OPERATIONS AND MAINTENANCE MANUAL

FOR

THE STABILIZATION FACILITY

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OBJECTIVE

The purpose of this manual is:

1.) To provide the operators with a description of the entire stabilization process.

2.) To communicate clearly to the operator the daily routines of running the entire stabilization process facility.

3.) To systematically give the operator the needed tools for start-up and shut down of the stabilization facility.

This manual is designed as an operator's guide to the entire stabilization process facility. This manual will provide the operator with sufficient knowledge of the stabilization systems to enable the operation of the system with hazardous waste materials.

1.0 INTRODUCTION

1.1 Process Description

Stabilization is a process that results in the reduction of the mobility (or leachability) of hazardous components within a hazardous waste matrix. Stabilization is accomplished by inducing a chemical reaction between the hazardous components and one or more reagents, such as cement, cement kiln dust, lime, flyash or other pozzolanic materials.

Typical materials to be stabilized are inorganic wastewater treatment sludges (WWT), media with metals, contaminated soils, sand blast grit, incinerator ash, incinerator slag, emissions control dust and debris. These waste streams are chemically compatible and have no reactive properties; therefore, compatibility concerns are minimal.

Waste Profiles are carefully reviewed for EPA codes, components, types of metals present and stabilization recipe (type and quantity of reagents). Generally, bulk loads are processed as individual batches. Drum or other small quantities of waste and bulk loads that have similar characteristics, non-conflicting EPA waste codes and the same stabilization recipe may be combined to increase the batch size for processing. Alternately, the most conservative recipe may be used for a mixed drum batch.

Wastewater from equipment wash down or compatible hazardous and non-hazardous gate receipts may be used as the water source in the recipe. The EPA codes will be tracked through the process tankage and the impact on the treatment standards will be assessed for each batch prior to processing. Alternatively, city water or non-hazardous site waters may be used to avoid code conflict.

The waste material to be stabilized arrives at the site in dump trailers, roll-off boxes, drums, pneumatic trailers, and other types of containers. The waste can be wet, sticky, cohesive, dusty and could contain rock, pipe sections, concrete, rags, wire or other debris. The operator may select one or a combination of the following systems to process the waste:

1) <u>Mixing Basin (Pit) System:</u>

   The majority of the waste that requires stabilization is deposited in a mixing basin. Reagents are metered into the basin in accordance with a predetermined recipe. Water is added to the mixture, and the waste with reagent and water is mixed to a homogeneous mixture. The stabilized waste mixture is then removed from the pit with a backhoe, loaded into a dump truck or container, and transported to the landfill or an off-site disposal facility.

   Waste in drums may be emptied into the pit using a forklift and drum handler or placed full into the pit and broken apart with the mixing backhoe. The material is then stabilized as explained above.

2) Special Client Treatment Room (SCTR):

The SCTR was previously used to stabilize special wastes, such as those which could present a safety concern or required multiple reagents, in bulk containers rather than the mixing basins. The SCTR is no longer used for this purpose and is only used for temporary storage of bulk solid waste containers.

3) Macroencapsulation:

Debris that may not be physically suitable for the stabilization equipment, or that contains organic contamination (e.g. pump contaminated with leachate) may be managed by macroencapsulation. This type of debris is placed in a non-degradable HDPE box. The void space is then eliminated by the addition of stabilization material that does not need to be held and tested or other non-degradable absorbent/space filler. The container is then permanently sealed and disposed of in the landfill.

4) Microencapsulation:

Microencapsulation is a specified technology involving the immobilization of contaminants on debris by stabilization. Stabilization treatment is performed in the mixing basin (pit) system. As it is not possible to develop a wastestream specific recipe, the requirement is to utilize sufficient stabilization media to treat all surfaces. For material or debris that is not easily manageable in the mixing pits, a slurry of stabilization media can be mixed in the pit and sprayed or otherwise applied to encapsulate the debris within suitable secondary containment.

1.2 Process Reagents

Reagents, such as Portland Cement, cement kiln dust, lime, sodium sulfate, ferrous sulfate and others, are metered into the mixing pits in accordance with a pre-determined recipe. Typically, the recipe is selected from a set of developed standard recipes. Recurring waste streams or new similar waste streams will utilize the same, or similar, recipes previously developed. For more unusual waste streams, a stabilization recipe may be developed using bench scale testing with a sales sample. At that time, the type, quantity and sequence of reagent addition is determined.

2.0 SYSTEM DESCRIPTION

2.1 Mixing Basin (Pit) Facility

The mixing basin facility consists of the following equipment and construction:

1) A 125-ft. x 75-ft. x 30-ft. eave height pre-engineered metal building with smooth sandwich panel (insulated) sides and roof, called the Northern Expansion.

