions. In addition, a dust suppressant material called Con-Cover is used to cover the waste on a daily basis. A 40% control efficiency, based on Figure 13.2.2-2 of AP-42, Section 13.2.2 (11/06), is used to account for the reduction in PM emissions due to these operational procedures which are required by the Facility's permit.

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Landfill Construction
Landfill Unit: RMU-1

Material Requirements

Cover Construction (GCL Design)

Material	Volume (yd^3)	Weight (tons)
Soils	157,280	154,999

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Coarse Stone	107
Soils	73

*Cover Construction Materials Usage / Phase ****

Material	Volume (yd^3)	Weight (tons)
Soils	17,476	17,222

Landfill Activity Span = 9 phases of cover
Total Landfill Life = 22 years (1995 - 2016)

*** No more than one phase of cover is constructed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{17{,}222 \text{ tpy}}{20 \text{ tons / truck}} = 861.1 \text{ trucks/year} = 862 \text{ trucks/year}$$

Roadway Construction Inside Active Landfill

Each layer of landfill material is 6 ft high.
Uncapped landfill height = 115 ft
Total layers = 20 (Road surface on 1st 19 layers only)
Total Cells = 14

Assume length of roadway surface as 1/2 the diagonal across 1 RMU-1 cell, then multiplied by 19

RMU-1 Length = 330 ft
RMU-1 Width = 330 ft
Diagonal = 466.7 ft
1/2 Diagonal = 233.3 ft

$$\text{Length} = \frac{(233.3 \text{ ft})(14 \text{ cells})(19 \text{ lifts})}{(\text{cell-lift})} = 62{,}069.8 \text{ ft}$$

Length / year = 2,821 ft
Depth = 0.5 ft (6 inches)
Width = 40 ft

Volume (stone) = 56,427 ft^3/yr
Volume (stone) = 2,090 yd^3/yr
Trucks needed = 151 /year

Operations Stone

Assume 5 trucks per week or 260 trucks per year for miscellaneous stone usage

Total Stone = 5,200 tons/year
Total Stone = 97,196 ft^3/yr
Total Stone = 3,600 yd^3/yr

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u/5)^{1.3}}{(M/2)^{1.4}}$$

where:

E =	emission factor (lb/ton)		
k =	0.053 (for $PM_{2.5}$)		
u =	mean wind speed (mph) =	6.8	(2006 average wind speed - Model City, NY)
M_{stone} =	% moisture in stone =	0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =	12	(from AP-42, Table 13.2.4-1)

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(0.7/2)^{1.4}} = 1.093E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(12/2)^{1.4}} = 2.046E\text{-}05 \text{ lb/ton}$$

Summary - Cover Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Soils	17,222	2.046E-05	0.4

Summary - Road Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	3,019	1.093E-03	3.3

Summary - Miscellaneous Stone Usage

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	5,200	1.093E-03	5.7

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.105)\ (5.7)\ (\text{silt\%})^{1.2}}{(\text{moisture\%})^{1.3}}$$

where: E = Emission rate of $PM_{2.5}$ in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Stone:
Silt % = 1.6
Moisture % = 0.7

Topsoil/Dirt:
Silt % = 9
Moisture % = 12

$$E_{(stone)} = \frac{(0.105)\ (5.7)\ (1.6)^{1.2}}{(0.7)^{1.3}} = 1.673E+00 \text{ lb/hr}$$

$$E_{(topsoil/dirt)} = \frac{(0.105)\ (5.7)\ (9)^{1.2}}{(12)^{1.3}} = 3.305E-01 \text{ lb/hr}$$

Total Cover Construction hours / year =	600	(10 hours/day, 5 days/week, 12 weeks/year)
Roadway Construction hours/year =	80	
Miscellaneous Stone operation hours/year =	100	
Total Bulldozers Operating / Activity =	2	

Summary - Cover Construction

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Soils	600	3.305E-01	396.6

Summary - Road Construction

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	80	1.673E+00	267.6

Summary - Miscellaneous Stone Usage

Material	Hours/Year	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	100	1.673E+00	334.5

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-1 LANDFILL
CWM CHEMICAL SERVICES, LLC

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$E = (0.031)\ (0.040)\ (\text{veh speed})^{2.5}$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 0.184 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.0002 lb $PM_{2.5}$ / yd^3

Summary - Cover Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Soils	17,476	1.883E-04	3.3

Summary - Road Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	2,090	1.883E-04	0.4

Summary - Miscellaneous Stone Usage

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Coarse Stone	3,600	1.883E-04	0.7

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES

Landfill Construction
Landfill Unit: RMU-2

Material Requirements

Cell Construction

Material	Volume (yd^3)	Weight (tons)
Clay	213,000	181,157
Coarse Stone	189,000	273,011
Soils	676,000	666,198

Material Densities (Appendix A-9 of AP-40, Second Edition)

Material	Density (lb/ft^3)
Clay	63
Coarse Stone	107
Soils	73

Facultative Pond 5 Construction

Material	Volume (yd^3)	Weight (tons)
Clay	26,110	22,207
Coarse Stone	2,500	3,611
Soils	90,990	89,671

Landfill Activity Span = 6 phases of cell construction
Facultative Pond 5 Activity Span = 1 phase of cover construction

Years 1-13: Cell Construction
Year 1: Facultative Pond 5 Construction
Years 5-20: Cover Construction

Total Landfill Life = 20 years

[Year 1 represents worst case scenario]

Cell Construction Materials Usage per Phase ***

Material	Volume (yd^3)	Weight (tons)
Clay	35,500	30,193
Coarse Stone	31,500	45,502
Soils	112,667	111,033
Total	**179,667**	**186,728**

Facultative Pond 5 Construction Materials Usage per Phase ***

Material	Volume (yd^3)	Weight (tons)
Clay	26,110	22,207
Coarse Stone	2,500	3,611
Soils	90,990	89,671
Total	**119,600**	**115,488**

*** No more than one phase of cell construction or Facultative Pond 5 construction is completed in one 12-month period

Truck nominal payload = 20 tons

$$\text{Trucks/year} = \frac{(186{,}728 \text{ tpy}) + (115{,}488 \text{ tpy})}{20 \text{ tons / truck}} = 15{,}110.8 \text{ trucks/year} = 15{,}111 \text{ trucks/year}$$

Cell Excavation

Total Area = 44 acres
Depth of cell = 7.5 ft
Density = 73 lb/ft^3 (moist common earth)

$$\text{Volume} = \frac{(44 \text{ acres})(43{,}560 \text{ ft}^2)(7.5 \text{ ft})}{(1 \text{ acre})} = 14{,}374{,}800 \text{ ft}^3 = 2{,}395{,}800 \text{ ft}^3\text{/year} = 532{,}400 \text{ yd}^3 = 88{,}733 \text{ yd}^3\text{/year}$$

Weight (excavated material) = 524,680.2 tons
Weight (excavated material) = 87,447 tons/year

- Assume each truckload of excavated material weighs 20 tons

$$\text{Traffic} = \frac{(2{,}395{,}800 \text{ ft}^3)(73 \text{ lb})(1 \text{ truckload})}{(1 \text{ yr})(1 \text{ft}^3)(40{,}000 \text{ lb})} = 4{,}373 \text{ truckloads/yr}$$

Faculatative Pond 5 Excavation

Total Area = 2.5 acres
Depth of pond = 7.5 ft
Density = 73 lb/ft^3 (moist common earth)

$$\text{Volume} = \frac{(2.5 \text{ acres})(43{,}560 \text{ ft}^2)(7.5 \text{ ft})}{(1 \text{ acre})} = 816{,}750 \text{ ft}^3 = 816{,}750 \text{ ft}^3\text{/year} = 30{,}250 \text{ yd}^3 = 30{,}250 \text{ yd}^3\text{/year}$$

Weight (excavated material) = 29,811.4 tons
Weight (excavated material) = 29,811.4 tons/year

- Assume each truckload of excavated material weighs 20 tons

$$\text{Traffic} = \frac{(816{,}750 \text{ ft}^3)(73 \text{ lb})(1 \text{ truckload})}{(1 \text{ yr})(1 \text{ft}^3)(40{,}000 \text{ lb})} = 1{,}491 \text{ truckloads/yr}$$

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES

Material Loading / Unloading Emissions

Batch Drop equation from AP-42, Section 13.2.4 (11/06):

$$E = k\,(0.0032)\,\frac{(u/5)^{1.3}}{(M/2)^{1.4}}$$

where:

E =	emission factor (lb/ton)		
k =	0.053 (for $PM_{2.5}$)		
u =	mean wind speed (mph) =	6.8	(2006 average wind speed - Model City, NY)
M_{clay} =	% moisture in clay =	10	(from AP-42, Table 13.2.4-1)
M_{stone} =	% moisture in stone =	0.7	(from AP-42, Table 13.2.4-1)
$M_{topsoil/dirt}$ =	% moisture in topsoil/dirt mix =	12	(from AP-42, Table 13.2.4-1)

$$E_{(clay)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(10/2)^{1.4}} = 2.641E\text{-}05 \text{ lb/ton}$$

$$E_{(stone)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(0.7/2)^{1.4}} = 1.093E\text{-}03 \text{ lb/ton}$$

$$E_{(topsoil/dirt)} = k\,(0.0032)\,\frac{(6.8/5)^{1.3}}{(12/2)^{1.4}} = 2.046E\text{-}05 \text{ lb/ton}$$

Summary - Cell Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Clay	30,193	2.641E-05	0.8
Coarse Stone	45,502	1.093E-03	49.7
Soils	111,033	2.046E-05	2.3

Summary - Facultative Pond 5 Construction

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Clay	22,207	2.641E-05	0.6
Coarse Stone	3,611	1.093E-03	3.9
Soils	89,671	2.046E-05	1.8

Summary - Excavation

Material	Usage/Year (tons)	EF (lb/ton)	$PM_{2.5}$ Emissions (lb/yr)
Soils (Total)	117,258	2.046E-05	2.4

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES

Bulldozing Emissions

Compaction by Bulldozing equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$$E = \frac{(0.105)\ (5.7)\ (\text{silt\%})^{1.2}}{(\text{moisture\%})^{1.3}}$$

where: E = Emission rate of PM_{10} in lb/hr

From Table 13.2.4-1 of AP-42 (11/06):

Clay:		Stone:	
Silt % =	6	Silt % =	1.6
Moisture % =	10	Moisture % =	0.7

Topsoil/Dirt:

Silt % =	9
Moisture % =	12

$$E_{(clay)} = \frac{(0.105)\ (5.7)\ (6)^{1.2}}{(10)^{1.3}} = 2.575E\text{-}01 \text{ lb/hr}$$

$$E_{(stone)} = \frac{(0.105)\ (5.7)\ (1.6)^{1.2}}{(0.7)^{1.3}} = 1.673E+00 \text{ lb/hr}$$

$$E_{(topsoil/dirt)} = \frac{(0.105)\ (5.7)\ (9)^{1.2}}{(12)^{1.3}} = 3.305E\text{-}01 \text{ lb/hr}$$

Total Construction hours / year =	1,800	(For Cell Construction, Pond Construction and excavation)
Total Bulldozers (Cell Construction) =	3	
Total Bulldozers (Pond Construction) =	1	

- Proportion total hours by fraction of each material to get $PM_{2.5}$ emissions for cell construction, cover construction, and excavation

Total Material = 186,728 tons + 115,448 tons + 87,447 tons + 29,811 tons = 419,474 tons

Summary - Cell Construction

Material	Usage/Year (tons)	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Clay	30,193	2.575E-01	100.1
Coarse Stone	45,502	1.673E+00	979.7
Soils	111,033	1.673E+00	2,390.7

Summary - Facultative Pond 5 Construction

Material	Usage/Year (tons)	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Clay	22,207	2.575E-01	24.5
Coarse Stone	3,611	1.673E+00	25.9
Soils	89,671	3.305E-01	127.2

Summary - Excavation

Material	Usage/Year (tons)	EF (lb/hr)	$PM_{2.5}$ Emissions (lb/yr)
Soils (Cell)	87,447	3.305E-01	372.1
Soils (Pond)	29,811	3.305E-01	42.3

$PM_{2.5}$ CALCULATIONS
LANDFILL CONSTRUCTION - RMU-2 LANDFILL
CWM CHEMICAL SERVICES

Grading Emissions

Grading equation from Table 11.9-1 of Supplement E of AP-42 Fourth Edition (7/98):

$E = (0.031)\ (0.040)\ (\text{veh speed})^{2.5}$

Assume avg. grader speed = 7.39 mph (650 fpm)

E = 0.184 lb / VMT (independent of material being graded)

Assume equipment blades are 10 feet wide
Assume grading depth of 0.5 feet (6 inches)

1 cubic yard of material graded every 5.4 feet
1 VMT (grader) = 977.8 yd^3 of material graded

EF = 0.0002 lb $PM_{2.5}$ / yd^3

Summary - Cell Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Clay	35,500	1.883E-04	6.7
Coarse Stone	31,500	1.883E-04	5.9
Soils	112,667	1.883E-04	21.2

Summary - Cover Construction

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Clay	26,110	1.883E-04	4.9
Coarse Stone	2,500	1.883E-04	0.5
Soils	90,990	1.883E-04	17.1

Summary - Excavation

Material	Usage/Year (yd^3)	EF (lb/yd^3)	$PM_{2.5}$ Emissions (lb/yr)
Soils (Total)	118,983	1.883E-04	22.4

$PM_{2.5}$ CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Paved / Unpaved Roads

Road Segment #	Vehicles on Segment	NO. OF VEHICLES [a] PER YEAR	AVERAGE FULL VEHICLE WEIGHT [b] (tons)	AVERAGE EMPTY VEHICLE WEIGHT [b] (tons)	ACTUAL MEAN VEHICLE WEIGHT [b] (tons)	MILES TRAVELED (c) (MILES)	SILT CONTENT [d] (g/m^2)	PM2.5 Emission Rate (lb/VMT) [e]	Uncontrolled PM2.5 (TPY)	Efficiency (%) [f] PM2.5 (TPY)	Controlled PM2.5 [g] (TPY)
				PAVED							PAVED
1-2	Landfill Disposal	5,900	39.5	18.7	29.1	4,800.5	7.4				
	AWTS	140	30.8	17.3	24.0	113.9	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,369.4	7.4				
	Transship	92	32.4	20.1	26.2	74.9	7.4				
	Drums	833	26.4	17.5	22.0	677.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	4,230.9	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	1,057.7	7.4				
	Personal Veh.	6,500	1.5	1.5	1.5	5,288.6	7.4				
Total/Average		21,648			12.5	17,613.6	7.4	0.044	0.388	40	0.23
2-3	Landfill Disposal	5,900	39.5	18.7	29.1	3,857.3	7.4				
	AWTS	140	30.8	17.3	24.0	91.5	7.4				
	Stabilization	1,683	35.1	19.9	27.5	1,100.3	7.4				
	Transship	92	32.4	20.1	26.2	60.1	7.4				
	Drums	833	26.4	17.5	22.0	544.6	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	3,399.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	849.9	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	849.9	7.4				
Total/Average		16,448			16.0	10,753.5	7.4	0.057	0.304	40	0.18
4-10	Landfill Disposal	5,900	39.5	18.7	29.1	1,423.6	7.4				
	AWTS	140	30.8	17.3	24.0	33.8	7.4				
	Stabilization	1,683	35.1	19.9	27.5	406.1	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	812.2	7.4				
	Transship	92	32.4	20.1	26.2	22.2	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,254.7	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	313.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	313.7	7.4				
Total/Average		18,981			17.5	4,579.9	7.4	0.062	0.142	40	0.09
5-6	Stabilization	1,683	35.1	19.9	27.5	185.5	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	371.0	7.4				
	Drums	833	26.4	17.5	22.0	91.8	7.4				
Total/Average		5,882			25.9	648.4	7.4	0.092	0.030	40	0.02
6-7	Stabilization	1,683	35.1	19.9	27.5	269.0	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	538.1	7.4				
Total/Average		5,049			26.5	807.1	7.4	0.094	0.038	40	0.02
6-8	Drums	833	26.4	17.5	22.0	626.3	7.4				
Total/Average		833			22.0	626.3	7.4	0.078	0.024	40	0.01
22-23	Drums	833	26.4	17.5	22.0	78.9	7.4				
Total/Average		833			22.0	78.9	7.4	0.078	0.003	40	0.00
10-11	Landfill Disposal	5,900	39.5	18.7	29.1	969.9	7.4				
	AWTS	140	30.8	17.3	24.0	23.0	7.4				
	Stabilization	1,683	35.1	19.9	27.5	276.7	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	553.4	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	854.8	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	213.7	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	213.7	7.4				
Total/Average		18,889			17.5	3,105.2	7.4	0.062	0.096	40	0.06
11-12	AWTS	140	30.8	17.3	24.0	37.8	7.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,402.4	7.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	350.6	7.4				
	Personal Veh.	1,300	1.5	1.5	1.5	350.6	7.4				
Total/Average		7,940			3.1	2,141.4	7.4	0.011	0.011	40	0.01
11-13	Landfill Disposal	5,900	39.5	18.7	29.1	1,068.3	7.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	609.5	7.4				
Total/Average		9,266			28.0	1,677.7	7.4	0.100	0.084	40	0.05
15-16	RMU-1 Construction	1,273	36.8	16.8	26.8	750.8	7.4				
Total/Average		1,273			26.8	750.8	7.4	0.095	0.036	40	0.02
16-17	RMU-1 Construction	1,273	36.8	16.8	26.8	343.3	7.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	5,656.9	7.4				
Total/Average		22,248			26.8	6,000.2	7.4	0.095	0.286	40	0.17
18-19	RMU-1 Construction	1,273	36.8	16.8	26.8	486.1	7.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	8,008.6	7.4				
Total/Average		22,248			26.8	8,494.7	7.4	0.095	0.405	40	0.24
										Total	**1.11**

$PM_{2.5}$ CALCULATIONS
PAVED / UNPAVED ROAD DUST
CWM CHEMICAL SERVICES, LLC

Road Segment #	Vehicles on Segment	NO. OF VEHICLES[a] PER YEAR	AVERAGE FULL VEHICLE WEIGHT[b] (tons)	AVERAGE EMPTY VEHICLE WEIGHT[b] (tons)	ACTUAL MEAN VEHICLE WEIGHT[b] (tons)	MILES TRAVELED (c) (MILES)	SILT CONTENT[d] (g/m^2)	PM2.5 Emission Rate (lb/VMT) [e]	Uncontrolled PM2.5 (TPY)	Efficiency (%) [f] PM2.5 (TPY)	Controlled PM2.5[g] (TPY)
UNPAVED										**UNPAVED**	
3-4	Landfill Disposal	5,900	39.5	18.7	29.1	1,644.8	6.4				
	AWTS	140	30.8	17.3	24.0	39.0	6.4				
	Stabilization	1,683	35.1	19.9	27.5	469.2	6.4				
	Transship	92	32.4	20.1	26.2	25.6	6.4				
	Drums	833	26.4	17.5	22.0	232.2	6.4				
	Site Vehicles	5,200	2.5	2.5	2.5	1,449.7	6.4				
	Delivery Trucks	1,300	5.0	5.0	5.0	362.4	6.4				
	Personal Veh.	1,300	1.5	1.5	1.5	362.4	6.4				
Total/Average		16,448			16.0	4,585.5	6.4	0.181	0.415	40	0.25
4-5	Stabilization	1,683	35.1	19.9	27.5	443.7	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	887.4	6.4				
	Drums	833	26.4	17.5	22.0	219.6	6.4				
Total/Average		5,882			25.9	1,550.7	6.4	0.225	0.174	40	0.10
9-10	Transship	92	32.4	20.1	26.2	14.1	6.4				
Total/Average		92			26.2	14.1	6.4	0.226	0.002	40	0.00
14-16	RMU-2 Construction	20,975	36.8	16.8	26.8	8,437.7	6.4				
Total/Average		20,975			26.8	8,437.7	6.4	0.228	0.962	40	0.58
17-18	RMU-1 Construction	1,273	36.8	16.8	26.8	739.7	6.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	12,187.7	6.4				
Total/Average		22,248			26.8	12,927.4	6.4	0.228	1.474	40	0.88
19-20	RMU-1 Construction	1,273	36.8	16.8	26.8	1,235.4	6.4				
	RMU-2 Construction	20,975	36.8	16.8	26.8	20,355.3	6.4				
Total/Average		22,248			26.8	21,590.7	6.4	0.228	2.462	40	1.48
8-22	Drums	833	26.4	17.5	22.0	220.9	6.4				
Total/Average		833			22.0	220.9	6.4	0.209	0.023	40	0.01
13-14	Landfill Disposal	5,900	39.5	18.7	29.1	1,528.6	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	872.1	6.4				
Total/Average		9,266			28.0	2,400.7	6.4	0.233	0.279	40	0.17
14-21	RMU-2 Construction	20,975	36.8	16.8	26.8	5,474.2	6.4				
	Landfill Disposal	5,900	39.5	18.7	29.1	1,539.8	6.4				
	Post-Stabilization	3,366	33.0	19.0	26.0	878.5	6.4				
Total/Average		30,241			27.1	7,892.4	6.4	0.229	0.906	40	0.54
										Total	**4.02**

EQUATIONS:

A Fugitive emissions from paved site roads are based on emission factors from AP-42 Section 13.2.1.3 (Equation 1 for paved roads).
Constant 'k' (particle size multiplier) from AP-42 Table 13.2-1.1.

Calculations

$E\ (lb/VMT) = [k(sL)^{.91}(W)^{1.02}]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/d)*(d/week)*(week/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
K(PM2.5) = 0.00054 lb/VMT
W = Average weight of vehicle in tons
sL = silt loading sL = 7.4 g/m^2

B Fugitive emissions from trucks driving on unpaved surfaces, will use emission factor equation in AP-42 Section 13.2.2.4 (Equation 1a for unpaved roads)

Calculations

$E\ (lb/VMT) = [k(s/12)^a(W/3)^b]$

E(TPY) = E(lb/VMT)*(VMT/truck)*(truck/yr)/2000

Variables/Constants

k = particle size multiplier (dimensionless)
k(PM2.5) = 0.15 lb/VMT

a = Constant a(PM2.5) = 0.9
b = Constant b(PM2.5) = 0.45
s = silt content (%)
(measured or estimated - varies for different sources/materials - see below)
s = 6.4 %

Notes:

a Number of vehicles information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
b Vehicle weight information was provided by Site specific data which was supplied by the Site (July 2006 - June 2007)
c The round-trip distance traveled on the roads determined from analysis of CAD drawing of site (See Below)
d Silt content was referenced from Section 13.2.1 or 13.2.2 from AP-42.
e PM emissions were calculated using equations as shown above.
f Control efficiencies for paved and unpaved roads (and surfaces treated as unpaved roads) were referenced from Figure 13.2.2-2 of AP-42, Section 13.2.2 (11/06); water trucks are used at the Facility to control dust emissions from paved and unpaved roads, and are required by the Facility's permit.
g Controlled PM emissions were calculated by applying the control efficiency to the calculated PM-TPY value.