2) Two mixing basins (pits), approximately 22-ft. long x 14-ft. wide x 10-ft. deep. Construction consists of a reinforced concrete wall and floor placed over an 80-mil HDPE liner and a minimum of 3-ft. of compacted clay with a permeability of 1×10^{-7} cm/sec. The inside of the concrete is coated and a heavy duty grating is installed on the floor and walls. A 3/4 inch steel plate is placed over the grating and welded to form a stable base for the secondary containment structure. Tubular steel and stiffener supports are placed between the 3/4 inch secondary steel plate and a 1 inch primary steel plate to create the leak detection zone. This forms an annular space to detect leaks in the primary liner. A monitoring pipe and sump is constructed in the bottom of the annular space to collect any leaks should a failure occur in the primary steel liner. The bottom floor of the pit is sloped to drain into the sump. An indicator probe is lowered to the sump floor on operating days to check for the presence of liquids. When a pumpable quantity of liquid is detected, it is manually pumped out and tested for conductivity.

3) The floor of the building is reinforced concrete placed over an 80-mil HDPE liner to form an impervious barrier against waste migration. A perimeter curb is constructed around the entire building to contain waste. The 80-mil HDPE floor liner is welded to the 80-mil HDPE pit liner.

4) A removable steel cover is available and can be placed over the pit. The use of the pit cover is for precautionary measures and is optionally used, depending on the waste stream.

5) A 5-ton, overhead bridge crane is installed to traverse the entire building laterally and longitudinally. The crane may be used to place and remove the cover over the pit(s), move equipment, and other services requiring lifting.

6) A 16-ft. x 14-ft. overhead door is installed in the NW corner of the building and a 16-ft. x 16-ft. door is installed in the NE corner. This provides a drive through capability.

7) Trucks dumping waste back up to the pit(s) through a 16-ft. wide x 26-ft. high overhead door(s) over a reinforced concrete unloading pad(s). A steel turnover structure(s) is provided at the dump area to prevent a truck from turning over.

8) A 16-ft. x 16-ft. overhead door is installed between the basins. A dump truck will back up between the two basins and be loaded for transporting the stabilized material.

9) Interior building lighting and exterior flood lighting is provided to allow night operations.

10) A silo system, consisting of a 500 cubic yard silo (TA-05) and a 24 cubic yard day bin (TA-06), is used to store and transfer reagents used in the stabilization process. Each silo system consists of the following equipment and components:

a) A bolted steel silo with fill piping system, ladder and perimeter guardrails, pressure/vacuum relief, and a finish coat of paint.

b) A bin filter baghouse, 3 level probes, 1 bin activator (vibrator), 1 isolation valve, 1 rotary airlock feeder, and 3 pneumatically operated knife gate valves.

c) An air conveying system consisting of a blower assembly and piping to transfer reagent from the silo.

d) Fill control panel for trucks, main control panels, lighting and ventilation.

2.2 Baghouse Dust Collection System

The Dust Collection System consists of two (2) baghouses used to control dust generation from the stabilization process in the Northern Expansion. A 40,000 cfm unit (BH-03) is associated with the south room (container storage, macro sealing area).

The two (2) baghouses used for the Northern Expansion include a 90,000 cfm unit (BH-01) and a 50,000 cfm unit (BH-02). Slotted vertical collection ducts are installed along the south side of each mixing pit and are connected to dust collection plenums leading to BH-01 and BH-02. Louver/dampers are installed in the ductwork to control air flow.

The following operational features have been designed into the overall Dust Collection System:

1) The entire building is maintained at a slight negative pressure.

2) When waste is being dumped into the pit through the open overhead door, air will flow from outside the building into the collection ducts located inside the building thereby preventing any external discharge of dust.

3) There is a continual flow of fresh air from above the pits and across the entire building. The velocity is adequate to capture and convey airborne dust particles to the collection ducts.

4) Air flow is controlled by air dampers/louvers installed on the east wall of the building.

5) Cleaning of bags in the dust collector is by a pulse air jet system that is activated by a timer and/or differential pressure gauge across the bags. The pulsing action will commence when the pressure drop reaches a pre-determined value. The pulsing action will continue until the pressure drop reaches a lower pressure. If it sounds like the air is by passing the bags (e.g. bags are missing or defective), a visual bag inspection may be scheduled. If the pulse-jet cleaners do not appear to be effectively cleaning the bags, a

visual bag inspection may be scheduled to check the condition of the bags. Material collected in the baghouse is periodically collected and returned to the pits for stabilization.