Distances determined from AutoCAD analysis of Site Drawing

Segment	Length (ft)
1-2	2148
2-3	1726
4-10	637
5-6	291
6-7	422
6-8	1985
22-23	250
10-11	434
11-12	712
11-13	478
15-16	1557
16-17	712
18-19	1008
3-4	736
4-5	696
9-10	405
14-16	1062
17-18	1534
19-20	2562
8-22	700
13-14	684
14-21	689

$PM_{2.5}$ CALCULATIONS
SILO LOADING AND STABILIZATION BAGHOUSES
CWM CHEMICAL SERVICES, LLC

Cement Kiln Silo Loading

- Cement Kiln Silo

Total Waste Stabilized at Facility = 25,454.0 tons/year

- Assume that 15% CKD is added to treat waste

CKD Consumption = 3,818.1 tons/year

* Section 11.12 of AP-42 (6/06) lists controlled emission factor for cement loading to elevated storage silo (pneumatic) as 0.00099 lb/ton loaded (Table 11.12-2)

** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ emissions = 3.78 lb/year
$PM_{2.5}$ emissions = 0.002 TPY

Lime Silo (AWTS Facility)

From Facility Records:

2005 Lime Consumption = 110 tons
2006 Lime Consumption = 110 tons

* Section 11.17 of AP-42 (2/98) lists emission factor for lime loading (enclosed truck) as:
0.61 lb/ton (Table 11.17-4)

** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ emissions = 67.10 lb/year
$PM_{2.5}$ emissions = 0.03 TPY

Stabilization Baghouses

- 2 stabilization baghouses in operation

- Facility records indicate that approximately 200 lb of particulates are removed from hoppers every 2 weeks

Collected PM = 5,200 lb/year

- Assume 99 percent capture efficiency in stabilization baghouse
** Assume that all particulate matter is $PM_{2.5}$ to be conservative

$PM_{2.5}$ Emissions = 52.5 lb/year (Controlled emissions)

Baghouse Flowrates:

			Fraction of Total
Baghouse 1 =	90,000	cfm	0.643
Baghouse 2 =	50,000	cfm	0.357

- Proportion emissions according to flowrate in each baghouse

Baghouse #1 Emissions = 33.8 lb/year
Baghouse #1 Emissions = 0.02 tons/year
Baghouse #2 Emissions = 18.8 lb/year
Baghouse #2 Emissions = 0.01 tons/year

$PM_{2.5}$ CALCULATIONS
LANDFILL TOTALS
CWM CHEMICAL SERVICES, LLC

Totals

Process	**$PM_{2.5}$ Emissions (lb/year)**	**$PM_{2.5}$ Emissions (TPY)**
Landfill Operation		
Waste Unloading	1.6	0.00
Waste Compaction	519.9	0.26
Paved Roads	2,216.6	1.11
Unpaved Roads	8,035.7	4.02
Totals	**10,773.9**	**5.39**
Landfill Construction (RMU-1)		
Material Loading/Unloading	9.3	0.00
Bulldozing/Compaction	998.8	0.50
Grading	4.4	0.00
Totals	**1,012.5**	**0.51**
Landfill Construction (RMU-2)		
Material Loading/Unloading	61.6	0.03
Bulldozing/Compaction	4,062.5	2.03
Grading	78.7	0.04
Totals	**4,202.8**	**2.10**
Silo Loading		
Cement Kiln Silo	3.8	0.002
Lime Silo (AWTS Facility)	67.1	0.03
Totals	**70.9**	**0.04**
Stabilization Baghouses		
Baghouse # 1	33.8	0.02
Baghouse # 2	18.8	0.01
Totals	**52.5**	**0.03**
Facility Totals	**16,112.6**	**8.06**

Attachment 3

USEPA Paper *"Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions"*

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Overall Mass Transfer Coefficient for Pollutant Emissions from Small Water Pools under Simulated Indoor Environmental Conditions

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Small chamber tests were conducted to experimentally determine the overall mass transfer coefficient for pollutant emissions from still aqueous solutions under simulated indoor (residential or occupational) environmental conditions. The tests covered six organic compounds with a Henry's constant range from 3.33×10^{-7} to 3.67×10^{-3} (atm m^3/mol). The estimated overall liquid phase mass transfer coefficients for still solutions varied from 1.8×10^{-6} to 5.7×10^{-3} m/h; the estimated liquid phase mass transfer coefficients were 9.7×10^{-3} m/h for the reference compound (oxygen) and 5.00×10^{-3} to 6.04×10^{-3} m/h for the test compounds. An empirical model is proposed to estimate the overall mass transfer coefficient, which can be used to predict pollutant emissions from still aqueous solutions (e.g. pools and puddles) in indoor environments.

Keywords: aqueous solution; emission; indoor environment; mass transfer coefficient; water

INTRODUCTION

The overall mass transfer coefficient, also known as the total transfer velocity, is a key parameter in predicting the rate of pollutant emissions from aqueous solutions. It is well established that, based on the classic two-resistance theory, the emission rate can be estimated by equation (1) or, equivalently, equation (2) (Lyman *et al.*, 1990).

$$R = SK_{OL}(C_L - C_G/H) \quad (1)$$

$$R = SK_{OG}(C_L H - C_G) \quad (2)$$

where R is the emission rate (μg/h), S is the source area (m^2), K_{OL} is the overall liquid phase mass transfer coefficient (m/h), K_{OG} is the overall gas phase mass transfer coefficient (m/h), C_L is the pollutant concentration in the liquid (μg/m^3), C_G is the pollutant concentration in air (μg/m^3) and H is the dimensionless Henry's constant $[(\mu g/m^3)_{air}/(\mu g/m^3)_{liquid}]$. The two overall mass transfer coefficients, K_{OL} and K_{OG}, are defined by equations (3) and (4), respectively.

$$1/K_{OL} = (1/k_L) + (1/k_G H) \quad (3)$$

$$1/K_{OG} = (H/k_L) + (1/k_G) \quad (4)$$

where k_L is the liquid phase mass transfer coefficient (m/h) and k_G is the gas phase mass transfer coefficient (m/h). K_{OL} and K_{OG} are so closely related that one can regard them as the measurement of the same physical property on different scales, a case similar to weighing an object in kilograms and pounds. The conversion factor between K_{OL} and K_{OG} is the Henry's constant (equation 5).

$$K_{OL} = HK_{OG} \quad (5)$$

The difference between the phase mass transfer coefficient (k_L or k_G) and the overall mass transfer coefficient (K_{OL} or K_{OG}) is that the former considers the transfer velocity in a single phase (either liquid or

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Table 1. Selected properties of the test compounds at 25°C

Compound	Formula	Molecular weight	Vapor pressure[a] (mmHg)	Henry's constant[b]		D_a[c] (m^2/h)	D_L[d] (m^2/h)
				(atm m^3/mol)	(dimensionless)		
Chloroform	$CHCl_3$	119.4	198	3.67×10^{-3}	1.50×10^{-1}	3.28×10^{-2}	3.90×10^{-6}
Butyl acetate	$CH_3COOC_4H_9$	116.2	11.6	2.81×10^{-4}	1.15×10^{-2}	2.61×10^{-2}	$2.79 \times 10_{-6}$
Ethyl acetate	$CH_3COOC_2H_5$	88.10	93.6	1.34×10^{-4}	5.48×10^{-3}	3.14×10^{-2}	3.45×10^{-6}
1-Butanol	C_4H_9OH	74.12	7.07	8.81×10^{-6}	3.60×10^{-4}	3.24×10^{-2}	3.54×10^{-6}
1-Propanol	C_3H_7OH	60.09	20.8	7.41×10^{-6}	3.03×10^{-4}	3.71×10^{-2}	4.08×10^{-6}
Phenol	C_6H_5OH	94.11	0.53	3.33×10^{-7}	1.36×10^{-5}	3.07×10^{-2}	3.55×10^{-6}

[a]From Yaws (1994).
[b]From Howard and Meylan (1997).
[c]D_a is diffusivity in air, calculated with the method of Fuller *et al.* (1966).
[d]D_L is diffusivity in water, calculated with the method of Hayduk and Laudie (1974).

gas) while the latter considers both phases. In other words, the overall mass transfer coefficient represents the combined effects of k_L, k_G and H.

Since Henry's constants are available in the literature for most compounds of interest, estimation of either overall mass transfer coefficient becomes the main issue for predicting pollutant emissions from aqueous solutions. Ways to estimate the phase mass transfer coefficients (k_L and k_G) have been thoroughly studied in the ambient environment, in which the sources of interest include oceans, lakes, rivers and waste water treatment facilities. Excellent summaries on this subject are given by Lyman *et al.* (1990) and Schwarzenbach *et al.* (1993). For example, Southworth (1979) used equations (6) and (7) to calculate k_L and k_G, respectively.

$$k_L = 23.51(V_{curr}^{0.969}/Z^{0.673})\sqrt{32/M} \quad (6)$$

$$k_G = 1137.5(V_{wind} + V_{curr})\sqrt{18/M} \quad (7)$$

where k_G and k_L are in cm/h, V_{curr} is the river current velocity (m/s), V_{wind} is the wind speed (m/s), Z is the depth of water (m) and M is the molecular weight of the chemical of interest (g/mol). The applicability of these ambient models to indoor environments is doubtful, however, because the conditions in the latter environments, occupational or residential, can be drastically different from those found outdoors. For instance, the velocity (or speed) of indoor air is usually much lower, typically 5–10 cm/s, and source areas are much smaller too. If the water is virtually still, equation (6) gives 0 for k_L.

In a comprehensive study on emissions from water use to indoor air (EPA, 2000), lumped overall mass transfer coefficients (SK_{OL}) were reported for washing machine, dishwasher, shower and bathtub. The absolute values of k_G and k_L were not determined, however.

This study concerns pollutant emissions from still aqueous solutions in the indoor environment. Examples of such emission sources include buckets of water-based hard surface cleaners used by janitors, water-based cleaners applied to horizontal surfaces and puddles of water-based insecticides applied to the floor. A more complex case is the emission of organic solvents from latex paint applied to a wall. The objective of this work was two-fold: (i) to experimentally determine the overall mass transfer coefficients for organic compounds with a wide range of Henry's constants under simulated indoor environmental conditions; (ii) to develop an empirical model to estimate the overall mass transfer coefficients for still aqueous solutions. The results of this work can be used to predict pollutant emissions from aqueous solutions in the forms of pools, puddles and films in residential and occupational environments.

METHODS

Six test compounds were selected (Table 1). They cover a range of Henry's constant from 3.33×10^{-7} to 3.67×10^{-3} (atm m^3/mol) or 1.36×10^{-5} to 1.50×10^{-1} (dimensionless). Their dilute solutions, ranging from 3.99×10^{-6} to 5.65×10^{-3} mol/l, were prepared one day before the chamber tests by dissolving a known amount of pure compound in deionized water. Prior to the start of chamber tests, the concentration of the stock solution was analyzed by flash vaporization of the liquid onto Tenax sorbent tubes with subsequent analysis by gas chromatography–mass spectroscopy (GC/MS). The source containers were identical circular pools made from stainless steel. They had an inside diameter of 7.4 cm, an outside diameter (including the edges at the top) of 8.9 cm and a depth of 3.1 cm. The emissions tests were conducted in two identical 53 l stainless steel environmental chambers (Tichenor *et al.*, 1990) with a ventilation rate of 1 air change/h, a temperature of 23.5°C and a relative humidity of inlet air of 20%. Temperature was measured by thermocouples (model E49008U-00-04; Inotek Technologies) and relative humidity by humidity probes (model HHT-2WC-RP-TTB; HyCal Sensing Products). Controlled by small circulation fans, the air speeds in the chambers were measured with a calibrated hot-wire anemometer (1213 Indoor Climate

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Analyzer; Brüel & Kjær) at five locations, 1 cm over the pool. The two chambers differed only in air speeds: 12.6 ± 4.5 cm/s in chamber 1 and 21.6 ± 7.9 cm/s in chamber 2. Prior to a test, the source container was filled with test solution and then placed at the center of the chamber bottom. The test start time was recorded as the chamber door closed. Air samples were collected onto Tenax TA sorbent tubes (Supelco) with mass flow controllers and analyzed by GC with a mass selective detector (6890/5973; Hewlett Packard) equipped with a 30 m DB624 column (0.25 mm i.d. × 1.4 μm film thickness). Samples collected on the sorbents were introduced into the GC by a multitube thermal desorption unit (ATD 400; Perkin Elmer).

RESULTS

Summary of test parameters

A total of 14 chamber tests were conducted, including one duplicate in each chamber. The test conditions are summarized in Table 2.

Time–concentration profiles

The time–concentration profiles were strongly affected by the Henry's constants. For chloroform, which has the largest Henry's constant among the test compounds, the two chambers had almost identical results, indicating that the emissions were limited by the liquid phase mass transfer. In addition, the emission rates decreased significantly over time due to exhaustion of the source (Fig. 1). For phenol, which has the smallest Henry's constant among the test compounds, the difference between the two chambers was significant, indicating that the emissions were limited by the gas phase mass transfer (Fig. 2). The time–concentration profiles for the remaining compounds were between these two extreme cases.

Estimation of the overall liquid phase mass transfer coefficient (K_{OL})

The overall liquid phase mass transfer coefficient (K_{OL}) was estimated by fitting the following mass balance model (equations 8–10) to the chamber concentration data with K_{OL} being the only unknown parameter.

$$V(dC_G/dt) = SK_{OL}(C_L - C_G/H) - QC_G \quad (8)$$

$$dW_L/dt = -SK_{OL}(C_L - C_G/H) \quad (9)$$

$$C_L = W_L/[V_L - (r_w t/\rho_w)] \quad (10)$$

where V is the chamber volume (m^3), t is the time (h), Q is the air exchange flow rate (m^3/h), W_L is the amount of test compound in the liquid (μg), V_L is the initial volume of liquid (m^3), r_w is the water evaporation rate (g/h) and ρ_w is the density of water (g/m^3). Data fitting software SCIENTIST (MicroMath Scientific Software, Salt Lake City, UT) was used for the non-linear regression, and the initial conditions were $t = 0$, $C_G = 0$ and $W_L = C_{L0} \times V_L$, where C_{L0} is the initial concentration in the liquid. The estimated K_{OL} values and their associated standard errors for the non-linear regression are given in the last column of Table 2.

AN EMPIRICAL MODEL FOR ESTIMATING K_{OL} AND K_{OG}

Approach

In order to use equations (1) and (2) as predictive models, one must know how to estimate the overall mass transfer coefficient for a given compound. The objective here is to develop a parameter estimation method for pollutant emissions from still aqueous solutions under indoor environmental conditions. The proposed model calculates the overall mass transfer coefficient (K_{OL} or K_{OG}) in three steps: (i) calculate the gas phase mass transfer coefficient (k_G) from the Sherwood number; (ii) calculate the liquid phase mass transfer coefficient (k_L) from that for a reference compound; (iii) calculate the overall mass transfer coefficient from equation (3) or (4). Details are discussed below.

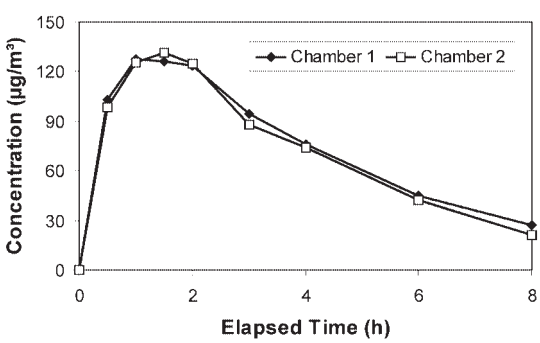


Fig. 1. Time–concentration profile for chloroform.

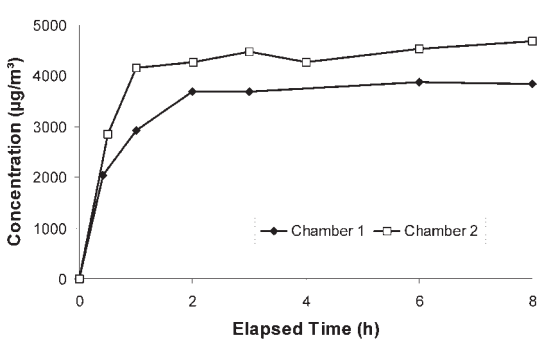


Fig. 2. Time–concentration profile for phenol.

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Table 2. Conditions of 14 chamber tests and estimated overall liquid phase mass transfer coefficients[a]

Test no.	Chemical	Chamber ID[b]	Ach (per h)	C_{L0} (mol/l)	V_L (ml)	T (°C)	RH (%)		r_w (g/h)	Estimated K_{OL} (m/h)
							Inlet	Outlet		
1	Chloroform	1	1.05	3.99×10^{-6}	98.3	23.3 ± 0.03	14.0 ± 0.10	62.0 ± 0.86	0.524	$(5.68 \pm 0.47) \times 10^{-3}$
2	Chloroform	2	1.05	3.99×10^{-6}	98.1	23.5 ± 0.03	14.2 ± 0.12	69.7 ± 0.79	0.625	$(5.60 \pm 0.52) \times 10^{-3}$
3	Butyl acetate	1	1.05	5.23×10^{-5}	96.7	23.4 ± 0.10	13.7 ± 0.13	60.3 ± 1.2	0.510	$(5.17 \pm 0.27) \times 10^{-3}$
4	Butyl acetate	2	1.07	5.23×10^{-5}	97.4	23.5 ± 0.07	13.7 ± 0.09	69.8 ± 1.7	0.649	$(5.00 \pm 0.26) \times 10^{-3}$
5	Butyl acetate	1	1.06	5.61×10^{-5}	95.8	23.3 ± 0.06	12.7 ± 0.13	57.8 ± 2.0	0.540	$(4.02 \pm 0.26) \times 10^{-3}$
6	Butyl acetate	2	1.08	5.61×10^{-5}	99.5	23.5 ± 0.04	12.6 ± 0.15	68.8 ± 1.3	0.644	$(4.41 \pm 0.29) \times 10^{-3}$
7	Ethyl acetate	1	1.05	7.54×10^{-5}	95.7	23.3 ± 0.03	14.0 ± 0.40	61.0 ± 0.89	0.555	$(5.03 \pm 0.22) \times 10^{-3}$
8	Ethyl acetate	2	1.06	7.54×10^{-5}	98.6	23.5 ± 0.03	13.8 ± 0.25	69.4 ± 0.89	0.680	$(5.28 \pm 0.26) \times 10^{-3}$
9	1-Butanol	1	1.05	1.33×10^{-3}	92.6	23.4 ± 0.25	14.5 ± 0.17	58.8 ± 1/86	0.541	$(1.44 \pm 0.06) \times 10^{-3}$
10	1-Butanol	2	1.05	1.33×10^{-3}	96.3	23.6 ± 0.14	14.1 ± 0.15	71.3 ± 1.4	0.669	$(1.52 \pm 0.10) \times 10^{-3}$
11	1-Propanol	1	1.05	9.78×10^{-3}	101	23.3 ± 0.03	13.6 ± 0.15	59.6 ± 1.15	0.555	$(1.33 \pm 0.05) \times 10^{-3}$
12	1-Propanol	2	1.06	$9.78 \times 10–^{3}$	98.0	23.5 ± 0.03	13.5 ± 0.10	69.0 ± 2.5	0.660	$(1.85 \pm 0.09) \times 10^{-3}$
13	Phenol	1	1.05	$5.65 \times 10–^{3}$	93.1	23.6 ± 0.30	14.7 ± 0.16	59.8 ± 1.94	0.565	$(1.80 \pm 0.06) \times 10^{-4}$
14	Phenol	2	1.05	$5.65 \times 10–^{3}$	93.3	23.7 ± 0.15	14.7 ± 0.19	69.4 ± 2.4	0.634	$(2.68 \pm 0.11) \times 10^{-4}$

Ach, air exchange rate; C_{L0}, initial concentration in liquid; V_L, initial volume of liquid; T, temperature; RH, relative humidity; r_w, water evaporation rate.
[a]The test duration was 4 h for tests 3 and 4 and 8 h for the rest.
[b]The air speed was 12.6 ± 4.5 cm/s in chamber 1 and 21.6 ± 7.9 cm/s in chamber 2.

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Estimation of gas phase mass transfer coefficient (k_G)

Several methods have been developed to estimate the gas phase mass transfer coefficient in indoor environments. A brief review of these methods is given by Guo (2002). The method used here is based on the Sherwood number (S_h), which is a dimensionless number related to k_G (equation 11) and can be correlated to Schmidt and Reynolds numbers (S_c and R_e). A series of correlations have been developed between S_h, S_c and R_e (Bennet and Myers, 1982; White, 1988). For example, equation (12) applies to laminar flow conditions and is often used for indoor environments.

$$S_h = (k_G L)/D_a \quad (11)$$

where L is the characteristic length (m), calculated from the square root of the source area, and D_a is the diffusivity in air (m^2/h).

$$S_h = 0.664 S_c^{1/3} R_e^{1/2} \quad (12)$$

where S_c and R_e are defined by equations (13) and (14), respectively.

$$S_c = \mu/(\rho D_a) \quad (13)$$

$$R_e = (Lu\rho)/\mu \quad (14)$$

where u is the air velocity (m/h), ρ is the density of air (g/m^3) and μ is the viscosity of air (g/m/h). The accuracy of this method was evaluated by using the water evaporation data from the 14 chamber tests (column 10 in Table 2). The k_G values for water evaporation were estimated from equation (15).

$$r_w = S k_G (C_{sw} - C_w) \quad (15)$$

where r_w is the experimental water evaporation rate (g/h), C_{sw} is the saturation concentration for water vapor at chamber temperature, converted from vapor pressure (g/m^3), and C_w is the experimental water vapor concentration in the chamber, converted from relative humidity (g/m^3). As shown in Table 3, the calculated gas phase mass transfer coefficients agreed well with the experimental results.

Estimation of liquid phase mass transfer coefficient (k_L)

With the overall liquid phase mass transfer coefficient (K_{OL}) presented in Table 2, the gas phase mass transfer coefficient (k_G) calculated from the Sherwood number and Henry's constant (H) from Table 1, the liquid phase mass transfer coefficients (k_L) can be calculated from equation (3). This direct calculation approach worked well for compounds with dimensionless Henry's constants $>10^{-3}$. With smaller Henry's constants, however, the calculation failed (see column 4 in Table 4) due to error propagation: the calculation involves subtraction between two large numbers to yield a small number.

The authors then used a different method to estimate k_L. It has been reported that k_L is proportional to

Table 3. Experimental and calculated gas phase mass transfer coefficients (k_G) for water evaporation from small pools

Chamber	k_G (m/h)		Relative error (%)
	Experimental	Calculated (equation 11)	
1	14.2 ± 0.92 (n = 7)	16.8	17
2	22.3 ± 0.88 (n = 7)	22.0	–1.3

Table 4. Estimated liquid phase mass transfer coefficient (k_L) from experimental K_{OL}

Test no.	Compound	Chamber	Estimated k_L (m/h)	
			Direct from equation (3)	From equation (18)
1	Chloroform	1	5.71×10^{-3}	5.91×10^{-3}
2	Chloroform	2	5.62×10^{-3}	5.91×10^{-3}
3	Butyl acetate	1	5.52×10^{-3}	5.00×10^{-3}
4	Butyl acetate	2	5.84×10^{-3}	5.00×10^{-3}
5	Butyl acetate	1	4.23×10^{-3}	5.00×10^{-3}
6	Butyl acetate	2	4.60×10^{-3}	5.00×10^{-3}
7	Ethyl acetate	1	5.68×10^{-3}	5.55×10^{-3}
8	Ethyl acetate	2	6.42×10^{-3}	5.55×10^{-3}
9	1-Butanol	1	2.80×10^{-3}	5.63×10^{-3}
10	1-Butanol	2	2.49×10^{-3}	5.63×10^{-3}
11	1-Propanol	1	2.60×10^{-3}	6.04×10^{-3}
12	1-Propanol	2	3.83×10^{-3}	6.04×10^{-3}
13	Phenol	1	-2.71×10^{-4}	5.63×10^{-3}
14	Phenol	2	-3.00×10^{-4}	5.63×10^{-3}

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the square root of the molecular diffusivity in water (Mackay and Yeun, 1983). Since the diffusivity can be readily calculated by existing methods (Hayduk and Laudie, 1974), the problem is reduced to selecting a reference compound and estimating its k_L. The liquid phase mass transfer coefficient for a given compound X can then be calculated from equation (16), in which oxygen was chosen as the reference compound. It should be pointed out that any compound can serve as the reference. The only reason to select oxygen here is for comparison with the literature values.

$$k_L(X) = k_L(O_2)\sqrt{\frac{D_L(X)}{D_L(O_2)}} \quad (16)$$

Substituting equation (16) into equation (3) yields:

$$k_L(O_2) = \frac{k_G H K_{OL}}{k_G H - K_{OL}}\sqrt{\frac{D_L(O_2)}{D_L(X)}} \quad (17)$$

A single value of $k_L(O_2)$ was estimated by applying equation (17) to the 14 experimental K_{OL} values (Table 2). Other input data included H and $D_L(X)$ from Table 1, k_G from the Sherwood number and $D_L(O_2) = 1.07 \times 10^{-5}$ m^2/h at 23.5°C from the Hayduk and Laudie (1974) method. The non-linear regression yielded a $k_L(O_2)$ value of $(9.78 \pm 0.36) \times 10^{-3}$ m/h. This value is fairly close to the literature value of 0.0144 m/h for ambient water bodies suggested by Schwarzenbach *et al.* (1993). This agreement suggests that the area of the source does not affect k_L if the water is still.

Substituting the values for $k_L(O_2)$ and $D_L(O_2)$ into equation (16) gives:

$$k_L(X) = 2.99\sqrt{D_L(X)} \quad (18)$$

where $k_L(X)$ and $D_L(X)$ are in m/h and m^2/h, respectively. Equation (18) can be used to estimate k_L for any chemical emissions from still water. The estimated k_L values for the test compounds are presented in the last column of Table 4.

Calculation of K_{OL}

Using k_G from the Sherwood number and k_L from equation (18), one can calculate K_{OL} from equation (3). Figure 3 compares the calculated K_{OL} with the experimental values. On average, the relative predictive error was 22.1%. In general, compounds with smaller Henry's constants tend to have greater relative errors. A complete example of estimating K_{OL} is provided in the Appendix.

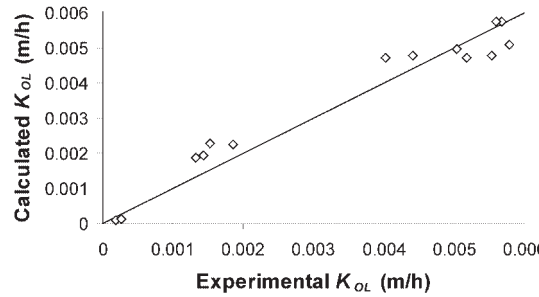


Fig. 3. Comparison between experimental and calculated overall liquid phase mass transfer coefficients. The solid line represents linearity.

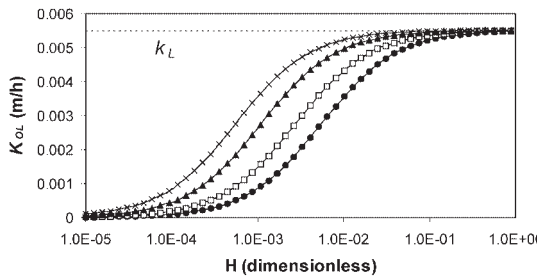


Fig. 4. Overall liquid phase mass transfer coefficient (K_{OL}) as a function of Henry's constant (H) and gas phase mass transfer coefficient (k_G). The curves from left to right are for k_G = 1, 2, 5 and 10 m/h, respectively.

DISCUSSION

Independent estimation of k_G and k_L allows one to study the effect of the Henry's constant on the overall mass transfer coefficient by using equation (3) or (4). Figure 4 shows K_{OL} as a function of H and k_G, assuming that the diffusivity in water is 3.6×10^{-6} m^2/h, which is roughly the average for the test compounds. When the Henry's constant becomes large, all curves converge to a single value of k_L. The curves do not converge to a single value, however, when the Henry's constant becomes very small. Assuming that the gas phase mass transfer coefficient typically varies from 1 to 10 m/h in indoor environments, the k_G/k_L ratio for still aqueous solutions would be in the range 180–1800. These values are significantly higher than the reported values (54–78) for a bathtub with a simulated person present (EPA, 2000).

As a practical matter, researchers often want to know under what conditions K_{OL} can be approximated by either k_L or k_G. There have been many discussions on this matter for the ambient environment (e.g. Munz and Roberts, 1989). In general, it depends on whether the gas or liquid phase mass transfer resistance is dominant in the overall mass transfer resistance ($1/K_{OL}$ or $1/K_{OL}$). Using the results of this work, Fig. 5 illustrates the contribution of the gas phase mass transfer resistance $1/(Hk_G)$ to $1/K_{OL}$

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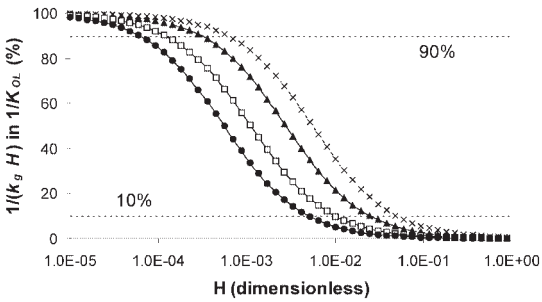


Fig. 5. Contribution of the gas phase mass transfer resistance $[1/(k_G H)]$ to the overall mass transfer resistance $(1/K_{OL})$. The curves from left to right are for k_G = 10, 5, 2 and 1 m/h, respectively.

as a function of H and k_G. For still water under indoor environmental conditions, the authors suggest that K_{OL} be approximated by k_L when $H > 10^{-1}$ and by k_G when $H < 10^{-4}$, where H is dimensionless.

Previous studies (for example, Schwarzenbach *et al.*, 1993) indicate that the depth of the water pool affects the liquid phase mass transfer coefficient. Thus, the applicability of equation (18) to liquid puddles and films is yet to be further evaluated. On the other hand, according to Schwarzenbach *et al.* (1993), the values of k_L for still water imply a 'stagnant water film' of no greater than 200 μm. We therefore speculate that equation (18) can be applied to liquid puddles and films with a depth >200 μm.

CONCLUSION

The emissions of six volatile organic compounds from pools of dilute aqueous solutions were tested under simulated indoor environmental conditions. These compounds cover a range of Henry's constant from 3.33×10^{-7} to 3.67×10^{-3} atm m^3/mol. The experimentally determined overall liquid phase mass transfer coefficient (K_{OL}) ranged from 2.68×10^{-4} to 5.68×10^{-3} m/h. Using these values, the liquid phase mass transfer coefficient (k_L) for still water was estimated to be $(9.78 \pm 0.36) \times 10^{-3}$ m/h for the reference compound (O_2). An empirical model was proposed to estimate K_{OL} and K_{OG} based on equations (3) and (4), respectively, with k_L calculated from equation (18) and k_G from the Sherwood number (equation 11). With this empirical model, one can use equations (1) and (2) as genuine predictive models for pollutant emissions from still aqueous solutions in indoor environments.

APPENDIX. AN EXAMPLE OF USING THE PROPOSED EMPIRICAL MODEL

Problem

Estimate the overall liquid phase mass transfer coefficient (K_{OL}) for 1-hexanal emissions from a water pool, given the following parameters: molecular formula, $C_6H_{12}O$; Henry's constant, 0.0105 (dimensionless); pool diameter, 0.20 m; air speed in room, 15 cm/s (540 m/h); air and liquid temperature, 25°C. Additional parameters needed for the calculation are summarized in Table A1. All the values are at 25°C.

Step 1: Calculate Schmidt number using equation (13)

$$S_c = \mu/(\rho D_a) = 66.8/(1180 \times 0.0270) = 2.097$$

Step 2: Calculate Reynolds number using equation (14)

$$R_e = (Lu\rho)/\mu = (0.447 \times 540 \times 1180)/66.8 = 4264$$

Step 3: Calculate Sherwood number using equation (12)

$$S_h = 0.664 S_c^{1/3} R_e^{1/2} = 0.664 \times 2.097^{1/3} \times 4262^{1/2} = 55.5$$

Step 4: Calculate k_G using equation (11)

$$k_G = (S_h D_a)/L = (55.5 \times 0.0270)/0.447 = 3.35 \text{ (m/h)}$$

Step 5: Calculate k_L using equation (16)

$$k_L(Hx) = 2.99\sqrt{D_L(Hx)}$$

$$k_L(Hx) = 2.99\sqrt{2.96 \times 10^{-6}} = 5.14 \times 10^{-3} \text{ m/h}$$

Step 6: Calculate K_{OL}

Rearranging equation (3) yields

Table A1. Additional parameters needed to calculate K_{OL} for 1-hexanal

Parameter	Symbol	Value	Data source or method
Density of air	ρ	1180 g/m^3	Literature
Viscosity of air	μ	66.8 g/h/m	Literature
Characteristic length of the pool	L	0.447 m	Square root of source area
Diffusivity in air for 1-hexanal	$D_a(Hx)$	2.70×10^{-2} m^2/h	FSG method[a]
Diffusivity in water for 1-hexanal	$D_L(Hx)$	2.78×10^{-6} m^2/h	Hayduk & Laudie method[b]

[a]Fuller *et al.* (1966).
[b]Hayduk and Laudie (1974).

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$$K_{OL} = (k_L k_G H)/(k_L + k_G H)$$

$$K_{OL} = \frac{5.14 \times 10^{-3} \times 3.35 \times 0.0105}{5.14 \times 10^{-3} + 3.35 \times 0.0105} = 4.48 \times 10^{-3}\ \text{m/h}$$

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Attachment 4
Historical Sampling Results for RMU-1 Leachate

		1208078-01	1202062-01	1107076-01	1102051-01	1007059-01	1002080-01	0907120-01	0902088-01	0807173-01	0802071-01	0707061-01	0702073-01	0607077-01
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L55	L55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55	L-55
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	90.1%	102%	101%	100%	92.0%	103%	101%	90.6%	106%	100%	99.6%	107%	113%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	90.6%	94.9%	98.8%	93.8%	90.0%	91.8%	96.6%	92.1%	104%	102%	91.5%	99.9%	102%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	101%	101%	102%	96.2%	93.1%	97.0%	100%	95.3%	107%	101%	96.5%	109%	104%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-02	1202062-02	1107076-02	1102051-02	1007059-02	1002080-02	0907120-02	0902088-02	902088-02RE	0807173-02	0802071-02	0707061-02	0702073-02	0607077-02
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L56	L56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56	L-56
1,1,1-Trichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	93.1%	102%	104%	102%	91.5%	106%	99.6%	90.7%	98.6%	104%	99.7%	97.4%	109%	111%
1,2-Dichloropropane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	53.3	<100	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	95.5%	93.5%	100%	96.1%	91.9%	96.2%	97.0%	90.9%	99.2%	104%	99.8%	91.8%	102%	100%
4-Methyl-2-pentanone	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	849	<50.0	877	<50.0	<50.0	<50.0	<50.0	1170	1070	<50.0	<50.0	<50.0	86.7	126
Benzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	106%	98.3%	104%	98.9%	93.8%	101%	98.7%	96.4%	103%	103%	99.3%	94.4%	109%	102%
trans-1,2-Dichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<100	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<100	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<300	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<100	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-03	1202062-03	1107076-03	1102051-03	1007059-03	1002080-03	0907120-03	0902088-03	0807173-03	0802071-03	0707061-03	0702073-03	0607077-03
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L57	L57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57	L-57
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	91.7%	101%	96.2%	99.8%	90.7%	105%	97.6%	93.1%	103%	99.8%	95.7%	105%	113%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	91.8%	95.2%	93.9%	94.4%	90.0%	94.6%	94.0%	94.8%	102%	102%	91.0%	101%	103%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	103%	97.7%	96.4%	97.0%	91.6%	99.8%	96.4%	99.0%	102%	102%	94.2%	107%	106%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-04	1202062-04	1107076-04	1102051-04	1007059-04	1002080-04	0907120-04	0905095-01	0902088-04	0807173-04	0802071-04	0707061-04	0702073-04	0607077-04
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	05/18/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L58	L58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58	L-58
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	87.6%	103%	101%	102%	93.1%	106%	96.8%	99.2%	92.3%	106%	100%	95.8%	109%	112%
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0 [1]	<50.0 [1]	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
4-Bromofluorobenzene	[surr]	88.5%	96.0%	98.6%	97.6%	91.5%	95.5%	92.0%	96.7%	96.2%	105%	100%	89.2%	99.3%	102%
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Toluene-d8	[surr]	98.8%	102%	101%	100%	94.0%	101%	96.6%	99.1%	101%	105%	99.1%	93.9%	110%	103%
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0 [1]	<50.0	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

		1208078-05	1202062-05	1107076-05	1102051-05	1007059-05	1002080-05	0907120-05	0902088-05	0807173-05	0802071-05	0707061-05	0702073-05	0607077-05
		08/22/12	02/14/12	07/19/11	02/15/11	07/13/10	02/18/10	07/21/09	02/17/09	07/29/08	02/13/08	07/12/07	02/12/07	07/14/06
Analyte	Units	L59	L59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59	L-59
1,1,1-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2,2-Tetrachloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1,2-Trichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloroethane-d4	[surr]	90.8%	106%	103%	103%	92.8%	107%	100%	<100	<100	<100	<200	<50.0	<50.0
1,2-Dichloropropane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100 [1]	<200 [1]	<50.0 [1]	<50.0
1,3-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
1,4-Dichlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Butanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Chloroethylvinyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
2-Hexanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
4-Bromofluorobenzene	[surr]	91.0%	96.2%	97.7%	97.1%	91.2%	95.7%	97.6%	<100	<100	<100	<200	<50.0	<50.0
4-Methyl-2-pentanone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	95.4%	103%	97.3%	95.3%	108%	112%
Acetone	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Benzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromodichloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromoform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Bromomethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Carbon disulfide	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Carbon tetrachloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chlorobenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100 [1]	<200	<50.0	<50.0
Chloroethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chloroform	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Chloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
cis-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Dibromochloromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Diethyl ether	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Ethyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Ethylbenzene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Methylene chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Styrene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Tetrachloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	102%	102%	97.0%	92.8%	109%	102%
Toluene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Toluene-d8	[surr]	101%	103%	104%	100%	94.7%	100%	98.2%	<100	<100	<100	<200	<50.0	<50.0
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
trans-1,3-Dichloropropene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	97.9%	102%	98.0%	89.5%	100%	100%
Trichloroethene	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Trichlorofluoromethane	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Vinyl acetate	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0
Vinyl chloride	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0 [2]	<50.0	<50.0	<100	<100	<100 [1]	<200	<50.0	<50.0
Xylenes, total	ug/L	<150	<150	<150	<150	<50.0	<50.0	<50.0	<100	<100	<100	<200	<50.0	<50.0

		1302105-01	1211120-01	1208112-01	1205142-01	1202076-01	1112105-01	1111006-01	1102051-06	1012072-01	1007059-06	1005079-01	1002080-06	0912112-01	0907120-06	0905095-02	0902088-06
		02/25/13	11/30/12	08/30/12	05/25/12	02/16/12	12/22/11	11/01/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/21/09	07/21/09	05/18/09	02/17/09
Analyte	Units	L60	L60	L60	L60	L60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,2-Dichloroethane-d4	[surr]	104%	107%	98.2%	92.7%	103%	104%	99.6%	102%	110%	92.0%	89.9%	104%	95.8%	97.6%	99.1%	93.1%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
2-Butanone	ug/L	<200	<200	270	<200	349	242	122	137	152	201	189	212	140	271	385	<100
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
4-Bromofluorobenzene	[surr]	101%	100%	93.6%	89.3%	97.0%	93.6%	96.1%	95.0%	102%	92.3%	94.8%	93.2%	98.1%	96.1%	97.0%	94.3%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	105	<100	<100	<100	<100	130	<100	105	<100	<200	175	<100
Acetone	ug/L	<200	318	640	516	924	764	448	593	558	645	619	805	646	1050	1340	338
Benzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Styrene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Toluene-d8	[surr]	107%	105%	98.7%	94.0%	99.1%	99.6%	101%	98.5%	103%	92.6%	96.4%	100%	99.9%	96.8%	98.1%	98.1%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<50.0	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<100	<100 [4]	<100	<100	<100	<200	<50.0	<100
Xylenes, total	ug/L	<600	<600	<600	<600	<300	<300	<300	<300	<100	<100	<100	<100	<100	<200	<50.0	<100

		0812030-01	0807173-06	0805043-01	0802071-06	0712071-01	0707061-06	0705127-01	0702073-06	702073-06RE	0612057-01	0607077-06	0605021-01
		12/05/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	07/14/06	05/02/06
Analyte	Units	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60	L-60
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,2-Dichloroethane-d4	[surr]	93.6%	106%	102%	99.1%	106%	98.4%	115%	113%	78.3%	117%	110%	106%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
2-Butanone	ug/L	<200	205	255	222	<100	<200	<200	482	295	239	124	240
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200 [1]	<100 [1]	<200 [1]	<200 [1]	<50.0 [1]	<200 [1]	<100	<50.0	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
4-Bromofluorobenzene	[surr]	96.2%	104%	104%	102%	104%	91.6%	99.1%	104%	93.6%	107%	101%	96.7%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<100	<200	<200	247	<200	<100	60.7	118
Acetone	ug/L	543	954	1270	955	153	728	716	2480 [2]	1320	1190	385	1110
Benzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Styrene	ug/L	<200	<200	<200	<200 [1]	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Toluene-d8	[surr]	101%	107%	106%	99.9%	104%	97.0%	95.4%	114%	100%	108%	101%	103%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100
Vinyl chloride	ug/L	<200	<200	<200	<200 [1]	<100	<200	<200	75.1	<200	<100	<50.0	<100
Xylenes, total	ug/L	<200	<200	<200	<200	<100	<200	<200	<50.0	<200	<100	<50.0	<100

		1302105-02	1211120-02	1208078-06	1205142-02	1202062-06	1112105-02	1107076-06	1105128-01	1102051-07	1012072-02	1007059-07	1005079-02	1002080-07	0912057-01	0907120-07	0905095-03	0902088-07	0812030-02
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09	12/05/08
Analyte	Units	L61	L61	L61	L61	L61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61
1,1,1-Trichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1,2-Trichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1-Dichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,1-Dichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,2-Dichloroethane-d4	[surr]	101%	111%	90.1%	96.1%	104%	104%	102%	102%	98.8%	106%	90.9%	92.4%	101%	99.5%	99.7%	100%	97.7%	92.1%
1,2-Dichloropropane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,3-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
1,4-Dichlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
2-Butanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
2-Chloroethylvinyl ether	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
2-Hexanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
4-Bromofluorobenzene	[surr]	96.1%	103%	91.1%	89.1%	97.0%	97.1%	99.5%	96.4%	97.5%	99.9%	91.8%	97.2%	92.8%	99.3%	96.0%	97.7%	101%	96.9%
4-Methyl-2-pentanone	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Acetone	ug/L	<200	<200	<500	435	<100	265	<100	<100	234	107	128	613	<100	<100	<100	<100	<100	360
Benzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromodichloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromoform	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Bromomethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Carbon disulfide	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Carbon tetrachloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chlorobenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloroethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloroform	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Chloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
cis-1,3-Dichloropropene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Dibromochloromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Diethyl ether	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Ethyl acetate	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Ethylbenzene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Methylene chloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Styrene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
Tetrachloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Toluene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Toluene-d8	[surr]	102%	107%	102%	95.4%	101%	99.9%	101%	99.3%	97.0%	101%	92.5%	97.6%	97.4%	102%	98.2%	99.9%	102%	101%
trans-1,2-Dichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
trans-1,3-Dichloropropene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Trichloroethene	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Trichlorofluoromethane	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Vinyl acetate	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Vinyl chloride	ug/L	<200	<200	<500	<200	<100	<100	<100	<100	<100	<100	<100 [6]	<100	<100	<100	<100	<100	<100	<200
Xylenes, total	ug/L	<600	<600	<1500	<600	<300	<300	<300	<300	<300	<100	<100	<100	<100	<100	<100	<100	<100	<200

		0807173-07	0802071-07	0707061-07	0705127-02	0702073-07	702073-07RE	0612057-02	612057-02RE	0607077-07	607077-07RE	0605021-02	605021-02RE	605021-02RE2
		07/29/08	02/13/08	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	12/07/06	07/14/06	07/14/06	05/02/06	05/02/06	05/02/06
Analyte	Units	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61	L-61
1,1,1-Trichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1,2-Trichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1-Dichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,1-Dichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,2-Dichloroethane-d4	[surr]	100%	98.4%	94.9%	116%	111%	79.3%	112%	112%	109%	103%	98.9%	52.0%	96.3%
1,2-Dichloropropane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,3-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
1,4-Dichlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
2-Butanone	ug/L	<500	<500	<1000	<1000	1080 [2]	<1000	213	<200	905	<1000	865	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<500	<500 [1]	<1000 [1]	<1000 [1]	<50.0 [1]	<1000 [1]	<100	<200 [3]	<50.0	<1000	<100	<1000	<1000
2-Hexanone	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
4-Bromofluorobenzene	[surr]	98.5%	98.2%	89.6%	102%	104%	93.2%	103%	102%	97.0%	95.6%	93.4%	48.1%	92.1%
4-Methyl-2-pentanone	ug/L	<500	<500	<1000	<1000	470	<1000	<100	<200	258	<1000	330	<1000	<1000
Acetone	ug/L	7480	909	7100	6150	9050 [2]	6470	2610 [2]	2250	12000 [2]	8280	10400 [2]	8580	8990 [4]
Benzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromodichloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromoform	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Bromomethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Carbon disulfide	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	50.7	<1000	<100	<1000	<1000
Carbon tetrachloride	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chlorobenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloroethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloroform	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Chloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Dibromochloromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Diethyl ether	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Ethyl acetate	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Ethylbenzene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Methylene chloride	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Styrene	ug/L	<500	<500 [1]	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Tetrachloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Toluene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Toluene-d8	[surr]	98.7%	99.5%	92.8%	97.2%	112%	99.8%	103%	105%	100%	95.5%	100%	51.7%	98.5%
trans-1,2-Dichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Trichloroethene	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Trichlorofluoromethane	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Vinyl acetate	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Vinyl chloride	ug/L	<500	<500 [1]	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000
Xylenes, total	ug/L	<500	<500	<1000	<1000	<50.0	<1000	<100	<200	<50.0	<1000	<100	<1000	<1000

		1302105-03	1211120-03	1208078-07	1205142-03	1202062-07	1112105-03	1107076-07	1105128-02	1102051-08	1012072-03	1007059-08	1005079-03	1002080-08	0912057-02	0907120-08	0905095-04	0902088-08
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09
Analyte	Units	L62	L62	L62	L62	L62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,2-Dichloroethane-d4	[surr]	99.8%	113%	92.1%	107%	104%	103%	104%	101%	107%	114%	90.4%	90.2%	107%	100%	94.9%	99.1%	95.1%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
2-Butanone	ug/L	<200	<200	<200	<200	<100	<100	125	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
4-Bromofluorobenzene	[surr]	96.9%	106%	94.7%	102%	96.8%	94.4%	99.0%	97.7%	100%	102%	91.6%	90.1%	95.2%	98.3%	91.7%	97.0%	97.9%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Acetone	ug/L	400	<200	650	<200	171	263	1490	<100	349	<50.0	103	<100	117	571	616	299	306
Benzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Bromoform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
Bromomethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloroethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloroform	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Chloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Styrene	ug/L	<600	<600	<600	<600	<300	<300	<300	<300	<150	<50.0	<100	<100	<100	<100	<100	<100	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Toluene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Toluene-d8	[surr]	103%	111%	105%	107%	103%	99.9%	103%	99.6%	100%	102%	94.0%	94.4%	101%	102%	94.7%	98.2%	100%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100 [3]	<100	<100	<100	<100	<100	<100
Xylenes, total	ug/L	<200	<200	<200	<200	<100	<100	<100	<100	<50.0	<50.0	<100	<100	<100	<100	<100	<100	<100

		0812030-03	0807173-08	807173-08RE	0805043-02	0802071-08	0712071-02	0707061-08	0705127-03	0702073-08	0612057-03	0607077-08	0605021-03
		12/05/08	07/29/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	12/07/06	07/14/06	05/02/06
Analyte	Units	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62	L-62
1,1,1-Trichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1,2-Trichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1-Dichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,1-Dichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,2-Dichloroethane-d4	[surr]	94.4%	106%	109%	98.8%	105%	108%	91.6%	118%	109%	115%	112%	99.2%
1,2-Dichloropropane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,3-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
1,4-Dichlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
2-Butanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
2-Chloroethylvinyl ether	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200 [1]	<200 [1]	<50.0 [1]	<50.0 [1]	<100	<50.0	<100
2-Hexanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
4-Bromofluorobenzene	[surr]	97.8%	106%	107%	103%	103%	106%	85.4%	99.1%	101%	105%	106%	92.7%
4-Methyl-2-pentanone	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Acetone	ug/L	1990	2230	2690	686	229	340	1980	194	<50.0	<100	120	<100
Benzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromodichloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromoform	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Bromomethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Carbon disulfide	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Carbon tetrachloride	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chlorobenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloroethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloroform	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Chloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Dibromochloromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Diethyl ether	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Ethyl acetate	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Ethylbenzene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Methylene chloride	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Styrene	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200	<200	<50.0	<50.0	<100	<50.0	<100
Tetrachloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Toluene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Toluene-d8	[surr]	102%	106%	106%	103%	106%	106%	89.3%	95.8%	111%	105%	103%	99.1%
trans-1,2-Dichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Trichloroethene	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Trichlorofluoromethane	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Vinyl acetate	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100
Vinyl chloride	ug/L	<100	<100	<200	<100 [1]	<100 [1]	<200	<200	<50.0	<50.0	<100	<50.0	<100
Xylenes, total	ug/L	<100	<100	<200	<100	<100	<200	<200	<50.0	<50.0	<100	<50.0	<100

		1302105-04	1211120-04	1208078-08	1205142-04	1202062-08	1112105-04	1107076-08	1105128-03	1102051-09	1012072-04	1007059-09	1005079-04	1002080-09	0912057-03	0907120-09	0905095-05
		02/25/13	11/30/12	08/22/12	05/25/12	02/14/12	12/22/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09
Analyte	Units	L63	L63	L63	L63	L63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63
1,1,1-Trichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2,2-Tetrachloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1,2-Trichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1-Dichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,1-Dichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,2-Dichloroethane-d4	[surr]	104%	108%	91.1%	97.2%	96.2%	99.3%	99.8%	103%	102%	113%	87.9%	89.6%	104%	100%	99.4%	99.0%
1,2-Dichloropropane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,3-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
1,4-Dichlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
2-Butanone	ug/L	305	302	239	<200	<200	331	293	<100	266	216	399	472	699	420	673	877
2-Chloroethylvinyl ether	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
2-Hexanone	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
4-Bromofluorobenzene	[surr]	99.6%	102%	92.4%	94.0%	90.2%	93.3%	97.7%	97.7%	96.9%	104%	87.5%	93.9%	94.5%	98.1%	97.9%	95.5%
4-Methyl-2-pentanone	ug/L	<200	<200	<200	<200	<200	180	<200	<100	<200	<200	255	296	328	<200	<500	446
Acetone	ug/L	860	1260	1040	735	511	1300	889	164	985	846	1180	1330	2520	1210	2090	2880
Benzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromodichloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromoform	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Bromomethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Carbon disulfide	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Carbon tetrachloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chlorobenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloroethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloroform	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Chloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
cis-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Dibromochloromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Diethyl ether	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Ethyl acetate	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Ethylbenzene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Methylene chloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Styrene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
Tetrachloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Toluene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Toluene-d8	[surr]	106%	105%	104%	98.7%	96.9%	98.4%	100%	101%	98.0%	106%	89.3%	96.1%	99.7%	103%	98.8%	97.9%
trans-1,2-Dichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
trans-1,3-Dichloropropene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Trichloroethene	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Trichlorofluoromethane	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Vinyl acetate	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200	<200	<200	<200	<500	<100
Vinyl chloride	ug/L	<200	<200	<200	<200	<200	<100	<200	<100	<200	<200	<200 [5]	<200	<200	<200	<500	<100
Xylenes, total	ug/L	<600	<600	<600	<600	<600	<300	<600	<300	<600	<200	<200	<200	<200	<200	<500	<100

		0902088-09	0812030-04	0807173-09	0805043-03	0802071-09	0712071-03	0707061-09	0705127-04	0702073-09	0612057-04	0610203-01	0607077-09	0605021-04
		02/17/09	12/05/08	07/29/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	12/07/06	10/20/06	07/14/06	05/02/06
Analyte	Units	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63	L-63
1,1,1-Trichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2,2-Tetrachloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1,2-Trichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,1-Dichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	11.8	<50.0	<100
1,1-Dichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,2-Dichloroethane-d4	[surr]	94.4%	93.8%	103%	103%	99.1%	104%	91.9%	117%	111%	116%	207%	109%	98.5%
1,2-Dichloropropane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,3-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
1,4-Dichlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
2-Butanone	ug/L	<100	127	<100	111	<100	<100	<100	121	146	<100	502	55.0	<100
2-Chloroethylvinyl ether	ug/L	<100	<100	<100	<100	<100 [1]	<100 [1]	<100 [1]	<50.0	<50.0 [1]	<100	<10.0	<50.0	<100
2-Hexanone	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
4-Bromofluorobenzene	[surr]	95.5%	97.3%	103%	104%	102%	101%	86.8%	100%	103%	105%	194%	98.5%	92.6%
4-Methyl-2-pentanone	ug/L	<100	<100	<100	<100	<100	<100	<100	60.7	92.4	<100	232	<50.0	<100
Acetone	ug/L	945	852	312	507	350	280	256	637	903	634	2240	287	<100
Benzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromodichloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromoform	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Bromomethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Carbon disulfide	ug/L	<100	<100	<100	<100	281	223	<100	121	495	<100	1090	76.4	<100
Carbon tetrachloride	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chlorobenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloroethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloroform	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Chloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
cis-1,3-Dichloropropene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Dibromochloromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Diethyl ether	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Ethyl acetate	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Ethylbenzene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Methylene chloride	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Styrene	ug/L	<100	<100	<100	<100	<100 [1]	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Tetrachloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Toluene	ug/L	629	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	22.9	<50.0	<100
Toluene-d8	[surr]	99.0%	102%	102%	105%	101%	101%	88.8%	95.5%	112%	106%	204%	100%	101%
trans-1,2-Dichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
trans-1,3-Dichloropropene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Trichloroethene	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Trichlorofluoromethane	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Vinyl acetate	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100
Vinyl chloride	ug/L	<100	<100	<100	<100	<100 [1]	<100	<100	55.8	<50.0	<100	142	<50.0	<100
Xylenes, total	ug/L	<100	<100	<100	<100	<100	<100	<100	<50.0	<50.0	<100	<10.0	<50.0	<100

		1302105-05	1211120-05	1208078-09	1205142-05	1202076-02	1112081-01	1107076-09	1105128-04	1102051-10	1012072-05	1007059-10	1005079-05	1002080-10	0912057-04	0907120-10	0905095-06	0902088-10	0807173-10
		02/25/13	11/30/12	08/22/12	05/25/12	02/16/12	12/19/11	07/19/11	05/23/11	02/15/11	12/15/10	07/13/10	05/18/10	02/18/10	12/10/09	07/21/09	05/18/09	02/17/09	07/29/08
Analyte	Units	L64	L64	L64	L64	L64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64
1,1,1-Trichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2,2-Tetrachloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1,2-Trichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1-Dichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,1-Dichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,2-Dichloroethane-d4	[surr]	103%	108%	92.7%	93.7%	105%	96.5%	98.6%	102%	102%	113%	89.8%	90.7%	105%	95.8%	100%	102%	95.2%	102%
1,2-Dichloropropane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,3-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
1,4-Dichlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
2-Butanone	ug/L	<10000	<10000	<10000	<5000	4880	<1000	<2500	<1000	<1000	<2500	<1000	<1000	668	<500	<1000	822	<200	<500
2-Chloroethylvinyl ether	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
2-Hexanone	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
4-Bromofluorobenzene	[surr]	99.7%	105%	94.4%	89.8%	98.5%	94.2%	98.2%	97.3%	95.8%	103%	91.0%	93.5%	94.4%	94.5%	97.6%	98.8%	96.5%	100%
4-Methyl-2-pentanone	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	344	<200	<500
Acetone	ug/L	27700	98600	114000	51600	56800	12700	19900	12100	13800	45800	24300	10100	16400	1570	11800	7500 [4]	560	20200 [2]
Benzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromodichloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromoform	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Bromomethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Carbon disulfide	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Carbon tetrachloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chlorobenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloroethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloroform	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Chloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
cis-1,3-Dichloropropene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Dibromochloromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Diethyl ether	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Ethyl acetate	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Ethylbenzene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Methylene chloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Styrene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
Tetrachloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Toluene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	1120	<2500	<1000	<1000	<500	<500	<1000	216	<200	638
Toluene-d8	[surr]	103%	107%	105%	94.4%	101%	100%	99.8%	99.9%	96.8%	105%	92.3%	94.5%	100%	97.6%	99.1%	99.9%	101%	101%
trans-1,2-Dichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
trans-1,3-Dichloropropene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Trichloroethene	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Trichlorofluoromethane	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Vinyl acetate	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500
Vinyl chloride	ug/L	<10000	<10000	<10000	<5000	<2500	<1000	<2500	<1000	<1000	<2500	<1000 [5]	<1000	<500	<500	<1000	<100	<200	<500
Xylenes, total	ug/L	<30000	<30000	<30000	<15000	<7500	<3000	<7500	<3000	<3000	<2500	<1000	<1000	<500	<500	<1000	<100	<200	<500

		807173-10RE	0805043-04	805043-04RE	0802071-10	0712071-04	0707061-10	0705127-05	0702073-10	702073-10RE	0612057-05	0607077-10	607077-10RE	0605021-05	605021-05RE	605021-05RE2
		07/29/08	05/08/08	05/08/08	02/13/08	12/13/07	07/12/07	05/17/07	02/12/07	02/12/07	12/07/06	07/14/06	07/14/06	05/02/06	05/02/06	05/02/06
Analyte	Units	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64	L-64
1,1,1-Trichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1,2-Trichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1-Dichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,1-Dichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,2-Dichloroethane-d4	[surr]	104%	101%	98.7%	97.3%	103%	96.1%	117%	107%	73.7%	115%	106%	104%	100%	52.3%	94.6%
1,2-Dichloropropane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,3-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
1,4-Dichlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
2-Butanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	58.0	<1000	<100	452	<2500	342	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<2500	<500	<2500	<1000 [1]	<2500 [1]	<2500 [1]	<1000 [1]	<50.0 [1]	<1000 [1]	<100	<50.0	<2500	<100	<1000	<1000
2-Hexanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
4-Bromofluorobenzene	[surr]	104%	104%	103%	96.4%	103%	87.9%	100%	99.7%	89.2%	104%	95.8%	94.5%	95.0%	48.1%	92.6%
4-Methyl-2-pentanone	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	102	<2500	109	<1000	<1000
Acetone	ug/L	6630 [4]	17000 [2]	8670 [4]	1000	8780	34300	2480	14500 [2]	10300	1520	20900 [2]	13300	16500 [2]	12700	12600 [3]
Benzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromodichloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromoform	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Bromomethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Carbon disulfide	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Carbon tetrachloride	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chlorobenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloroethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloroform	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Chloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Dibromochloromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Diethyl ether	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Ethyl acetate	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Ethylbenzene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Methylene chloride	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Styrene	ug/L	<2500	<500	<2500	<1000 [1]	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Tetrachloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Toluene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	2050 [2]	1790	1130	543	<2500	871	<1000	<1000
Toluene-d8	[surr]	104%	104%	102%	98.0%	101%	91.1%	95.3%	109%	93.6%	104%	97.5%	94.8%	102%	51.1%	99.2%
trans-1,2-Dichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Trichloroethene	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Trichlorofluoromethane	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Vinyl acetate	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000
Vinyl chloride	ug/L	<2500	<500	<2500	<1000 [1]	<2500	<2500	<1000	84.5	<1000	<100	<50.0	<2500	<100	<1000	<1000
Xylenes, total	ug/L	<2500	<500	<2500	<1000	<2500	<2500	<1000	<50.0	<1000	<100	<50.0	<2500	<100	<1000	<1000

		1304080-06	1304062-06	1304052-06	1304045-06	1304041-06	1304036-06	1304035-03	1304014-06	1304011-06	1304010-03	1303119-06	1303105-06	1303098-06	1303097-03	1303061-06	1303055-06	1303052-06	1303051-01	1303019-06	1303011-06	1303010-06	1303009-06	1302122-06	1302114-06
		04/17/13	04/13/13	04/12/13	04/11/13	04/10/13	04/09/13	04/08/13	04/03/13	04/02/13	04/01/13	03/26/13	03/22/13	03/21/13	03/20/13	03/14/13	03/13/13	03/12/13	03/11/13	03/05/13	03/04/13	03/03/13	03/02/13	02/28/13	02/27/13
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	4/17/2013 7:0	4/15/2013 6:2	4/12/2013 6:4	4/11/2013 7:0	4/10/2013 6:3	4/9/2013 6:55	4/9/2013 6:55	4/3/2013 6:45	4/2/2013 6:44	4/2/2013 6:48	3/26/2013 6:1	3/22/2013 6:3	3/21/2013 7:0	3/21/2013 7:0	3/14/2013 6:3	3/13/2013 6:1	3/12/2013 6:4	3/12/2013 6:4	3/5/2013 6:3	3/4/2013 6:40	3/4/2013 6:40	3/4/2013 6:40	2/28/2013 6:3	2/27/2013 6:3
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	2570	2510	2850	4720	6000	5810	6200	<2500	36500	37400	4590	4910	5480	5480	3300	3490	3390	3980	3140	3150	2870	3140	16100	11300
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1140	<1000	<1000	<1000	<1000	6420	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	107%	109%	106%	107%	106%	105%	107%	109%	109%	106%	104%	103%	104%	105%	104%	102%	103%	104%	109%	107%	111%	111%	102%	110%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1290	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	104%	108%	106%	104%	105%	105%	107%	102%	103%	101%	103%	103%	104%	105%	105%	102%	104%	104%	106%	106%	104%	106%	100%	107%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	96.7%	99.8%	100%	100%	100%	103%	107%	99.4%	102%	98.9%	99.4%	101%	101%	103%	101%	99.6%	100%	100%	99.2%	101%	97.3%	99.7%	99.3%	104%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<7500	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

		1302113-03	1302083-06	1302076-06	1302065-06	1302059-06	1302049-06	1302041-06	1302040-03	1302019-06	1302016-06	1302001-06	1301138-06	1301126-06	1301122-06	1301094-06	1301083-06	1301082-06	1301073-01	1301061-06	1301053-06	1301047-03	1301018-06	1301005-01	1301001-06
		02/26/13	02/20/13	02/19/13	02/15/13	02/14/13	02/13/13	02/12/13	02/11/13	02/06/13	02/05/13	02/01/13	01/31/13	01/30/13	01/29/13	01/23/13	01/21/13	01/20/13	01/18/13	01/16/13	01/15/13	01/14/13	01/07/13	01/02/13	01/01/13
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	2/26/2013 1:1	2/20/2013 6:2	2/19/2013 6:2	2/15/2013 6:4	2/14/2013 6:3	2/13/2013 6:3	2/12/2013 6:3	2/12/2013 6:2	2/6/2013 6:39	2/5/2013 6:48	2/1/2013 7:0	1/31/2013 6:3	1/30/2013 6:4	1/29/2013 6:2	1/23/2013 7:0	1/21/2013 6:4	1/21/2013 6:4	1/18/2013 8:3	1/16/2013 6:4	1/15/2013 6:3	1/14/2013 10	1/7/2013 6:36	1/2/2013 9:56	1/2/2013 6:25
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	3380	5190	14800	3930	3420	4090	<2500	<2500	3990	3430	2900	2900	3920	5460	3620	3750	3540	3040	2690	3280	6230	6230	5410	5590
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	1410	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	94.2%	107%	111%	107%	104%	112%	111%	111%	107%	102%	106%	107%	110%	106%	106%	107%	106%	108%	109%	107%	95.2%	103%	102%	105%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	99.3%	102%	106%	103%	102%	107%	106%	107%	104%	101%	100%	104%	106%	102%	105%	104%	100%	104%	104%	105%	96.0%	103%	99.6%	103%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	96.7%	92.2%	97.2%	94.9%	96.5%	100%	100%	98.4%	96.9%	93.2%	95.3%	97.6%	99.8%	95.9%	95.6%	96.0%	92.9%	95.9%	95.5%	96.2%	92.6%	97.3%	95.2%	98.1%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

		1212128-03	1212109-03	1212107-06	1212106-03	1212097-06	1212085-06	1212079-03	1212073-03	1212046-03	1212040-06	1212033-06	1212015-06	1212012-03	1211117-03	1211084-06	1211039-06	1211038-06	1211037-06	1211033-06	1211015-06	1211014-06	1211009-06	1211004-06	1210148-06
		12/31/12	12/26/12	12/25/12	12/24/12	12/21/12	12/19/12	12/18/12	12/17/12	12/12/12	12/11/12	12/10/12	12/05/12	12/04/12	11/29/12	11/21/12	11/12/12	11/11/12	11/10/12	11/09/12	11/05/12	11/04/12	11/02/12	11/01/12	10/31/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	12/31/2012 1	12/26/2012 1	12/26/2012 8	12/24/2012 1	12/21/2012 6	12/19/2012 6	12/18/2012 1	12/17/2012 1	12/12/2012 1	12/11/2012 6	12/10/2012 6	12/5/2012 6:5	12/4/2012 11	11/30/2012 6	11/21/2012 6	11/12/2012 6	11/12/2012 6	11/12/2012 6	11/9/2012 6:2	11/5/2012 6:3	11/5/2012 6:3	11/2/2012 8:4	11/1/2012 10	10/31/2012 6
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	5620	4270	3900	3710	5040	4810	6160	5680	5660	5270	5770	5460	5830	7480	5440	4350	3610	4220	3290	1890	1760	1080	<1000	<1000
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	105%	109%	109%	108%	113%	105%	107%	91.5%	99.7%	101%	103%	99.3%	102%	114%	109%	105%	107%	105%	100%	106%	106%	100%	92.2%	90.6%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	102%	105%	107%	106%	109%	104%	110%	90.7%	95.5%	95.0%	96.9%	94.5%	96.7%	108%	105%	104%	106%	104%	100%	108%	106%	102%	94.3%	93.9%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	98.9%	101%	105%	101%	105%	102%	105%	83.1% [2]	87.4%	89.5%	91.0%	90.9%	94.4%	105%	101%	99.1%	100%	98.9%	95.4%	102%	99.3%	96.9%	89.8%	88.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<1500	<1500	<1500	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<500	<500	<500	<1000	<1000	<1000	<1000	<1000	<1000

		1210142-06	1210132-06	1210131-06	1210130-06	1210126-06	1210120-06	1210113-06	1210109-06	1210094-03	1210079-06	1210074-03	1210067-06	1210062-06	1210059-03	1210015-06	1210005-03	1209126-06	1209123-06	1209124-03	1209094-06	1209087-03	1209081-06	1209077-06	1209071-06
		10/30/12	10/29/12	10/28/12	10/27/12	10/26/12	10/25/12	10/24/12	10/23/12	10/19/12	10/16/12	10/15/12	10/12/12	10/11/12	10/10/12	10/02/12	10/01/12	09/28/12	09/27/12	09/26/12	09/20/12	09/18/12	09/16/12	09/15/12	09/14/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	10/30/2012 6	10/29/2012 6	10/29/2012 6	10/29/2012 6	10/26/2012 6	10/25/2012 6	10/24/2012 6	10/23/2012 6	10/19/2012 1	10/16/2012 6	10/15/2012 1	10/12/2012 8	10/11/2012 6	10/10/2012 1	10/2/2012 7:(	10/1/2012 11	9/28/2012 7:(	9/27/2012 10	9/27/2012 11	9/20/2012 8:3	9/18/2012 1:3	9/17/2012 9:4	9/17/2012 9:3	9/14/2012 7:(
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	<1000	<1000	1740	<1000	3340	3390	4510	6350	8610	6330	11800	4420	1670	<1000	7030	7450	3710	4670	4280	6660	6250	4800	4090	<1000
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1810	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	94.4%	94.5%	96.0%	94.8%	94.3%	89.7%	92.8%	94.7%	109%	115%	120% [1]	114%	108%	108%	101%	113%	105%	104%	108%	100%	102%	96.8%	101%	90.2%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	97.4%	94.2%	97.4%	94.8%	94.4%	91.7%	95.3%	93.7%	104%	99.7%	108%	100%	95.6%	98.0%	93.1%	102%	98.5%	98.3%	101%	97.3%	99.4%	94.7%	102%	95.7%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	92.4%	89.3%	92.6%	91.9%	90.7%	89.5%	94.4%	92.3%	102%	98.4%	105%	98.7%	95.6%	95.2%	91.6%	101%	97.8%	95.1%	99.7%	95.7%	99.1%	93.6%	100%	93.0%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<7500	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<2500	<1000	<1000	<1000	<1000	<1000

		1209063-06	1209052-06	1209044-06	1209035-06	1209034-06	1209033-06	1209032-03	1209013-06	1209012-03	1208113-06	1208108-06	1208104-06	1208097-06	1208075-06	1208074-03	1208053-06	1208040-06	1208030-03	1208016-06	1208014-03	1207108-03	1207102-06	1207100-06	1207098-03
		09/13/12	09/12/12	09/11/12	09/10/12	09/09/12	09/08/12	09/07/12	09/05/12	09/04/12	08/31/12	08/30/12	08/29/12	08/28/12	08/22/12	08/21/12	08/15/12	08/10/12	08/09/12	08/07/12	08/06/12	07/30/12	07/27/12	07/26/12	07/25/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	9/13/2012 7:0	9/12/2012 7:0	9/11/2012 8:2	9/10/2012 7:0	9/10/2012 7:0	9/10/2012 7:0	9/10/2012 7:0	9/5/2012 7:0	9/5/2012 7:0	8/31/2012 7:0	8/30/2012 8:2	8/29/2012 7:0	8/28/2012 7:0	8/22/2012 7:0	8/22/2012 7:0	8/15/2012 7:0	8/10/2012 7:0	8/9/2012 11:2	8/7/2012 7:0	8/6/2012 9:1	7/30/2012 10	7/27/2012 8:3	7/26/2012 11	7/26/2012 9:3
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Acetone	ug/L	1350	1640	3080	2680	6280	3960	4660	9000	8200	1920	2350	2060	7150	4130	4530	4860	2110	3470	4250	9780	7210	4640	4930	13400
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichloroethane-d4	[surr]	86.0%	95.7%	93.3%	101%	89.7%	102%	102%	101%	101%	99.1%	96.4%	98.3%	97.8%	91.6%	93.2%	104%	98.2%	104%	103%	109%	89.6%	102%	102%	101%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Toluene-d8	[surr]	94.6%	97.4%	97.8%	97.1%	94.7%	95.9%	96.8%	96.6%	97.4%	96.9%	94.1%	97.3%	95.8%	104%	105%	104%	101%	101%	99.7%	104%	101%	102%	100%	83.2% [1]
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
4-Bromofluorobenzene	[surr]	93.0%	95.2%	95.0%	95.1%	93.8%	94.9%	95.5%	95.0%	95.4%	95.2%	91.9%	94.7%	93.0%	93.7%	95.7%	97.6%	94.7%	97.3%	94.0%	101%	99.0%	97.9%	96.4%	87.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<7500	<7500	<3000	<3000	<7500	<3000	<3000	<3000	<3000	<7500	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<2500	<2500	<1000	<1000	<2500	<1000	<1000	<1000	<1000	<2500	<1000

		1207071-06	1207067-06	1207063-03	1207045-06	1207035-06	1207034-01	1207009-06	1206099-06	1206098-03	1206077-06	1206076-03	1206061-06	1206056-06	1206055-03	1206017-06	1206013-06	1206009-03	1206005-04	1205167-03	1205160-06	1205117-06	1205097-06	1205084-06	1205074-06
		07/19/12	07/18/12	07/17/12	07/12/12	07/11/12	07/10/12	07/03/12	06/26/12	06/25/12	06/19/12	06/18/12	06/14/12	06/13/12	06/12/12	06/06/12	06/05/12	06/04/12	06/03/12	05/31/12	05/30/12	05/22/12	05/17/12	05/15/12	05/14/12
		T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102	T-102
Analyte	Units	7/19/2012 7:(	7/18/2012 7:(	7/17/2012 10	7/12/2012 7:(	7/11/2012 7:(	7/11/2012 7:(	7/3/2012 7:44	6/26/2012 7:(	6/25/2012 1:1	6/19/2012 7:(	6/19/2012 7:(	6/14/2012 9:1	6/13/2012 7:(	6/13/2012 7:(	6/6/2012 7:0(	6/5/2012 7:15	6/4/2012 11:1	6/4/2012 7:0(	5/31/2012 1(	5/30/2012 7:(	5/22/2012 7:(	5/17/2012 8:(	5/15/2012 7:(	5/14/2012 7:(
Chloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl chloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromomethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichlorofluoromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Diethyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acetone	ug/L	11100	8240	9150	5900	5330	9290	8290	11000	13900	7820	7900	4690	5910	6700	3250	5130	5410	7380	7880	7500	7400	4040	2590	2720
1,1-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Methylene chloride	ug/L	<1000	<1000	<1000	<1000	<1000	1780	<1000	<1000	1640	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon disulfide	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,2-Dichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Vinyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Butanone	ug/L	<1000	<1000	<1000	<1000	<1000	1910	<1000	<1000	2370	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethyl acetate	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chloroform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,1-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbon tetrachloride	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloroethane-d4	[surr]	109%	98.5%	96.3%	91.5%	90.3%	92.0%	98.6%	105%	110%	104%	102%	89.9%	95.4%	95.4%	104%	104%	103%	104%	99.6%	100%	98.6%	89.0%	89.5%	86.9%
1,2-Dichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Benzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Trichloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichloropropane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromodichloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
2-Chloroethylvinyl ether	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Methyl-2-pentanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
cis-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Toluene-d8	[surr]	98.5%	92.9%	90.5%	92.2%	92.6%	92.5%	96.5%	95.6%	101%	97.7%	97.4%	90.0%	96.0%	95.5%	104%	103%	103%	104%	97.6%	101%	95.9%	97.4%	95.6%	94.1%
Toluene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
trans-1,3-Dichloropropene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2-Trichloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
4-Bromofluorobenzene	[surr]	97.8%	91.6%	90.5%	91.3%	92.4%	91.9%	94.4%	96.9%	102%	97.9%	97.6%	88.6%	93.0%	93.6%	102%	100%	100%	102%	94.9%	97.0%	94.1%	94.6%	91.5%	93.9%
2-Hexanone	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tetrachloroethene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Dibromochloromethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Ethylbenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Xylenes, total	ug/L	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Styrene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Bromoform	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,1,2,2-Tetrachloroethane	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,3-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,4-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Dichlorobenzene	ug/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

RMU-1, SLF-12 tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx 120215035 120215034 Old Landfill Old Landfill Leachates_111116033

SLF 12 standpipe SLF 12 lift station

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Conventional/General Water Quality														
Total Organic Carbon	mg/L	SM 5310C		167	263	262	277	290		257	49.5		66.6	315
Total Suspended Solids	mg/L	SM 2540D		86.7	55	96	133	65		72.0	10		44	16.5
Total Dissolved Solids	mg/L	SM 2540C		11900	17700	18600	22000	21300		27200.00	1430		4090	18000
Total Petroleum Hydrocarbon	mg/L	E1664		25.6	40	47.9	64.9	57.9		12.5	13.4		<1	16.8
Liquid Volume Processed	gpd	----	28393	80254	6480	26374								
Sulfide	mg/L		<0.200	<0.200	<1.00	<1.00	<0.200	<0.200		125	<0.200	<0.200		
Metals														
Phenolic, Total	mg/L	420.4, 420.1		2.55	5.1	6.5	6.5			0.800	0.108		0.031	6.79
Volatile Organic Compounds - Purgeables (10)														
Chloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Vinyl Chloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromomethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Trichlorofluoromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Diethyl ether	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2-Trichloro-1,2,2-trifluoroe	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Acetone	µg/L	8260C	4200	4440	7160	7380	8260	9040		<50.0	60.1	362		
1,1-Dichloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Methylene chloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	2280		
Carbon disulfide	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
trans-1,2-Dichlorethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1-Dichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Vinyl acetate	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Butanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Ethyl acetate	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chloroform	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,1-Trichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Carbon tetrachloride	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Benzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Trichloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichlropropane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromodichloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Chloroethylvinyl ether	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
4-Methyl-2-pentanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
cis-1,3-Dichloropropene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Toluene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
trans-1,3-Dichloropropene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2-Trichloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
2-Hexanone	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Tetrachloroethene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Dibromochloromethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Chlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Ethylbenezene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Xylenes, total	µg/L	8260C	<3000	<3000	<3000	<3000	<3000	<3000		<150	<60.0	<150		
Styrene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Bromoform	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,1,2,2-Tetrachloroethane	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,3-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,4-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
1,2-Dichlorobenzene	µg/L	8260C	<1000	<1000	<1000	<1000	<1000	<1000		<50.0	<20.0	<50.0		
Semi-Volatile Organic Compounds - Base Acid/Neutrals														
1,2,4-Trichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,2-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,3-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
1,4-Dichlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4,5-Trichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4,6-Trichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4-Dichlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,4-Dimethylphenol	µg/L	625		71	140	110	120	110		<50	<50		<5	140
2,4-Dinitrophenol	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
2,4-Dinitrotoluene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2,6-Dinitrotoluene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Chloronaphthalene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Chlorophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
2-Methylnaphthalene	µg/L	625												
2-Methylphenol	µg/L	625												
2-Nitrophenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
3,3´-Dichlorobenzidine	µg/L	625		<100	<200	<200	<200	<200		<100	<100		<10	<200
4,6-Dinitro-2-methylphenol	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
4-Bromophenyl phenyl ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Chloro-3-methylphenol	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Chlorophenyl phenyl ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
4-Methylphenol	µg/L	625												
4-Nitrophenol	µg/L	625		<250	<500	500	<500	<500		<250	<250		<25	<500
Acenaphthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

SLF 12 standpipe

SLF 12 lift station

RMU-1, SLF-12 | tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx | 120215035 120215034 Old Landfill Old Landfill Leachates_ 111116033

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Acenaphthylene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Azobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benz(a)anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzidine	µg/L	625		<250	<500	<500	<500	<500		<250	<250		<25	<500
Benzo(a)pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(b)fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(g,h,i)perylene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzo(k)fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Benzothiazole	µg/L	625												
Bis(2-chloroethoxy)methane	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-chloroethyl)ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-chloroisopropyl)ether	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Bis(2-ethylhexyl)phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	330		<5	<100
Butyl benzyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Carbazole	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Chrysene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dibenz(a,h)anthracene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dibenzofuran	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Diethyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Dimethyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Di-n-butyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Di-n-octyl phthalate	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Fluoranthene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Fluorene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorobutadiene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachlorocyclopentadiene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexachloroethane	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Hexamethylbenzene	µg/L	625												
Indeno(1,2,3-cd)pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Isophorone	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Naphthalene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
n-decane	µg/L	625												
Nitrobenzene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodimethylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodi-n-propylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
N-Nitrosodiphenylamine	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
n-Octadecane	µg/L	625												
Pentachlorophenol	µg/L	625		<250	<500	<500	<500	<100		<250	<250		<25	<500
Phenanthrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Phenol	µg/L	625		630	1100	990	1200	<100		<50	<50		<5	<100
Pyrene	µg/L	625		<50	<100	<100	<100	<100		<50	<50		<5	<100
Pyridine	µg/L	625												
PCB Aroclor														
Aroclor 1016	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1221	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1232	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1242	µg/L	608		3	29.6	<0.26	2.04	<0.349		<0.357	34.6		226	5.32
Aroclor 1248	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	<13.1		<16.8	<3.25
Aroclor 1254	µg/L	608		<1.3	<5.2	<0.26	<0.074	<0.349		<0.357	289		92.5	<3.25
Aroclor 1260	µg/L	608		1.67	112	<0.26	<0.074	<0.349		<0.357	227		69.7	<3.25
Aroclor 1016	µg/L	8082A												
Aroclor 1221	µg/L	8082A												
Aroclor 1232	µg/L	8082A												
Aroclor 1242	µg/L	8082A												
Aroclor 1248	µg/L	8082A												
Aroclor 1254	µg/L	8082A												
Aroclor 1260	µg/L	8082A												
Aroclor 1262	µg/L	8082A												
Aroclor 1268	µg/L	8082A												
Chlorinated Pesticides														
4,4´-DDD	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
4,4´-DDE	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
4,4´-DDT	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Aldrin	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
alpha-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
alpha-Chlordane	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
beta-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Chlordane	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
delta-BHC	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Dieldrin	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endosulfan I	µg/L	608		<0.2	<4	<0.2	<0.057	<0.054		<0.055	<10.1		<12.9	<0.56
Endosulfan II	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endosulfan sulfate	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11
Endrin	µg/L	608		<0.4	<8	<0.4	<0.114	<0.108		<0.110	<20.2		<25.8	<1.11

Leachate Analytical Data - T-160
AWTS & FacPond Evaluation

CWM Chemical Services, LLC
Model City, NY

May 2012 - rev. 1

SLF 12 standpipe

SLF 12 lift station

RMU-1, SLF-12 tank sampl 120202028 T160 AES 0 120210022 120215024 120216018CMW.xls, T160 021512.xlsx 120215035 120215034 Old Landfill Old Landfill Leachates_ 111116033

Parameter	Units	Analytical Method	RMU-1 T-160 1/31/2012	RMU-1 T-160 2/1/2012	RMU-1 T-160 2/7/2012	RMU-1 T-160 2/9/2012	RMU-1 T-160 2/14/2012	RMU-1 T-160 2/15/2012	RMU-1 8/22/12	L-54 2/14/2012	T-150 2/14/2012	T-150 2/14/2012	T-150 7/23/2012	Combined T-102 11/15/2011
Samples Collected						***6***				***1***	***1***			***1***
Samples Required						***6***				***3***	***3***			***24***
Endrin aldehyde	µg/L	608		<8	<0.114	<0.108				<0.110	<20.2		<25.8	<1.11
Endrin Ketone	µg/L	608		<8	<0.108	<0.108				<0.110	<20.2		<25.8	<1.11
gamma-BHC	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
gamma-Chlordane	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Heptachlor	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Heptachlor epoxide	µg/L	608		<4	<0.054	<0.054				<0.055	<10.1		<12.9	<0.56
Methoxychlor	µg/L	608		<40	<0.538	<0.538				<0.549	<101		<129	<5.56
Toxaphene	µg/L	608		<80	<1.08	<1.08				<1.10	<202		<258	<11.1
Other key considerations														

Key:

Attachment 5
VOC and HAP Emissions from Landfill Open Face

Chemical Waste Management, Model City, New York

Waste Profile Report

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Non-Hazardous VOCs (Generic Oil)	N/A	N/A		
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	1.147447	
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	0.011028	
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	Class II	9.988952	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II		
1,2-Dibromoethane (Ethylene bromide, Ethylene dibro	106-93-4	Class I		
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	Class II	0.028965	
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Class II		
1,3-Dichloropropylene (1,3-dichloropropene, DCP)	542-75-6	Class II		
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	Class II	0.351931	
1,4-Dioxane (Diethylene dioxide, p-Dioxane)	123-91-1	Class II		
2,3-Toluene diamine (MTD, Toluene-2,4-diamine)	25376-45-8	Class II		
2,4,5-Trichlorophenol	95-95-4	Class III		
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II		
2,4-Dinitrophenol	51-28-5	Class II		
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II		
2,6-Dinitrotoluene	606-20-2	Class II		
2-Acetylaminofluorene (N-flouren-2-yl-acetamide)	53-96-3	Class II		
4,4'-Methylene-bis(2-chloroaniline) (MOCA, MBOCA)	101-14-4	Class II		
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III		
Acetonitrile (Cyanomethane, Methyl cyanide)	75-05-8	Class II		
Acetophenone	98-86-2	Class III		
Acrylamide (Acrylic amide)	79-06-1	Class II		
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III		
Acrylonitrile	107-13-1	Class I	0.00031	
Allyl chloride (3-Chloropropene)	107-05-1	Class II		
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II		
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	0.345517	
bis(2-Chloroethyl) ether (Dichloroethyl ether)	111-44-4	Class I		
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)p	117-81-7	Class II	7.332404	
Bromoform (Tribromomethane)	75-25-2	Class II		
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	0.119793	
Carbon tetrachloride (Tetrachloromethane)	56-23-5	Class II	0.00809	
Chlordane	57-74-9	Class II	0.054264	
Chlorobenzene (Benzene chloride)	108-90-7	Class II	6.765508	
Chloroethane (Ethyl chloride)	75-00-3	Class II		
Chloroform (Trichloromethane)	67-66-3	Class II	0.039264	
Chloromethane (Methyl chloride)	74-87-3	Class II		
Cresol - mixed isomers	1319-77-3	Class III	0.000942	
DDE (p,p'-dichlorodiphenyldichloroethylene)	72-55-9	Class II		
Dibutyl phthalate (DBP)	84-74-2	Class II	6.012406	
Dichloromethane (Methylene chloride, DCM)	75-09-2	Class II	0.715861	
Dimethyl phthalate (Phthalic acid methyl ester)	131-11-3	Class II		
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II		
Ethyl benzene (Phenylethane)	100-41-4	Class II	3.475857	

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Ethylene glycol	107-21-1	Class III	0.268326	
Ethylene oxide	75-21-8	Class I		
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII		
Formaldehyde (methylene oxide)	50-00-0	Class I		
Glycol ethers	109-86-4	Class II		
Heptachlor (3-Chlorochlordene)	76-44-8	Class II		
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	87-68-3	Class II		
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II		
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III		
Hexachloroethane (Perchloroethane)	67-72-1	Class II		
Methanol (Methyl alcohol)	67-56-1	Class III		
Methoxychlor (Methoxy DDT, DMDT, Dimethoxy-DDT)	72-43-5	Class II		
Methyl Bromide (Bromomethane)	74-83-9	Class III		
Methyl ethyl ketone (MEK)	78-93-3	Class III	1.991377	
Methyl iodide (Iodomethane)	74-88-4	Class II		
Methyl isobutyl ketone (MIBK)	108-10-1	Class III		
Methyl methacrylate	80-62-6	Class III		
n-Butyl alcohol (n-Butanol)	71-36-3	Class III		
n-Hexane	110-54-3	Class III		
n-Nitrosodimethylamine (DMN, dimethylnitrosoamine)	62-75-9	Class I		
n-Nitrosomorpholine (4-Nitrosomorpholine)	59-89-2	Class II		
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	5.263441	
Nitrobenzene (Nitrobenzol)	98-95-3	Class II		
Parathion (AATP, ethyl parathion)	56-38-2	Class II		
Pentachloronitrobenzene (Quintobenzene, PCNB)	82-68-8	Class II		
Pentachlorophenol (PCP)	87-86-5	Class II		
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	0.000881	
Phthalic anhydride	85-44-9	Class III		
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	Class II	15.03722	
Propoxur (Baygon, 0-Isopropoxyphenyl methylcarbam	114-26-01	Class III		
Pyridine	110-86-1	Class III	0.000717	
Styrene (Vinylbenzene)	100-42-5	Class II		
Tetrachloroethane (Acetylene tetrachloride)	79-34-5	Class II		
Tetrachloroethylene (Antisol 1, Carbon dichloride, Per	127-18-4	Class II	0.899999	
Toluene (Methylbenzene)	108-88-3	Class III	13.55171	
Toluene-2,4-diisocyanate	584-84-9	Class II		
Toxaphene (Chlorinated camphene)	8001-35-2	Class II		
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	0.602068	
Vinyl acetate	108-05-4	Class III		
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	Class I	0.010034	
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II		
Xylene (mixed isomers)	1330-20-7	Class II	10.25792	
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II		
Benzyl Chloride (Totyl chloride)	100-44-7	II		
4,6-Dinitro-o-cresol	534-52-1	II		
Triethylamine	121-44-8	III		

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Carbaryl	63-25-2	II		
o-Toluidine	95-53-4	II		
Hydrazine	302-01-2	II		
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	1715.17	
2-Nitropropane	79-46-9	II		
Cumene (isopropyl benzene)	98-82-8	III		
Acenaphthene	83-32-9	Class II		
Acenaphthylene	208-96-8	Class II		
Acrolein	107-02-8	Class II		
Aldrin	309-00-2	Class II		
Anthracene	120-12-7	Class II	1.603446	
Benz (a) anthracene	56-55-3	Class II		
Benzal Chloride 2	98-87-3	Class II		
Benzo (b) flouranthene 4	205-66-2	Class II		
Benzo (k) flouranthene 4	207-08-9	Class II		
Benzo (a) pyrene	50-32-8	Class II		
BHC - Lindane	58-89-9	Class II		
Chlorobenzilate	510-15-6	Class II		
2-Chloronaphthalene	91-58-7	Class II		
Chrysene	218-01-9	Class II		
Dibenz (a, h) anthracene	53-70-3	Class II		
Dieldrin	60-57-1	Class II		
Diphenyl amine 4	122-39-4	Class 2		
1,2-Diphenylhydrazine	122-66-7	Class II		
Endrin	72-20-8	Class II		
Endrin aldehyde	7421-93-4	Class II		
Ethylene oxide	75-21-8	Class II		
Fluoranthene	206-44-0	Class II		
Fluorene	86-737-7	Class II		
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II		
3-Methylcholanthrene	56-49-5	Class II		
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0	
Penthachlorobenzene	608-93-5	Class II		
Phenathrene	85-01-8	Class II	5.536544	
Pyrene	129-00-0	Class II		
1,1,2,2-Tetrachloroethane	79-34-5	Class II		
Trichloroethene	79-01-6	Class II		
Tetrachloroethene	127-18-4	Class II		
1,3 Butadiene (Biethylene)	106-99-0	Class II		
2-Methylnapthalene	91-57-6	Class II		
1-Methylnaphthalene	90-12-0	Class III		
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III		
Acetaldehyde	75-07-0	Class II		
Diethanolamine	111-42-2	Class III		
Chloroprene	126-99-8	Class II		
Lindane	58-89-9	Class II		

Chemical Waste Management, Model City, New York

Waste Profile Report

PROFILE NUMBER			max	
TOTAL WEIGHT (tons)			241667	
PARAMETER (Concentrations in PPM)	CAS	CLASS (Table 51.1 or 51.3)		
Benzidine	92-87-5	Class I		
p-Phenylenediamine	106-50-3	Class III		
benzo(ghi)perylene	191-24-2	Class	0.143108	
2,4-Dimethylphenol	105-67-9	Class	0.004813	
p-phenylenediamine	106-50-3	Class	0.011368	
Mercury	7439-97-6	Class	0.025836	
1,2,4-Trimethylbenzene	CAS No.	Class	0.00127	

Chemical Waste Management
Model City, New York

Open-Face Landfill Emissions Model Summary	
Modeling Period Start Date:	1/1/2016
Modeling Period End Date:	12/31/2016
Total Days Modeled:	366
Chemical Name	***Pounds Emitted***
1,1,1-Trichloroethane (Methyl chloroform)	57.992127
1,1,2-Trichloroethane (Cloroethene)	0.2513085
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	11.97764
1,2-Dichloroethane (Ethylene dichloride, EDC)	1.3636541
1,4-Dichlorobenzene (p-Dichlorobenzene)	1.6525922
Acrylonitrile	0.0188874
Benzene (Benzol, Coal naphhtha)	16.32008
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	0.0100256
Carbon disulfide (Carbon bisulfide)	12.060955
Carbon tetrachloride (Tetrachloromethane)	0.3919477
Chlordane	0.0003024
Chlorobenzene (Benzene chloride)	102.48196
Chloroform (Trichloromethane)	2.9801189
Cresol - mixed isomers	0.0022186
Dibutyl phthalate (DBP)	0.2041065
Dichloromethane (Methylene chloride, DCM)	77.699727
Ethyl benzene (Phenylethane)	14.49
Ethylene glycol	0.5108008
Methyl ethyl ketone (MEK)	92.381914
Naphthalene (and Methylnaphthalenes)	10.01
Phenol (Benzenol, Carbolic acid)	0.0024035
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	7.7893848
Pyridine	0.0157842
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	17.178219
Toluene (Methylbenzene)	357.26212
Trichloroethylene (Acetylene trichloride)	23.915172
Vinyl chloride (Chloroethene, Monochloride ethylene)	2.7495454
Xylene (mixed isomers)	130.38542
Polychlorinated Biphenyls (PCB's)	237.10784
Anthracene	0.0053694
Phenathrene	14.523726
benzo(ghi)perylene	3.316E-06
2,4-Dimethylphenol	0.0603519
p-phenylenediamine	0.0033775
Mercury	0.0026554
1,2,4-Trimethylbenzene	0.0109301

Total Non-Hazardous, VOC Emissions:	-
Total Hazardous VOC Emissions:	1,193.81
Total VOC Emissions:	1,193.81

Chemical Name	*CAS No.*	*Class*	*Average Concentration* (ppm, by weight)	*Chemical Weight Fraction* (unitless)	*Effective Diffusivity* D_e (cm^2/s)	*Partition Coefficient* K_{eq}	*Rate Equation Validity Test* <0.25?	*Emission Rate Factor* K_{dt}	*Fraction Emitted* F_t	*Mass Avb'l for Emission* M_o (g/cm^2)	*Total Mass Emitted* $E_{timeperiod}$ (Megagram	*Total Mass Emitted* $E_{timeperiod}$ (Pounds)
Non-Hazardous VOCs (Generic Oil)	N/A	N/A	0.000E+00	0.000E+00	8.101E-05	2.463E-06	YES!!	4.655E-07	4.912E-04	0.000	0.00E+00	-
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A	0.000E+00	0.000E+00	1.497E-04	2.239E-04	YES!!	7.819E-05	6.366E-03	0.000	0.00E+00	-
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	1.147E+00	6.351E-04	1.459E-04	7.246E-02	YES!!	2.467E-02	1.131E-01	0.000	2.63E-02	57.99
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	1.103E-02	6.104E-06	1.459E-04	1.473E-02	YES!!	5.015E-03	5.099E-02	0.000	1.14E-04	0.25
1,2,4-Trichlorobenzene (unsym-Trichlorol	120-82-1	Class II	9.989E+00	5.529E-03	5.613E-05	1.060E-04	YES!!	1.389E-05	2.683E-03	0.003	5.43E-03	11.98
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II	0.000E+00	0.000E+00	3.966E-05	4.714E-04	YES!!	4.362E-05	4.755E-03	0.000	0.00E+00	-
1,2-Dibromoethane (Ethylene bromide, E	106-93-4	Class I	0.000E+00	0.000E+00	5.370E-05	6.941E-03	YES!!	8.695E-04	2.123E-02	0.000	0.00E+00	-
1,2-Dichloroethane (Ethylene dichloride, I	107-06-2	Class II	2.897E-02	1.603E-05	1.946E-04	4.716E-02	YES!!	2.141E-02	1.053E-01	0.000	6.19E-04	1.36
1,2-Dichloropropane (Propylene dichlorid	78-87-5	Class II	0.000E+00	0.000E+00	1.463E-04	2.357E-02	YES!!	8.045E-03	6.458E-02	0.000	0.00E+00	-
1,3-Dichloropropylene (1,3-dichloroprope	542-75-6	Class II	0.000E+00	0.000E+00	1.171E-04	2.534E-02	YES!!	6.923E-03	5.991E-02	0.000	0.00E+00	-
1,4-Dichlorobenzene (p-Dichlorobenzene	106-46-7	Class II	3.519E-01	1.948E-04	1.291E-04	7.071E-04	YES!!	2.130E-04	1.051E-02	0.000	7.50E-04	1.65
1,4-Dioxane (Diethylene dioxide, p-Dioxa	123-91-1	Class II	0.000E+00	0.000E+00	4.284E-04	2.180E-02	YES!!	2.179E-02	1.063E-01	0.000	0.00E+00	-
2,3-Toluene diamine (MTD, Toluene-2,4-	25376-45-8	Class II	0.000E+00	0.000E+00	1.065E-04	9.368E-04	YES!!	2.327E-04	1.098E-02	0.000	0.00E+00	-
2,4,5-Trichlorophenol	95-95-4	Class III	0.000E+00	0.000E+00	5.444E-05	2.351E-05	YES!!	2.987E-06	1.244E-03	0.000	0.00E+00	-
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II	0.000E+00	0.000E+00	5.875E-05	4.301E-06	YES!!	5.895E-07	5.528E-04	0.000	0.00E+00	-
2,4-Dinitrophenol	51-28-5	Class II	0.000E+00	0.000E+00	5.108E-05	8.249E-06	YES!!	9.830E-07	7.138E-04	0.000	0.00E+00	-
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II	0.000E+00	0.000E+00	3.798E-04	3.005E-06	YES!!	2.662E-06	1.175E-03	0.000	0.00E+00	-
2,6-Dinitrotoluene	606-20-2	Class II	0.000E+00	0.000E+00	6.118E-05	3.535E-03	YES!!	5.046E-04	1.617E-02	0.000	0.00E+00	-
2-Acetylaminofluorene (N-flouren-2-yl-ace	53-96-3	Class II	0.000E+00	0.000E+00	4.965E-05	7.071E-06	YES!!	8.191E-07	6.516E-04	0.000	0.00E+00	-
4,4'-Methylene-bis(2-chloroaniline) (MOC	101-14-4	Class II	0.000E+00	0.000E+00	3.723E-05	4.075E-08	YES!!	3.540E-09	4.284E-05	0.000	0.00E+00	-
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III	0.000E+00	0.000E+00	8.045E-05	5.911E-08	YES!!	1.109E-08	7.584E-05	0.000	0.00E+00	-
Acetonitrile (Cyanomethane, Methyl cyan	75-05-8	Class II	0.000E+00	0.000E+00	2.395E-04	5.303E-02	YES!!	2.963E-02	1.239E-01	0.000	0.00E+00	-
Acetophenone	98-86-2	Class III	0.000E+00	0.000E+00	1.123E-04	1.750E-04	YES!!	4.583E-05	4.874E-03	0.000	0.00E+00	-
Acrylamide (Acrylic amide)	79-06-1	Class II	0.000E+00	0.000E+00	1.815E-04	7.071E-06	YES!!	2.994E-06	1.246E-03	0.000	0.00E+00	-
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III	0.000E+00	0.000E+00	1.834E-04	3.064E-03	YES!!	1.311E-03	2.607E-02	0.000	0.00E+00	-
Acrylonitrile	107-13-1	Class I	3.103E-04	1.718E-07	2.283E-04	6.717E-02	YES!!	3.577E-02	1.362E-01	0.000	8.57E-06	0.02
Allyl chloride (3-Chloropropene)	107-05-1	Class II	0.000E+00	0.000E+00	1.886E-04	2.127E-01	YES!!	9.359E-02	2.203E-01	0.000	0.00E+00	-
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II	0.000E+00	0.000E+00	1.310E-04	5.893E-04	YES!!	1.801E-04	9.661E-03	0.000	0.00E+00	-
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	3.455E-01	1.912E-04	1.646E-04	5.610E-02	YES!!	2.155E-02	1.057E-01	0.000	7.40E-03	16.32
bis(2-Chloroethyl) ether (Dichloroethyl eth	111-44-4	Class I	0.000E+00	0.000E+00	1.295E-04	8.249E-04	YES!!	2.492E-04	1.137E-02	0.000	0.00E+00	-
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2	117-81-7	Class II	7.332E+00	4.058E-03	6.567E-05	1.178E-10	YES!!	1.805E-11	3.059E-06	0.002	4.55E-06	0.01
Bromoform (Tribromomethane)	75-25-2	Class II	0.000E+00	0.000E+00	2.788E-05	3.300E-03	YES!!	2.146E-04	1.055E-02	0.000	0.00E+00	-
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	1.198E-01	6.630E-05	1.946E-04	2.157E-01	YES!!	9.790E-02	2.253E-01	0.000	5.47E-03	12.06
Carbon tetrachloride (Tetrachloromethane	56-23-5	Class II	8.090E-03	4.478E-06	1.459E-04	6.658E-02	YES!!	2.267E-02	1.084E-01	0.000	1.78E-04	0.39
Chlordane	57-74-9	Class II	5.426E-02	3.003E-05	2.208E-05	5.822E-09	YES!!	2.998E-10	1.247E-05	0.000	1.37E-07	0.00
Chlorobenzene (Benzene chloride)	108-90-7	Class II	6.766E+00	3.745E-03	1.366E-04	6.955E-03	YES!!	2.216E-03	3.389E-02	0.002	4.65E-02	102.48
Chloroethane (Ethyl chloride)	75-00-3	Class II	0.000E+00	0.000E+00	5.070E-04	7.071E-01	NO!!	8.364E-01	6.585E-01	0.000	0.00E+00	-
Chloroform (Trichloromethane)	67-66-3	Class II	3.926E-02	2.173E-05	1.946E-04	1.226E-01	YES!!	5.563E-02	1.698E-01	0.000	1.35E-03	2.98
Chloromethane (Methyl chloride)	74-87-3	Class II	0.000E+00	0.000E+00	2.357E-04	2.257E+00	NO!!	1.241E+00	8.021E-01	0.000	0.00E+00	-
Cresol - mixed isomers	1319-77-3	Class III	9.422E-04	5.215E-07	1.298E-04	1.768E-04	YES!!	5.355E-05	5.269E-03	0.000	1.01E-06	0.00
DDE (p,p'-dichlorodiphenyldichloroethyler	72-55-9	Class II	0.000E+00	0.000E+00	2.694E-05	4.030E-09	YES!!	2.533E-10	1.146E-05	0.000	0.00E+00	-
Dibutyl phthalate (DBP)	84-74-2	Class II	6.012E+00	3.328E-03	8.195E-05	5.822E-08	YES!!	1.113E-08	7.596E-05	0.002	9.26E-05	0.20
Dichloromethane (Methylene chloride, DC	75-09-2	Class II	7.159E-01	3.962E-04	1.890E-04	2.581E-01	YES!!	1.138E-01	2.429E-01	0.000	3.52E-02	77.70
Dimethyl phthalate (Phthalic acid methyl e	131-11-3	Class II	0.000E+00	0.000E+00	1.063E-04	1.178E-07	YES!!	2.920E-08	1.230E-04	0.000	0.00E+00	-
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II	0.000E+00	0.000E+00	1.441E-04	2.357E-02	YES!!	7.921E-03	6.408E-02	0.000	0.00E+00	-
Ethyl benzene (Phenylethane)	100-41-4	Class II	3.476E+00	1.924E-03	1.403E-04	5.128E-04	YES!!	1.679E-04	9.328E-03	0.001	6.57E-03	14.49
Ethylene glycol	107-21-1	Class III	2.683E-01	1.485E-04	2.021E-04	7.424E-05	YES!!	3.500E-05	4.259E-03	0.000	2.32E-04	0.51
Ethylene oxide	75-21-8	Class I	0.000E+00	0.000E+00	1.946E-04	7.365E-01	YES!!	3.343E-01	4.163E-01	0.000	0.00E+00	-
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII	0.000E+00	0.000E+00	1.388E-04	3.483E-01	YES!!	1.128E-01	2.418E-01	0.000	0.00E+00	-

Chemical Name	CAS No.	Class	Average Concentration (ppm, by weight)	Chemical Weight Fraction (unitless)	Effective Diffusivity D_e (cm^2/s)	Partition Coefficient K_{eq}	Rate Equation Validity Test <0.25?	Emission Rate Factor K_{dt}	Fraction Emitted F_t	Mass Avb'l for Emission M_o (g/cm^2)	Total Mass Emitted $E_{timeperiod}$ (Megagram	Total Mass Emitted $E_{timeperiod}$ (Pounds)
Formaldehyde (methylene oxide)	50-00-0	Class I	0.000E+00	0.000E+00	3.330E-04	2.062E+00	NO!!	1.602E+00	9.114E-01	0.000	0.00E+00	-
Glycol ethers	109-86-4	Class II	0.000E+00	0.000E+00	1.310E-04	2.027E-03	YES!!	6.193E-04	1.792E-02	0.000	0.00E+00	-
Heptachlor (3-Chlorochlordene)	76-44-8	Class II	0.000E+00	0.000E+00	2.095E-05	1.769E-07	YES!!	8.647E-09	6.695E-05	0.000	0.00E+00	-
Hexachloro-1,3-butadiene (Hexachlorobu	87-68-3	Class II	0.000E+00	0.000E+00	1.050E-04	8.839E-05	YES!!	2.164E-05	3.350E-03	0.000	0.00E+00	-
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II	0.000E+00	0.000E+00	1.014E-04	2.828E-06	YES!!	6.691E-07	5.890E-04	0.000	0.00E+00	-
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III	0.000E+00	0.000E+00	3.012E-05	4.774E-05	YES!!	3.355E-06	1.319E-03	0.000	0.00E+00	-
Hexachloroethane (Perchloroethane)	67-72-1	Class II	0.000E+00	0.000E+00	4.677E-06	3.830E-04	YES!!	4.179E-06	1.472E-03	0.000	0.00E+00	-
Methanol (Methyl alcohol)	67-56-1	Class III	0.000E+00	0.000E+00	2.806E-04	6.717E-02	YES!!	4.398E-02	1.510E-01	0.000	0.00E+00	-
Methoxychlor (Methoxy DDT, DMDT, Dim	72-43-5	Class II	0.000E+00	0.000E+00	2.919E-05	9.135E-08	YES!!	6.220E-09	5.679E-05	0.000	0.00E+00	-
Methyl Bromide (Bromomethane)	74-83-9	Class III	0.000E+00	0.000E+00	2.788E-05	9.369E-01	YES!!	6.093E-02	1.777E-01	0.000	0.00E+00	-
Methyl ethyl ketone (MEK)	78-93-3	Class III	1.991E+00	1.102E-03	1.512E-04	5.893E-02	YES!!	2.078E-02	1.038E-01	0.001	4.19E-02	92.38
Methyl iodide (Iodomethane)	74-88-4	Class II	0.000E+00	0.000E+00	7.297E-05	2.357E-01	YES!!	4.012E-02	1.442E-01	0.000	0.00E+00	-
Methyl isobutyl ketone (MIBK)	108-10-1	Class III	0.000E+00	0.000E+00	1.403E-04	9.251E-03	YES!!	3.028E-03	3.962E-02	0.000	0.00E+00	-
Methyl methacrylate	80-62-6	Class III	0.000E+00	0.000E+00	1.441E-04	2.121E-02	YES!!	7.129E-03	6.079E-02	0.000	0.00E+00	-
n-Butyl alcohol (n-Butanol)	71-36-3	Class III	0.000E+00	0.000E+00	1.497E-04	3.830E-03	YES!!	1.337E-03	2.633E-02	0.000	0.00E+00	-
n-Hexane	110-54-3	Class III	0.000E+00	0.000E+00	3.742E-04	8.839E-02	YES!!	7.716E-02	2.000E-01	0.000	0.00E+00	-
n-Nitrosodimethylamine (DMN, dimethyln	62-75-9	Class I	0.000E+00	0.000E+00	2.107E-04	4.716E-03	YES!!	2.318E-03	3.466E-02	0.000	0.00E+00	-
n-Nitrosomorpholine (4-Nitrosomorpholine	59-89-2	Class II	0.000E+00	0.000E+00	1.104E-04	5.862E-05	YES!!	1.510E-05	2.797E-03	0.000	0.00E+00	-
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	5.263E+00	2.913E-03	1.104E-04	1.355E-04	YES!!	3.490E-05	4.253E-03	0.001	4.54E-03	10.01
Nitrobenzene (Nitrobenzol)	98-95-3	Class II	0.000E+00	0.000E+00	1.422E-04	1.768E-04	YES!!	5.864E-05	5.513E-03	0.000	0.00E+00	-
Parathion (AATP, ethyl parathion)	56-38-2	Class II	0.000E+00	0.000E+00	3.181E-05	2.239E-08	YES!!	1.661E-09	2.935E-05	0.000	0.00E+00	-
Pentachloronitrobenzene (Quintobenzene	82-68-8	Class II	0.000E+00	0.000E+00	2.975E-05	5.822E-08	YES!!	4.040E-09	4.577E-05	0.000	0.00E+00	-
Pentachlorophenol (PCP)	87-86-5	Class II	0.000E+00	0.000E+00	1.048E-04	2.946E-06	YES!!	7.201E-07	6.110E-04	0.000	0.00E+00	-
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	8.808E-04	4.875E-07	1.534E-04	2.009E-04	YES!!	7.192E-05	6.106E-03	0.000	1.09E-06	0.00
Phthalic anhydride	85-44-9	Class III	0.000E+00	0.000E+00	1.328E-04	8.840E-07	YES!!	2.739E-07	3.768E-04	0.000	0.00E+00	-
Polynuclear Aromatic Hydrocarbons (Ger	206-44-0	Class II	1.504E+01	8.323E-03	8.213E-05	1.352E-05	YES!!	2.591E-06	1.159E-03	0.004	3.53E-03	7.79
Propoxur (Baygon, 0-Isopropoxyphenyl m	114-26-01	Class III	0.000E+00	0.000E+00	5.108E-05	1.013E-05	YES!!	1.208E-06	7.912E-04	0.000	0.00E+00	-
Pyridine	110-86-1	Class III	7.169E-04	3.968E-07	1.703E-04	1.179E-02	YES!!	4.682E-03	4.926E-02	0.000	7.16E-06	0.02
Styrene (Vinylbenzene)	100-42-5	Class II	0.000E+00	0.000E+00	1.328E-04	4.301E-03	YES!!	1.333E-03	2.629E-02	0.000	0.00E+00	-
Tetrachloroethane (Acetylene tetrachlorid	79-34-5	Class II	0.000E+00	0.000E+00	1.328E-04	3.830E-03	YES!!	1.187E-03	2.481E-02	0.000	0.00E+00	-
Tetrachloroethylene (Antisol 1, Carbon di	127-18-4	Class II	9.000E-01	4.981E-04	1.347E-04	1.120E-02	YES!!	3.518E-03	4.271E-02	0.000	7.79E-03	17.18
Toluene (Methylbenzene)	108-88-3	Class III	1.355E+01	7.500E-03	1.628E-04	1.768E-02	YES!!	6.712E-03	5.899E-02	0.004	1.62E-01	357.26
Toluene-2,4-diisocyanate	584-84-9	Class II	0.000E+00	0.000E+00	1.141E-04	4.714E-05	YES!!	1.255E-05	2.551E-03	0.000	0.00E+00	-
Toxaphene (Chlorinated camphene)	8001-35-2	Class II	0.000E+00	0.000E+00	2.170E-05	1.768E-04	YES!!	8.949E-06	2.154E-03	0.000	0.00E+00	-
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	6.021E-01	3.332E-04	1.478E-04	4.419E-02	YES!!	1.524E-02	8.888E-02	0.000	1.08E-02	23.92
Vinyl acetate	108-05-4	Class III	0.000E+00	0.000E+00	1.590E-04	6.776E-02	YES!!	2.514E-02	1.142E-01	0.000	0.00E+00	-
Vinyl chloride (Chloroethene, Monochlorid	75-01-4	Class I	1.003E-02	5.554E-06	1.983E-04	1.567E+00	NO!!	7.252E-01	6.131E-01	0.000	1.25E-03	2.75
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II	0.000E+00	0.000E+00	1.684E-04	3.712E-01	YES!!	1.458E-01	2.749E-01	0.000	0.00E+00	-
Xylene (mixed isomers)	1330-20-7	Class II	1.026E+01	5.677E-03	1.336E-04	5.007E-03	YES!!	1.560E-03	2.844E-02	0.003	5.91E-02	130.39
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II	0.000E+00	0.000E+00	7.559E-05	5.889E-04	YES!!	1.038E-04	7.337E-03	0.000	0.00E+00	-
Benzyl Chloride (Totyl chloride)	100-44-7	II	0.000E+00	0.000E+00	1.403E-04	7.129E-04	YES!!	2.334E-04	1.100E-02	0.000	0.00E+00	-
4,6-Dinitro-o-cresol	534-52-1	II	0.000E+00	0.000E+00	5.482E-05	1.061E-05	YES!!	1.357E-06	8.387E-04	0.000	0.00E+00	-
Triethylamine	121-44-8	III	0.000E+00	0.000E+00	7.989E-05	5.893E-06	YES!!	1.098E-06	7.546E-04	0.000	0.00E+00	-
Carbaryl	63-25-2	II	0.000E+00	0.000E+00	5.201E-05	2.356E-08	YES!!	2.858E-09	3.849E-05	0.000	0.00E+00	-
o-Toluidine	95-53-4	II	0.000E+00	0.000E+00	1.336E-04	1.424E-04	YES!!	4.438E-05	4.797E-03	0.000	0.00E+00	-
Hydrazine	302-01-2	II	0.000E+00	0.000E+00	7.791E-04	8.486E-03	YES!!	1.542E-02	8.942E-02	0.000	0.00E+00	-
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	1.715E+03	9.493E-01	3.274E-05	2.416E-06	YES!!	1.846E-07	3.093E-04	0.452	1.08E-01	237.11
2-Nitropropane	79-46-9	II	0.000E+00	0.000E+00	1.727E-04	5.983E-02	YES!!	2.410E-02	1.118E-01	0.000	0.00E+00	-
Cumene (isopropyl benzene)	98-82-8	III	0.000E+00	0.000E+00	1.216E-04	2.711E-03	YES!!	7.692E-04	1.997E-02	0.000	0.00E+00	-

Chemical Name	*CAS No.*	*Class*	*Average Concentration* (ppm, by weight)	*Chemical Weight Fraction* (unitless)	*Effective Diffusivity* D_e (cm^2/s)	*Partition Coefficient* K_{eq}	*Rate Equation Validity Test* <0.25?	*Emission Rate Factor* K_{dt}	*Fraction Emitted* F_t	*Mass Avb'l for Emission* M_o (g/cm^2)	*Total Mass Emitted* $E_{timeperiod}$ (Megagram	*Total Mass Emitted* $E_{timeperiod}$ (Pounds)
Acenaphthene	83-32-9	Class II	0.000E+00	0.000E+00	7.877E-05	2.947E-06	YES!!	5.415E-07	5.298E-04	0.000	0.00E+00	-
Acenaphthylene	208-96-8	Class II	0.000E+00	0.000E+00	8.019E-05	1.352E-05	YES!!	2.530E-06	1.145E-03	0.000	0.00E+00	-
Acrolein	107-02-8	Class II	0.000E+00	0.000E+00	1.964E-04	1.438E-01	YES!!	6.590E-02	1.848E-01	0.000	0.00E+00	-
Aldrin	309-00-2	Class II	0.000E+00	0.000E+00	2.470E-05	3.536E-09	YES!!	2.037E-10	1.028E-05	0.000	0.00E+00	-
Anthracene	120-12-7	Class II	1.603E+00	8.875E-04	6.062E-05	7.658E-10	YES!!	1.083E-10	7.493E-06	0.000	2.44E-06	0.01
Benz (a) anthracene	56-55-3	Class II	0.000E+00	0.000E+00	9.542E-05	1.178E-10	YES!!	2.622E-11	3.687E-06	0.000	0.00E+00	-
Benzal Chloride 2	98-87-3	Class II	0.000E+00	0.000E+00	1.403E-04	7.129E-04	YES!!	2.334E-04	1.100E-02	0.000	0.00E+00	-
Benzo (b) flouranthene 4	205-66-2	Class II	0.000E+00	0.000E+00	4.228E-05	2.947E-10	YES!!	2.907E-11	3.882E-06	0.000	0.00E+00	-
Benzo (k) flouranthene 4	207-08-9	Class II	0.000E+00	0.000E+00	4.228E-05	5.643E-14	YES!!	5.566E-15	5.372E-08	0.000	0.00E+00	-
Benzo (a) pyrene	50-32-8	Class II	0.000E+00	0.000E+00	8.045E-05	3.345E-07	YES!!	6.278E-08	1.804E-04	0.000	0.00E+00	-
BHC - Lindane	58-89-9	Class II	0.000E+00	0.000E+00	3.031E-05	1.822E-05	YES!!	1.288E-06	8.172E-04	0.000	0.00E+00	-
Chlorobenzilate	510-15-6	Class II	0.000E+00	0.000E+00	3.143E-05	1.572E-12	YES!!	1.153E-13	2.444E-07	0.000	0.00E+00	-
2-Chloronaphthalene	91-58-7	Class II	0.000E+00	0.000E+00	6.492E-05	1.002E-05	YES!!	1.517E-06	8.869E-04	0.000	0.00E+00	-
Chrysene	218-01-9	Class II	0.000E+00	0.000E+00	4.640E-05	3.394E-13	YES!!	3.674E-14	1.380E-07	0.000	0.00E+00	-
Dibenz (a, h) anthracene	53-70-3	Class II	0.000E+00	0.000E+00	9.355E-05	5.911E-14	YES!!	1.290E-14	8.178E-08	0.000	0.00E+00	-
Dieldrin	60-57-1	Class II	0.000E+00	0.000E+00	2.339E-05	1.178E-10	YES!!	6.426E-12	1.825E-06	0.000	0.00E+00	-
Diphenyl amine 4	122-39-4	Class 2	0.000E+00	0.000E+00	5.613E-05	5.893E-04	YES!!	7.717E-05	6.325E-03	0.000	0.00E+00	-
1,2-Diphenylhydrazine	122-66-7	Class II	0.000E+00	0.000E+00	5.931E-05	1.473E-08	YES!!	2.039E-09	3.251E-05	0.000	0.00E+00	-
Endrin	72-20-8	Class II	0.000E+00	0.000E+00	2.339E-05	1.178E-10	YES!!	6.426E-12	1.825E-06	0.000	0.00E+00	-
Endrin aldehyde	7421-93-4	Class II	0.000E+00	0.000E+00	5.613E-05	5.893E-02	YES!!	7.717E-03	6.325E-02	0.000	0.00E+00	-
Ethylene oxide	75-21-8	Class II	0.000E+00	0.000E+00	1.946E-04	7.367E-01	YES!!	3.344E-01	4.164E-01	0.000	0.00E+00	-
Fluoranthene	206-44-0	Class II	0.000E+00	0.000E+00	5.650E-05	1.043E-05	YES!!	1.375E-06	8.442E-04	0.000	0.00E+00	-
Fluorene	86-737-7	Class II	0.000E+00	0.000E+00	9.355E-05	1.885E-07	YES!!	4.114E-08	1.460E-04	0.000	0.00E+00	-
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II	0.000E+00	0.000E+00	3.555E-05	5.911E-13	YES!!	4.902E-14	1.594E-07	0.000	0.00E+00	-
3-Methylcholanthrene	56-49-5	Class II	0.000E+00	0.000E+00	3.910E-05	4.473E-07	YES!!	4.080E-08	1.454E-04	0.000	0.00E+00	-
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0.000E+00	0.000E+00	3.274E-05	2.418E-06	YES!!	1.847E-07	3.094E-04	0.000	0.00E+00	-
Penthachlorobenzene	608-93-5	Class II	0.000E+00	0.000E+00	1.066E-04	2.709E-06	YES!!	6.741E-07	5.911E-04	0.000	0.00E+00	-
Phenathrene	85-01-8	Class II	5.537E+00	3.064E-03	9.355E-05	3.045E-04	YES!!	6.646E-05	5.870E-03	0.001	6.59E-03	14.52
Pyrene	129-00-0	Class II	0.000E+00	0.000E+00	9.355E-05	1.120E-06	YES!!	2.443E-07	3.559E-04	0.000	0.00E+00	-
1,1,2,2-Tetrachloroethane	79-34-5	Class II	0.000E+00	0.000E+00	1.328E-04	3.829E-03	YES!!	1.187E-03	2.480E-02	0.000	0.00E+00	-
Trichloroethene	79-01-6	Class II	0.000E+00	0.000E+00	1.459E-04	1.473E-02	YES!!	5.016E-03	5.099E-02	0.000	0.00E+00	-
Tetrachloroethene	127-18-4	Class II	0.000E+00	0.000E+00	1.347E-04	1.120E-02	YES!!	3.518E-03	4.271E-02	0.000	0.00E+00	-
1,3 Butadiene (Biethylene)	106-99-0	Class II	0.000E+00	0.000E+00	4.659E-04	1.236E+00	NO!!	1.343E+00	8.345E-01	0.000	0.00E+00	-
2-Methylnapthalene	91-57-6	Class II	0.000E+00	0.000E+00	8.981E-05	3.991E-05	YES!!	8.361E-06	2.082E-03	0.000	0.00E+00	-
1-Methylnaphthalene	90-12-0	Class III	0.000E+00	0.000E+00	8.981E-05	3.175E-05	YES!!	6.652E-06	1.857E-03	0.000	0.00E+00	-
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III	0.000E+00	0.000E+00	1.916E-04	1.133E-01	YES!!	5.064E-02	1.620E-01	0.000	0.00E+00	-
Acetaldehyde	75-07-0	Class II	0.000E+00	0.000E+00	2.320E-04	5.127E-01	YES!!	2.775E-01	3.793E-01	0.000	0.00E+00	-
Diethanolamine	111-42-2	Class III	0.000E+00	0.000E+00	1.317E-04	3.219E-07	YES!!	9.892E-08	2.265E-04	0.000	0.00E+00	-
Chloroprene	126-99-8	Class II	0.000E+00	0.000E+00	1.946E-04	1.608E-01	YES!!	7.298E-02	1.945E-01	0.000	0.00E+00	-
Lindane	58-89-9	Class II	0.000E+00	0.000E+00	3.031E-05	1.823E-05	YES!!	1.289E-06	8.174E-04	0.000	0.00E+00	-
Benzidine	92-87-5	Class I	0.000E+00	0.000E+00	6.361E-05	1.791E-07	YES!!	2.658E-08	1.174E-04	0.000	0.00E+00	-
p-Phenylenediamine	106-50-3	Class III	0.000E+00	0.000E+00	1.338E-04	2.732E-06	YES!!	8.525E-07	6.648E-04	0.000	0.00E+00	-
benzo(ghi)perylene	191-24-2	Class	1.431E-01	7.921E-05	3.761E-05	5.911E-14	YES!!	5.186E-15	5.185E-08	0.000	1.50E-09	0.00
2,4-Dimethylphenol	105-67-9	Class	4.813E-03	2.664E-06	1.093E-04	5.956E-03	YES!!	1.518E-03	2.805E-02	0.000	2.74E-05	0.06
p-phenylenediamine	106-50-3	Class	1.137E-02	6.292E-06	1.338E-04	2.732E-06	YES!!	8.525E-07	6.648E-04	0.000	1.53E-06	0.00
Mercury	7439-97-6	Class	2.584E-02	1.430E-05	5.744E-05	7.613E-07	YES!!	1.020E-07	2.300E-04	0.000	1.20E-06	0.00
1,2,4-Trimethylbenzene	CAS No.	Class	1.270E-03	7.029E-07	1.141E-04	2.687E-03	YES!!	7.154E-04	1.926E-02	0.000	4.96E-06	0.01

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Non-Hazardous VOCs (Generic Oil)	N/A	N/A	0.0433	0.940	190.00	5.500E-06
Non-Hazardous VOCs (Generic Fuel)	N/A	N/A	0.0800	0.900	147.00	5.000E-04
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Class III	0.0780	1.330	133.40	1.618E-01
1,1,2-Trichloroethane (Cloroethene)	79-00-5	Class II	0.0780	1.300	133.40	3.289E-02
1,2,4-Trichlorobenzene (unsym-Trichlorobenzene)	120-82-1	Class II	0.0300	1.410	181.50	2.368E-04
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	Class II	0.0212	1.410	236.36	1.053E-03
1,2-Dibromoethane (Ethylene bromide, Ethylene dibromide)	106-93-4	Class I	0.0287	1.410	187.88	1.550E-02
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	Class II	0.1040	1.260	98.96	1.053E-01
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Class II	0.0782	1.156	112.99	5.263E-02
1,3-Dichloropropylene (1,3-dichloropropene, DCP)	542-75-6	Class II	0.0626	1.200	110.97	5.658E-02
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	Class II	0.0690	1.290	147.00	1.579E-03
1,4-Dioxane (Diethylene dioxide, p-Dioxane)	123-91-1	Class II	0.2290	1.030	88.20	4.868E-02
2,3-Toluene diamine (MTD, Toluene-2,4-diamine)	25376-45-8	Class II	0.0569	1.110	122.17	2.092E-03
2,4,5-Trichlorophenol	95-95-4	Class III	0.0291	1.180	197.45	5.251E-05
2,4,6-Trichlorophenol (2,4,6-T)	88-06-2	Class II	0.0314	1.000	197.46	9.605E-06
2,4-Dinitrophenol	51-28-5	Class II	0.0273	1.680	184.00	1.842E-05
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	Class II	0.2030	1.310	182.14	6.710E-06
2,6-Dinitrotoluene	606-20-2	Class II	0.0327	1.150	182.14	7.894E-03
2-Acetylaminofluorene (N-flouren-2-yl-acetamide)	53-96-3	Class II	0.0265	1.020	223.27	1.579E-05
4,4'-Methylene-bis(2-chloroaniline) (MOCA, MBOCA)	101-14-4	Class II	0.0199	1.150	267.15	9.100E-08
4-Nitrophenol (p-Nitrophenol)	100-02-7	Class III	0.0430	1.400	139.11	1.320E-07
Acetonitrile (Cyanomethane, Methyl cyanide)	75-05-8	Class II	0.1280	0.780	41.03	1.184E-01
Acetophenone	98-86-2	Class III	0.0600	1.030	120.16	3.908E-04
Acrylamide (Acrylic amide)	79-06-1	Class II	0.0970	1.120	71.09	1.579E-05
Acrylic acid (Acroleic acid, Propene acid)	79-10-7	Class III	0.0980	0.970	72.07	6.842E-03
Acrylonitrile	107-13-1	Class I	0.1220	0.810	53.10	1.500E-01
Allyl chloride (3-Chloropropene)	107-05-1	Class II	0.1008	1.410	75.60	4.750E-01
Aniline (Aminobenzene), Phenylamine)	62-53-3	Class II	0.0700	1.020	93.10	1.316E-03
Benzene (Benzol, Coal naphhtha)	71-43-2	Class I	0.0880	0.870	78.10	1.253E-01
bis(2-Chloroethyl) ether (Dichloroethyl ether)	111-44-4	Class I	0.0692	1.220	143.00	1.842E-03
bis (2-Ethylhexyl) phthalate (DEHP, Di-(2-ethylhexyl)phthalate	117-81-7	Class II	0.0351	1.000	390.56	2.632E-10
Bromoform (Tribromomethane)	75-25-2	Class II	0.0149	2.890	252.77	7.368E-03
Carbon disulfide (Carbon bisulfide)	75-15-0	Class II	0.1040	1.260	76.10	4.816E-01
Carbon tetrachloride (Tetrachloromethane)	56-23-5	Class II	0.0780	1.590	153.80	1.487E-01

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Chlordane	57-74-9	Class II	0.0118	1.110	409.80	1.300E-08
Chlorobenzene (Benzene chloride)	108-90-7	Class II	0.0730	1.110	112.60	1.553E-02
Chloroethane (Ethyl chloride)	75-00-3	Class II	0.2710	1.410	64.51	1.579E+00
Chloroform (Trichloromethane)	67-66-3	Class II	0.1040	1.490	119.38	2.737E-01
Chloromethane (Methyl chloride)	74-87-3	Class II	0.1260	0.950	50.49	5.039E+00
Cresol - mixed isomers	1319-77-3	Class III	0.0694	1.030	108.10	3.947E-04
DDE (p,p'-dichlorodiphenyldichloroethylene)	72-55-9	Class II	0.0144	1.410	318.03	9.000E-09
Dibutyl phthalate (DBP)	84-74-2	Class II	0.0438	1.043	278.30	1.300E-07
Dichloromethane (Methylene chloride, DCM)	75-09-2	Class II	0.1010	1.340	85.00	5.763E-01
Dimethyl phthalate (Phthalic acid methyl ester)	131-11-3	Class II	0.0568	1.190	194.20	2.630E-07
Ethyl acrylate (Ethyl propenoate)	140-88-5	Class II	0.0770	0.920	100.00	5.263E-02
Ethyl benzene (Phenylethane)	100-41-4	Class II	0.0750	0.870	106.20	1.145E-03
Ethylene glycol	107-21-1	Class III	0.1080	1.110	62.08	1.658E-04
Ethylene oxide	75-21-8	Class I	0.1040	0.870	44.00	1.645E+00
Ethylidene dichloride (1,1-dichloroethane)	75-34-3	ClassII	0.0742	1.170	98.96	7.778E-01
Formaldehyde (methylene oxide)	50-00-0	Class I	0.1780	0.970	30.00	4.605E+00
Glycol ethers	109-86-4	Class II	0.0700	0.978	134.14	4.526E-03
Heptachlor (3-Chlorochlordene)	76-44-8	Class II	0.0112	1.570	373.35	3.950E-07
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	87-68-3	Class II	0.0561	1.670	260.80	1.974E-04
Hexachlorobenzene (Perchlorobenzene)	118-74-1	Class II	0.0542	2.040	284.80	6.316E-06
Hexachlorocyclopentadiene (HCCPD)	77-47-4	Class III	0.0161	1.700	272.77	1.066E-04
Hexachloroethane (Perchloroethane)	67-72-1	Class II	0.0025	2.090	237.00	8.553E-04
Methanol (Methyl alcohol)	67-56-1	Class III	0.1500	0.790	32.00	1.500E-01
Methoxychlor (Methoxy DDT, DMDT, Dimethoxy-DDT)	72-43-5	Class II	0.0156	0.970	345.65	2.040E-07
Methyl Bromide (Bromomethane)	74-83-9	Class III	0.0149	1.410	94.95	2.092E+00
Methyl ethyl ketone (MEK)	78-93-3	Class III	0.0808	1.150	72.10	1.316E-01
Methyl iodide (Iodomethane)	74-88-4	Class II	0.0390	1.650	141.94	5.263E-01
Methyl isobutyl ketone (MIBK)	108-10-1	Class III	0.0750	0.800	100.20	2.066E-02
Methyl methacrylate	80-62-6	Class III	0.0770	0.950	100.10	4.737E-02
n-Butyl alcohol (n-Butanol)	71-36-3	Class III	0.0800	0.810	74.14	8.553E-03
n-Hexane	110-54-3	Class III	0.2000	0.660	86.20	1.974E-01
n-Nitrosodimethylamine (DMN, dimethylnitrosoamine)	62-75-9	Class I	0.1126	1.150	74.08	1.053E-02
n-Nitrosomorpholine (4-Nitrosomorpholine)	59-89-2	Class II	0.0590	1.150	116.14	1.309E-04
Naphthalene (and Methylnaphthalenes)	91-20-3	Class II	0.0590	1.140	128.20	3.026E-04

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Nitrobenzene (Nitrobenzol)	98-95-3	Class II	0.0760	1.200	123.10	3.947E-04
Parathion (AATP, ethyl parathion)	56-38-2	Class II	0.0170	1.260	291.30	5.000E-08
Pentachloronitrobenzene (Quintobenzene, PCNB)	82-68-8	Class II	0.0159	1.410	295.36	1.300E-07
Pentachlorophenol (PCP)	87-86-5	Class II	0.0560	1.980	266.40	6.579E-06
Phenol (Benzenol, Carbolic acid)	108-95-2	Class II	0.0820	1.070	94.10	4.487E-04
Phthalic anhydride	85-44-9	Class III	0.0710	1.330	148.10	1.974E-06
Polynuclear Aromatic Hydrocarbons (Generic PAHs)	206-44-0	Class II	0.0439	1.020	147.00	3.020E-05
Propoxur (Baygon, 0-Isopropoxyphenyl methylcarbamate)	114-26-01	Class III	0.0273	1.150	209.24	2.263E-05
Pyridine	110-86-1	Class III	0.0910	0.980	79.10	2.632E-02
Styrene (Vinylbenzene)	100-42-5	Class II	0.0710	0.900	104.20	9.605E-03
Tetrachloroethane (Acetylene tetrachloride)	79-34-5	Class II	0.0710	1.590	168.00	8.553E-03
Tetrachloroethylene (Antisol 1, Carbon dichloride, Perchloroethylene)	127-18-4	Class II	0.0720	1.624	165.83	2.500E-02
Toluene (Methylbenzene)	108-88-3	Class III	0.0870	0.870	92.40	3.947E-02
Toluene-2,4-diisocyanate	584-84-9	Class II	0.0610	1.200	174.16	1.053E-04
Toxaphene (Chlorinated camphene)	8001-35-2	Class II	0.0116	1.110	414.00	3.947E-04
Trichloroethylene (Acetylene trichloride)	79-01-6	Class II	0.0790	1.400	131.40	9.868E-02
Vinyl acetate	108-05-4	Class III	0.0850	0.930	86.09	1.513E-01
Vinyl chloride (Chloroethene, Monochloride ethylene)	75-01-4	Class I	0.1060	0.910	62.60	3.500E+00
Vinylidine Chloride (1,1-Dichloroethylene)	75-35-4	Class II	0.0900	1.213	96.94	8.289E-01
Xylene (mixed isomers)	1330-20-7	Class II	0.0714	0.880	106.16	1.118E-02
Biphenyl (1,1-Biphenyl, Xenene)	95-52-4	Class II	0.0404	1.180	154.20	1.315E-03
Benzyl Chloride (Totyl chloride)	100-44-7	II	0.0750	1.100	126.60	1.592E-03
4,6-Dinitro-o-cresol	534-52-1	II	0.0293	1.150	198.00	2.369E-05
Triethylamine	121-44-8	III	0.0427	1.150	149.19	1.316E-05
Carbaryl	63-25-2	II	0.0278	1.232	201.22	5.260E-08
o-Toluidine	95-53-4	II	0.0714	0.989	107.17	3.180E-04
Hydrazine	302-01-2	II	0.4164	1.008	32.06	1.895E-02
Polychlorinated Biphenyls (PCB's)	1336-36-3	II	0.0175	1.190	292.00	5.396E-06
2-Nitropropane	79-46-9	II	0.0923	0.988	89.09	1.336E-01
Cumene (isopropyl benzene)	98-82-8	III	0.0650	0.860	120.20	6.054E-03
Acenaphthene	83-32-9	Class II	0.0421	1.070	154.21	6.580E-06
Acenaphthylene	208-96-8	Class II	0.0429	1.020	152.21	3.020E-05
Acrolein	107-02-8	Class II	0.1050	0.840	56.10	3.211E-01
Aldrin	309-00-2	Class II	0.0132	1.180	364.93	7.896E-09

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Anthracene	120-12-7	Class II	0.0324	1.250	178.23	1.710E-09
Benz (a) anthracene	56-55-3	Class II	0.0510	1.110	228.30	2.630E-10
Benzal Chloride 2	98-87-3	Class II	0.0750	1.100	126.60	1.592E-03
Benzo (b) flouranthene 4	205-66-2	Class II	0.0226	1.020	252.32	6.580E-10
Benzo (k) flouranthene 4	207-08-9	Class II	0.0226	1.020	252.32	1.260E-13
Benzo (a) pyrene	50-32-8	Class II	0.0430	1.110	252.30	7.470E-07
BHC - Lindane	58-89-9	Class II	0.0162	1.410	290.85	4.068E-05
Chlorobenzilate	510-15-6	Class II	0.0168	0.970	325.20	3.510E-12
2-Chloronaphthalene	91-58-7	Class II	0.0347	1.410	162.62	2.237E-05
Chrysene	218-01-9	Class II	0.0248	1.110	228.20	7.580E-13
Dibenz (a, h) anthracene	53-70-3	Class II	0.0500	1.282	278.35	1.320E-13
Dieldrin	60-57-1	Class II	0.0125	1.180	380.93	2.630E-10
Diphenyl amine 4	122-39-4	Class 2	0.0300	1.160	169.24	1.316E-03
1,2-Diphenylhydrazine	122-66-7	Class II	0.0317	1.190	184.23	3.290E-08
Endrin	72-20-8	Class II	0.0125	1.800	380.93	2.630E-10
Endrin aldehyde	7421-93-4	Class II	0.0300	1.790	382.93	1.316E-01
Ethylene oxide	75-21-8	Class II	0.1040	0.870	44.00	1.645E+00
Fluoranthene	206-44-0	Class II	0.0302	1.020	202.00	2.329E-05
Fluorene	86-737-7	Class II	0.0500	1.203	166.32	4.210E-07
Indeno (1,2,3-c,d) pyrene	193-39-5	Class II	0.0190	1.150	276.34	1.320E-12
3-Methylcholanthrene	56-49-5	Class II	0.0209	1.020	268.36	9.988E-07
PCBs (Total) all isomers or Aroclors	1336-36-3	Class II	0.0175	1.190	292.00	5.400E-06
Penthachlorobenzene	608-93-5	Class II	0.0570	1.610	250.34	6.050E-06
Phenathrene	85-01-8	Class II	0.0500	0.980	178.23	6.800E-04
Pyrene	129-00-0	Class II	0.0500	1.271	202.25	2.500E-06
1,1,2,2-Tetrachloroethane	79-34-5	Class II	0.0710	1.590	168.00	8.550E-03
Trichloroethene	79-01-6	Class II	0.0780	1.300	133.40	3.290E-02
Tetrachloroethene	127-18-4	Class II	0.0720	1.624	165.83	2.500E-02
1,3 Butadiene (Biethylene)	106-99-0	Class II	0.2490	0.760	54.09	2.760E+00
2-Methylnapthalene	91-57-6	Class II	0.0480	1.020	142.19	8.912E-05
1-Methylnaphthalene	90-12-0	Class III	0.0480	1.020	142.19	7.090E-05
Methyl Tert Butyl Ether (MTBE)	1634-04-4	Class III	0.1024	0.970	83.10	2.530E-01
Acetaldehyde	75-07-0	Class II	0.1240	0.788	45.06	1.145E+00
Diethanolamine	111-42-2	Class III	0.0704	1.088	105.14	7.189E-07

Chemical Name	***CAS No.***	***Class***	***Air Diffusivity*** (cm^2/sec)	***Density*** (g/cm^3)	***Molecular Weight***	***Vapor Pressure*** (Atm)
Chloroprene	126-99-8	Class II	0.1040	0.958	88.50	3.590E-01
Lindane	58-89-9	Class II	0.0162	1.410	290.85	4.070E-05
Benzidine	92-87-5	Class I	0.0340	1.250	184.24	4.000E-07
p-Phenylenediamine	106-50-3	Class III	0.0715	1.140	108.14	6.100E-06

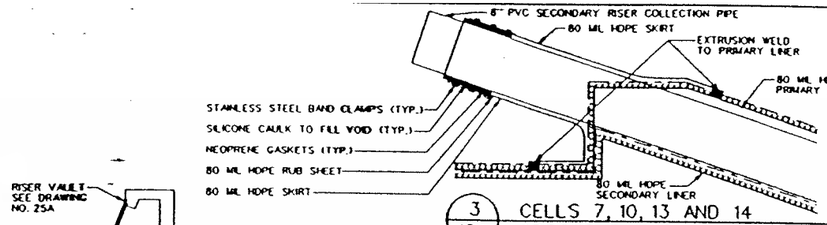
Landfill Data for Emissions Calculations

Open Fill Area	*Average Fill Depth*	*Air Porosity*	*Total Porosity*	*Landfill Density*	*Landfill Temp.*
(Acres)	(Feet)	(unitless)	(unitless)	(lb/ft^3)	(°C)
19.0	6.0	0.100	0.500	90.0	25

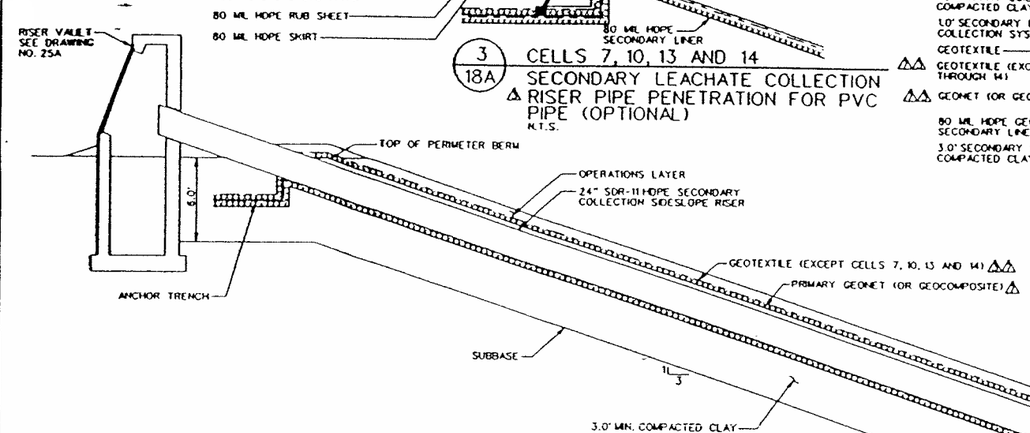
Time Period Modeled	
Start Date	1/1/2016
End Date	#########
Total Days	366

Calculated Landfill Data	
Total Organic Loading, L *(g/cm^3)*	0.00260
Average Organic Molecular Weight	285.4

Attachment 6
Select Drawings of RMU-2 Landfill

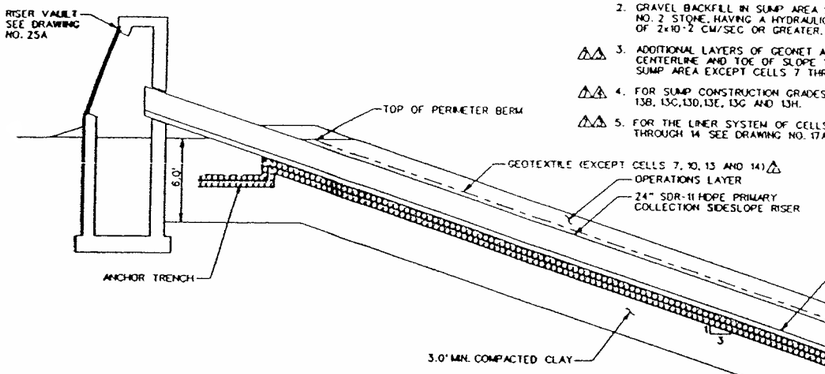


3 / 18A CELLS 7, 10, 13 AND 14
SECONDARY LEACHATE COLLECTION RISER PIPE PENETRATION FOR PVC PIPE (OPTIONAL) △
N.T.S.



A / 18A SECTION △△
SECONDARY LEACHATE COLLECTION SUMP AND RISER
SCALE 1" = 5'

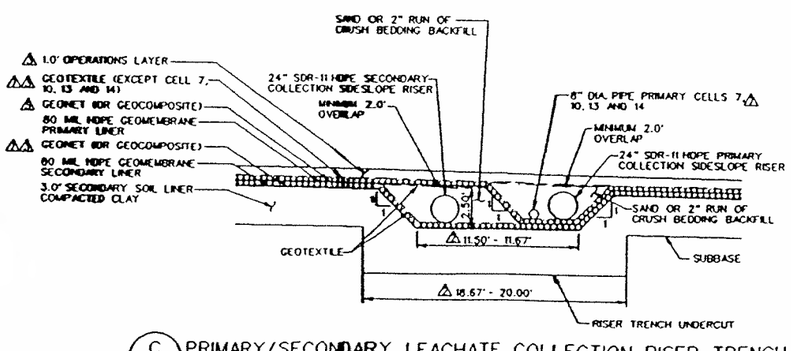
NOTES:
1. HORIZONTAL SECTION OF HDPE SIDESLOPE RISER SHALL BE PERFERATED WITH EVENLY SPACED 1/2" DIAMETER HOLES AND WRAPPED WITH TWO LAYERS OF GEONET. HOLE SPACING SHALL BE 6" EACH WAY.
2. GRAVEL BACKFILL IN SUMP AREA SHALL BE N.Y.S.D.O.T. NO. 2 STONE, HAVING A HYDRAULIC CONDUCTIVITY OF 2x10-2 CM/SEC OR GREATER.
△△ 3. ADDITIONAL LAYERS OF GEONET ALONG CENTERLINE AND TOE OF SLOPE TO EXTEND 5 FEET INTO SUMP AREA EXCEPT CELLS 7 THROUGH 14.
△△△ 4. FOR SUMP CONSTRUCTION GRADES SEE DRAWINGS NO. 13A, 13B, 13C, 13D, 13E, 13G AND 13H.
△△ 5. FOR THE LINER SYSTEM OF CELLS 7 THROUGH 14 SEE DRAWING NO. 17A.



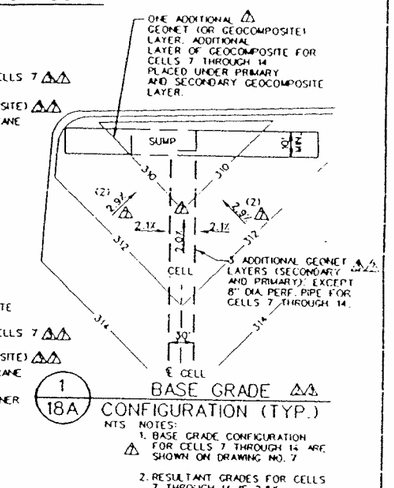
B / 18A SECTION △
PRIMARY LEACHATE COLLECTION SUMP AND RISER
SCALE 1" = 5'

NOTES:
1. HORIZONTAL SECTION OF HDPE SIDESLOPE RISER SHALL BE PERFERATED WITH EVENLY SPACED 1/2" DIAMETER HOLES AND WRAPPED WITH THREE LAYERS OF GEONET. HOLE SPACING SHALL BE 6" EACH WAY.
2. GRAVEL BACKFILL IN SUMP AREA AND BETWEEN VERTICAL RISER AND CONCRETE SLEEVE SHALL N.Y.S.D.O.T. NO. 2 STONE, HAVING A HYDRAULIC CONDUCTIVITY OF 2x10-2 CM/SEC OR GREATER.
3. HDPE VERTICAL RISER BETWEEN HORIZONTAL SECTION OF FABRICATED TEE AND BOTTOM OF MANHOLE SHALL BE PERFORATED WITH A MINIMUM OF 20 EVENLY SPACED 1/2" DIA. HOLES. PERFORATED PORTION OF RISER SHALL BE WRAPPED WITH THREE LAYERS OF GEONET.
△△ 4. ADDITIONAL LAYERS OF GEONET ALONG CENTERLINE AND TOE OF SLOPE TO EXTEND 5 FEET INTO SUMP AREA EXCEPT CELLS 7 THROUGH 14
△△ 5. FOR SUMP CONSTRUCTION GRADES SEE DRAWINGS NO. 13A, 13B, 13C, 13D, 13E, 13G AND 13H.
△△ 6. FOR THE LINER SYSTEMS OF CELLS 7 THROUGH 14 SEE DRAWING NO. 17A.

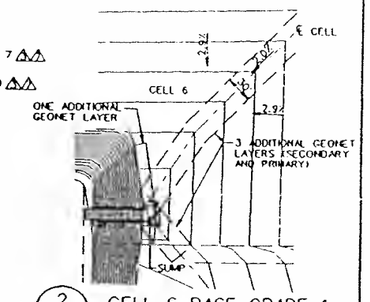
CADD PRODUCED DRAWING



C / 18A PRIMARY/SECONDARY LEACHATE COLLECTION RISER TRENCH △△
SCALE 1" = 5'



1 / 18A BASE GRADE △△
CONFIGURATION (TYP.)
NTS NOTES:
1. BASE GRADE CONFIGURATION FOR CELLS 7 THROUGH 14 ARE △ SHOWN ON DRAWING NO. 7
2. RESULTANT GRADES FOR CELLS 7 THROUGH 14 IS 2.5%.
3. CENTERLINE GRADE FOR CELLS 7 THROUGH 14 IS 1.3%.



2 / 18A CELL 6 BASE GRADE △
CONFIGURATION (TYP.)
NTS

REV.	DATE	DESCRIPTION	DRN BY	APP BY
△	10-97	MODIFY PIPING AND ADDED NOTES	FAS	CPB
△	7-97	ADJUSTED 8" PIPE LOCATION	FAS	CPB
△	6-97	DELETED SECONDARY RISER CLEANOUT	FAS	CPB
△	4-97	REVISED FOR CELL 8	FAS	CPB
△	11-96	MODIFY LINER SYSTEM	FAS	CPB
△	7-96	ADD NOTE DETAIL 1, REVISED TITLE FOR CELL 10	FAS	CPB
△	4-96	ADDED DETAIL CELL 6 BASE GRADE	FAS	CPB

DATE: NOVEMBER 1995 | PROJECT NO. 34282.100 | SCALE: AS SHOWN

DES BY	FAS	
DRN BY	FAS	
CHK BY	CPB	
REV BY	AWE	
APP BY	CPB	

PROJECT: RESIDUALS MANAGEMENT UNIT 1

SHEET TITLE: SUMP DETAILS CELLS 5 THROUGH 14 △△

RUST ENVIRONMENT & INFRASTRUCTURE

SIGNATURE

DATE

STATE OF NEW YORK
CHARLES P. BALLOD
LICENSED PROFESSIONAL ENGINEER
59688-1

NOV 18 1997

CWM Chemical Services, Inc.
Model City Facility

DRAWING NO. 18A

www.ghd.com



ENCLOSURE NO. 3
PROPOSED REVISED FUGITIVE DUST CONTROL PLAN

Addition of RMU-2
(includes document showing tracked changes)

APPENDIX D-10
FUGITIVE DUST CONTROL PLAN

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II. Control of General Particulate Dust....3
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FUGITIVE DUST CONTROL PLAN

As a hazardous waste management facility, the possibility exists that potentially contaminated dust could be released to the atmosphere. 6 NYCRR 373-2.14(c)(9) specifies that if a landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal. Controls, such as wetting, must be applied to dusty waste streams when they are disposed of in the landfill to prevent particulate emissions. Vehicles exiting the landfill are cleaned of any gross contamination at the exit of the landfill. In order to control any potentially contaminated dust that may accumulate on the roads outside the landfill which are used by waste hauling vehicles, road maintenance is performed.

In addition to the control of potentially contaminated dust from waste management activities, CWM employs best management practices to reduce the amount of soil-type particulate dust. The practices are employed during construction, site and stockpile maintenance and the maintenance of roadways which are used by non-waste hauling vehicles.

I. Control of Potentially Contaminated Dust

A. Landfill Operations

1. Waste stream evaluation.

    a) Waste streams are evaluated for dusting potential during the approval process. Recommendations for dust control, including wetting, containerization, stabilization treatment, etc. will be included on the disposal decision for any wastes identified with dusting potential.

    b) Recommendations for dust control will be considered by the On-Site DEC Monitors during their review and approval of the landfill waste stream. DEC comments will be incorporated into the management approach as appropriate.

    c) Upon receipt of the first shipment of any new waste, the sampler will inspect the load and consider its potential for dusting. The disposal decision may be updated if necessary.

    d) A dusty load for direct landfill disposal will be flagged for special handling by the landfill personnel and the control method prescribed on the Waste Tracking Form.

2. Waste Disposal

    a) If the prescribed method for dust control is wetting, an operator with a water canon may wet the load in the container in the landfill. If required, an operator may use a backhoe to mix the water and the material in the container prior to dumping to ensure

proper wetting of the waste. Additional water may be sprayed during the unloading or after waste placement.

b) Any excess or free liquid resulting from the operations contemplated by the activity above shall be treated as liquid from a precipitation event and shall not be deemed to constitute the disposal of free liquids or bulk waste containing free liquids. This interpretation is in keeping with USEPA policy contained in a statutory interpretative guidance document issued in April, 1986.

c) If a dusty waste load not previous identified as having a dusting potential is noted by the landfill personnel, the lab will be notified and the disposal decision amended as needed to specify controls.

d) If the specified dust controls are unsuccessful during a trial load, CWM shall cease disposal of additional loads and revise the dust control procedure.

e) In addition, a trash fence is employed to prevent wind blown debris from escaping the landfill. On a routine basis, all plastic and paper debris escaping the boundaries of the waste management area will be collected.

f) Additional water may be applied to the landfill operating area to control dust. DEC approved cover material such as ConCover may be used to provide dust control of the waste placed in the landfill.

g) All exposed waste is covered at the end of each day of operation using a DEC approved cover material.

NOTE: The procedures specified above in sections 1. a)-c) and 2. c)-d) must be included in this and any future versions of CWM's Fugitive Dust Control Plan according to a Memorandum of Understanding (89-151) between CWM and NYSDEC.

B. Roadways Used By Waste Hauling Vehicles

1. Potential Contamination Control

a) Vehicles or any other equipment which have entered the landfill facility where it has come into direct contact with waste, shall be inspected for gross contamination prior to leaving the landfill area.

b) Any gross contamination identified on the wheels or equipment will be physically removed before leaving the area to prevent contamination of on-site roads.

c) Despite the efforts described above, the potential exists that contaminated dust may be present on the roadways outside the landfill. These roadways will be cleaned and

maintained. A sweeper or other road cleaning equipment may be employed to minimize dust accumulation on these roads. Water trucks may also be employed to wet the road surfaces and to minimize air borne dust. Note: If truck washing is performed at the landfill exit, the potential for contaminated dust on the roadway will be eliminated.

d) In addition, the site traffic control plan has generally limited these roadways to waste hauling vehicles. A low speed limit has been posted and speed bumps are employed to minimize dust generation.

II. Control of General Particulate Dust

A. Construction Projects

Dust management procedures for new site and landfill construction projects are addressed in the related permit applications where appropriate. A Stormwater Pollution Prevention Plan has been developed for construction projects affecting areas of at least one acre to control soil erosion and contain sediments.

B. Erosion

Vegetative cover is maintained using on-site and contracted services. This includes the application of clay, top soil, fertilizer, hydroseeding and hand seeding. Some berm areas may also be covered with stone or gravel. The use of gabion mats and especially Miramet geotextile fabric has reduced erosion and enhanced vegetative growth.

C. Other Site Roads

Roadways other than those used by waste hauling vehicles will be cleaned and maintained as good housekeeping dictates. In general, the paved roads will be swept as needed, weather permitting. These roads may be wetted down as needed to provide general dust management, adequate visibility and nuisance control.

III. Air Monitoring - Fugitive Dust Emissions

CWM has an Ambient Air Monitoring Program. This program determines the impact, if any, of the hazardous waste activities and other site activities on the surrounding air quality at the Model City facility. This Ambient Air Monitoring Program has been approved by NYSDEC.

A. During Landfill Operations

PM-10 Monitoring

A detailed discussion of the PM-10 monitoring network relative to dust emissions is presented in the PM-10 Air Monitoring Program QA/QC Manual, initially approved by NYSDEC (H. Sandonato to J. Pizzuto, 9/26/90), with subsequent revisions. This monitoring program demonstrates CWM's compliance with the national primary and secondary 24 hour ambient air quality standard for particulate matter (PM-10) of 150 micrograms/cubic meter, 24 hour average concentration.

The results of the PM-10 monitoring shall be treated as PM-2.5 and compared to the national primary and secondary 24 hour ambient air quality standard for particulate matter (PM-2.5) of 35 micrograms/cubic meter, 24 hour average concentration (98th percentile, averaged over 3 years). Alternatively, the Permittee may perform a short-term monitoring program using temporary PM-2.5 units co-located at PM-10 monitoring network locations to establish the fraction of the PM-10 results that are PM-2.5.

The fugitive dust control measures discussed in this plan have consistently resulted in particulate matter levels below the ambient air quality standards. If this monitoring network begins to show levels above the standards, CWM will investigate the cause and revise the Fugitive Dust Control Plan, if necessary.

B. Monitoring During Construction

PM-10 Monitoring

In addition to the perimeter network monitoring, the Permittee shall perform continuous real-time PM-10 monitoring proximate to the landfill construction in accordance with the Residuals Management Unit No. 2 (RMU-2) Air Monitoring Plan (RAMP) for Landfill Construction as required by Attachment N of this Permit. Response Levels and Response Actions shall be specified in the RAMP.

APPENDIX D-10

FUGITIVE DUST CONTROL PLAN

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FUGITIVE DUST CONTROL PLAN

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III. Air Monitoring - Fugitive Dust Emissions 3
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B. Monitoring During Construction 4

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The results of the PM-10 monitoring shall be treated as PM-2.5 and compared to the national primary and secondary 24 hour ambient air quality standard for particulate matter (PM-2.5) of 35 micrograms/cubic meter, 24 hour average concentration (98th percentile, averaged over 3 years). Alternatively, the Permittee may perform a short-term monitoring program using temporary PM-2.5 units co-located at PM-10 monitoring network locations to establish the fraction of the PM-10 results that are PM-2.5.

The fugitive dust control measures discussed in this plan have consistently resulted in particulate matter levels below the ambient air quality standards. If this monitoring network begins to show levels above the standards, CWM will investigate the cause and revise the Fugitive Dust Control Plan, if necessary.

B. Monitoring During Construction

PM-10 Monitoring

In addition to the perimeter network monitoring, the Permittee shall perform continuous real-time PM-10 monitoring proximate to the landfill construction in accordance with the Residuals Management Unit No. 2 (RMU-2) Air Monitoring Plan (RAMP) for Landfill Construction as required by Attachment N of this Permit. Response Levels and Response Actions shall be specified in the RAMP.

ENCLOSURE NO. 4
PROPOSED REVISED AIR & METEOROLOGICAL MONITORING PLAN

Addition of RMU-2
(includes document showing tracked changes)

Air & Meteorological Monitoring Plan

Monitoring Network

A NYSDEC-approved ambient air and meteorological monitoring network shall be operated and maintained at the CWM Model City facility. This program shall consist of a minimum of six (6) monitoring sites established at NYSDEC-approved locations and equipped with sampling devices and other equipment as necessary for ambient air quality and one (1) meteorological monitoring. Additional monitoring will be required during landfill construction activities.

Air Quality Monitoring During Construction

Air samples shall be obtained from the NYSDEC-approved monitoring network and analyzed for PM-10 in accordance with Methods published by the USEPA. CWM will sample for PM-10 once every six calendar days. The Permittee shall prepare and submit to the NYSDEC for approval a Residuals Management Unit No. 2 (RMU-2) Air Monitoring Plan (RAMP) for Landfill Construction prior to initiating landfill construction activities at the facility. The Permittee shall use Appendix 1A and 1B of DER-10 as a guide to prepare the RAMP. Additional air sampling and analysis for Volatile Organic Compounds (VOCs), Polychlorinated biphenyls (PCBs), and/or heavy metals shall be performed, if necessary, proximate to the landfill construction in accordance with the RAMP for Landfill Construction. At a minimum, the Permittee shall perform continuous real-time PM-10 monitoring proximate to the landfill construction. Additionally, the Permittee shall perform VOC, PCB, and/or metals monitoring in accordance with the RAMP for Landfill Construction proximate to the excavation of in-situ soil with known VOC, PCB, and/or metals contamination. In accordance with the RMU-2 Soil Excavation Monitoring and Management Plan (SEMMP), which includes an RMU-2 Corrective Action Plan, local VOC monitoring is required during all soil excavation activities. PCB and/or heavy metals monitoring will not be required for excavation in areas that have been shown to be less than the levels in Table 375-6.8(b) for industrial facilities.

Air Quality Monitoring During RMU-2 Operations

Air samples shall be obtained from the monitoring network and analyzed for PM-10 in accordance with Methods published by the USEPA during the operational life of RMU-2. CWM will sample for PM-10 once every six calendar days.

The results of the PM-10 monitoring shall be treated as PM-2.5 and compared to the national primary and secondary 24 hour ambient air quality standard for particulate matter (PM-2.5) of 35 micrograms/cubic meter, 24 hour average concentration (98th percentile, averaged over 3 years). Alternatively, the Permittee may perform a short-term monitoring program using temporary PM-2.5 units co-located at PM-10 monitoring network locations to establish the fraction of the PM-10 results that are PM-2.5.

Additional monitoring network air sampling and analysis for Volatile Organic Compounds (VOCs) and/or Polychlorinated biphenyls (PCBs) shall be performed if deemed necessary by the NYSDEC.

Commencing with the start of waste receiving operations in RMU-2, the Permittee shall perform perimeter monitoring at the established monitoring network for VOCs and PCBs . The Permittee shall prepare and submit for NYSDEC Air Monitoring Program QA/QC Manual for VOCs and PCBs. The Permittee may petition the NYSDEC for approval of discontinuing the VOC and/or PCB monitoring no sooner than one-year after the initiation of the program(s).

Meteorological Monitoring

Temperature, wind speed and wind direction shall be continuously measured at CWM's on-site meteorological station and recorded. CWM shall also measure and record the date, or dates, duration (in hours) and amount (in inches) of all precipitation events at the facility's meteorological station. Other parameters shall also be measured if deemed necessary by the NYSDEC.

Quality Assurance / Quality Control (QA/QC)

The ambient air and meteorological monitoring network shall be maintained and all sampling and analysis shall be performed in accordance with the November 2000 and any subsequently Department approved revisions of the CWM Meteorological Monitoring Network - Quality Assurance Project Plan, which is incorporated by reference into this Permit by **Condition B** in **Schedule 1 of Module I** of this Permit, and in accordance with the May 2005 and any subsequently Department approved revisions of the PM-10 Air Monitoring Program QA/QC Manual and approved VOC and PCB Air Monitoring Program QA/QC Manuals. CWM shall compensate the NYSDEC for the costs incurred in the oversight and validation of the network QA/QC that are reported to CWM. Compensation procedures shall be the same as those specified by **Condition E** in **Schedule 1 of Module I** of this Permit for the environmental monitors.

Reporting of Monitoring Data

A monthly report of air monitoring data collected during each calendar month shall be submitted to the Region 9 Air and Solid & Hazardous Materials Engineers within ninety (90) days from the end of each calendar month or in accordance with an alternative Department approved submission schedule. Meteorological monitoring data shall be made available upon request.

Air & Meteorological Monitoring Plan

Monitoring Network

A NYSDEC-approved ambient air and meteorological monitoring network shall be operated and maintained at the CWM Model City facility. This program shall consist of a minimum of six (6) monitoring sites established at NYSDEC-approved locations and equipped with sampling devices and other equipment as necessary for ambient air quality and one (1) meteorological monitoring. Additional monitoring will be required during landfill construction activities.

Air Quality Monitoring During Construction

Air samples shall be obtained from the NYSDEC-approved monitoring network and analyzed for PM-10 in accordance with Methods published by the USEPA. CWM will sample for PM-10 once every six calendar days. The Permittee shall prepare and submit to the NYSDEC for approval a Residuals Management Unit No. 2 (RMU-2) Air Monitoring Plan (RAMP) for Landfill Construction prior to initiating landfill construction activities at the facility. The Permittee shall use Appendix 1A and 1B of DER-10 as a guide to prepare the RAMP. Additional air sampling and analysis for Volatile Organic Compounds (VOCs~~) and/or~~), Polychlorinated ~~biphenals~~biphenyls (PCBs), and/or heavy metals shall be performed, if necessary, proximate to the landfill construction in accordance with the RAMP for Landfill Construction. At a minimum, the Permittee shall perform continuous real-time PM-10 monitoring proximate to the landfill construction. Additionally, the Permittee shall perform VOC, PCB, and/or metals monitoring in accordance with the RAMP for Landfill Construction proximate to the excavation of in-situ soil with known VOC, PCB, and/or metals contamination. In accordance with the RMU-2 Soil Excavation Monitoring and Management Plan (SEMMP), which includes an RMU-2 Corrective Action Plan, local VOC monitoring is required during all soil excavation activities. PCB and/or heavy metals monitoring will not be required for excavation in areas that have been shown to be less than the levels in Table 375-6.8(b) for industrial facilities.

Air Quality Monitoring During RMU-2 Operations

Air samples shall be obtained from the monitoring network and analyzed for PM-10 in accordance with Methods published by the USEPA during the operational life of RMU-2. CWM will sample for PM-10 once every six calendar days.

The results of the PM-10 monitoring shall be treated as PM-2.5 and compared to the national primary and secondary 24 hour ambient air quality standard for particulate matter (PM-2.5) of 35 micrograms/cubic meter, 24 hour average concentration (98th percentile, averaged over 3 years). Alternatively, the Permittee may perform a short-term monitoring program using temporary PM-2.5 units co-located at PM-10 monitoring network locations to establish the fraction of the PM-10 results that are PM-2.5.

Additional monitoring network air sampling and analysis for Volatile Organic Compounds (VOCs) and/or Polychlorinated biphenyls (PCBs) shall be performed if deemed necessary by the

NYSDEC.

Commencing with the start of waste receiving operations in RMU-2, the Permittee shall perform perimeter monitoring at the established monitoring network for VOCs and PCBs . The Permittee shall prepare and submit for NYSDEC Air Monitoring Program QA/QC Manual for VOCs and PCBs. The Permittee may petition the NYSDEC for approval of discontinuing the VOC and/or PCB monitoring no sooner than one-year after the initiation of the program(s).

Meteorological Monitoring

Temperature, wind speed and wind direction shall be continuously measured at ~~CWM=s~~CWM's on-site meteorological station and recorded. CWM shall also measure and record the date, or dates, duration (in hours) and amount (in inches) of all precipitation events at the ~~facility=s~~facility's meteorological station. Other parameters shall also be measured if deemed necessary by the NYSDEC.

Quality Assurance / Quality Control (QA/QC)

The ambient air and meteorological monitoring network shall be maintained and all sampling and analysis shall be performed in accordance with the November 2000 and any subsequently Department approved revisions of the ~~A~~CWM Meteorological Monitoring Network - Quality Assurance Project Plan~~@,~~ which is incorporated by reference into this Permit by **Condition B** in **Schedule 1 of Module I** of this Permit, and in accordance with the May 2005 and any subsequently Department approved revisions of the ~~A~~PM-10 Air Monitoring Program QA/QC Manual~~@.~~ and approved VOC and PCB Air Monitoring Program QA/QC Manuals. CWM shall compensate the NYSDEC for the costs incurred in the oversight and validation of the network QA/QC that are reported to CWM. Compensation procedures shall be the same as those specified by **Condition E** in **Schedule 1 of Module I** of this Permit for the environmental monitors.

Reporting of Monitoring Data

A monthly report of air monitoring data collected during each calendar month shall be submitted to the Region 9 Air and Solid & Hazardous Materials Engineers within ninety (90) days from the end of each calendar month or in accordance with an alternative Department approved submission schedule. Meteorological monitoring data shall be made available upon request.

ENCLOSURE NO. 5
PROPOSED RMU-2 AIR MONITORING PROGRAM FOR CONSTRUCTION AND OPERATIONS

February 12, 2016

PROPOSED AIR MONITORING PROGRAM
RESIDUALS MANAGEMENT UNIT NO. 2
CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK

	Current Operations				RMU-2 Construction (1)				RMU-2 Operations (1)			
	Monitoring	Type	Location	Frequency	Monitoring	Type	Location	Frequency	Monitoring	Type	Location	Frequency
Dust	PM-10	Hi-vol	Network	1/6 days	PM-10 (2) DER-10 (RAMP)	Hand-Held DataRAM™ pDR-1000AN or equivalent	Proximate	Continuous during construction activities	PM-10 (2)	Hi-vol	Network	1/6 days
VOCs	-	-	-	-	DER-10 (Contaminated Areas Only)	Hand-Held MiniRAE 3000 or equivalent	Proximate	Continuous during construction activities	Method 325A—VOCs from Fugitive and Area Sources	Passive Sorbent	Network	Continuous (2 week sample)
PCBs (routine)	-	-	-	-	Surrogate (Contaminated Areas Only)	Hand-Held DataRAM™ pDR-1000AN or equivalent	Proximate	Continuous during construction activities	PM-10 (surrogate)	Hi-vol	Network	1/6 days
PCBs (confirmation, first month of RMU-2 operation)	-	-	-	-	-	-	-	-	PCB by ASTM D 4861	Filter /PUF	Network	1/6 days
Metals (routine)	-	-	-	-	Surrogate (Contaminated Areas Only)	Hand-Held DataRAM™ pDR-1000AN or equivalent	Proximate	Continuous during construction activities	PM -10 (surrogate)	Hi-vol	Network	1/6 days
Metals (confirmation first month of RMU-2 operation)	-	-	-	-	-	-	-	-	analyze PM-10 filter for metals	Hi-vol	Network	1/6 days

Notes:

(1) = Methods and procedures for monitoring for dust, VOCs, PCBs, and metals during construction and operations for RMU-2 will be established in the RMU-2 Air Monitoring Plan (RAMP) to be submitted to the NYSDEC and approved prior to construction.

(2) = A short-term program with portable PM-2.5 units will be co-located at various PM-10 monitoring locations to establish what percentage of PM-10 particulates are PM-2.5. Methods and frequency will be established in the RAMP.

- = Not Required

Proximate = Monitoring located near construction activities in accordance with DER-10 or RMU-2 Air Monitoring Plan (RAMP)