6) The baghouses will be inspected monthly (during operating months) for broken/missing bags and the general condition of the bags (deteriorated? caked with dust?, etc., see Cycle task ST999). This inspection is performed from the top of the baghouse by opening the doors at key locations and visually inspecting for damaged bags. Individual broken/missing bags will be replaced as necessary. If some or all of the bags are defective, several rows of the leading bags may be replaced or all the bags in the baghouse may be changed out. If the inspection finds the condition of the bags unsatisfactory and the situation cannot be remedied by the end of the next business day, an Environmental Work Order will be issued to track the resolution. A daily inspection for visible emissions from the stacks of each baghouse is also performed on operating days as part of the RCRA inspection program (refer to Attachment F of the Sitewide Part 373 Permit). Any potential upset conditions noted during the RCRA inspection will be investigated.

2.3 HVAC System

The stabilization facility has a heating and ventilation system that includes a unit heater and various ventilation vents. The unit heater is propane fueled from an aboveground propane tank. The unit heater has a 320,000 BTU output capacity. The unit heater is equipped with a thermostat. The ventilation system for the stabilization building consists of four (4) 8,000 cfm capacity, 48" x 60" louver/dampers with damper motors and four (4) 8,000 cfm capacity centrifugal belt drive roof exhausters with 42" x 42" exhaust dampers and actuators.

The ventilation system for the electric room consists of drawing 1,220 cfm of air into the electric room through a 18" x 36" motorized louver/damper and venting through a gravity backdraft damper.

2.4 Process Water Storage System

The process water used in the stabilization facility is primarily city water and rainwater collected from containment areas which is transferred to a storage tank by a pumping system located at the stabilization building or by site vacuum trucks. These tanks feed the stabilization facility via permanently installed pumps and piping Tanks TA-01 and TA-02 are 20,000 gallon tanks located south of the main building. Vessel overflow protection is provided for all tanks with high level alarms. Compatible hazardous and non-hazardous gate receipts may also be stored in tanks TA-01 and TA-02.

3.0 OPERATING PROCEDURES

The following procedures describe the methods for operation of the Mixing Pits and the Dust Collection System.

3.1 Stabilization in the Mixing Basins (Pits)

1) Make sure ventilation system is operating properly.
2) Empty waste to be stabilized into one of the pits. For loads containing heavy debris, a soil/waste/reagent cushion layer will be placed into the pit prior to dumping the load. Wastes with greater than 500 ppm volatile organics (40CFR 264.1080-1091, Subpart CC) will not be stabilized in the pits, although the pits may be used as an intermediate step for container to container transfers.
3) Add reagents and water in accordance with the pre-determined recipe.
4) Using the backhoe, mix the waste stream until the waste has a smooth homogenous consistency. The material of the backhoe cutting edge will not be harder than the steel walls of the pits.
5) Transfer the stabilized waste from the pit to a staged roll-off or dump truck.

3.2 Baghouse Dust Collection System

1) Operation of system is from computer inside the Stabilization Office. Stabilization personnel start computer and insure communications arefunctioning properly.
2) Stabilization personnel activate facility air compressor by pressing the start button on the front of the compressor. Monitor unit to ensure that it is functioning properly.
3) To start Dust Collection System, turn selector switch to on position for Baghouses #1 and/or #2, and press start button. Monitor for proper operations.
4) Shut down procedures are opposite of start-up procedures.

3.3 Quality Control and Testing

1) A waste to reagent ratio (recipe) will be determined from a recipe database or from bench-scale testing for every profile requiring stabilization. A previously developed and established recipe may be identified for use in lieu of bench scale recipe development, e.g., recipe utilized on a similar waste.
2) The recipe developed for the profile will be followed to treat all subsequent shipments of the profiled waste. Following stabilization, the first load for each profile will be sampled and analyzed (TCLP) to determine the validity of the recipe.

3) The stabilized waste will be sampled and analyzed according to the facility's Waste Analysis Plan ((attachment C of the facility's Sitewide 373 Permit) and SDP 2071 to demonstrate compliance with requirements.

4.0 OPERATOR SAFETY

4.1 Caution and Warning

1) Do not perform any maintenance operations on any machine unless the machine is completely de-energized and locked out (see HS-1174 Control of Hazardous Energy)
2) Make absolutely certain that all power is removed from the machine when maintenance is needed.
3) Do not remove guards unless machine is de-energized and locked-out.
4) Make certain all guards are in place when machine is in operation.
5) Never enter hoppers to loosen material unless the machine has been de-energized and locked-out.

4.2 System Safety Features

1) Eye wash/safety showers.
2) Baghouses/static bag filters on top of silos to prevent dust from entering into the atmosphere.
3) Ventilation system.
4) Switches are provided to de-energize a machine in the event of an emergency.
5) All platforms and risers have left and right hand rails, toeplates, constructed of heavy duty steel, and are painted OSHA safety yellow for high visibility.
6) All electrical components comply with the National Electric Code (NEC).
7) Vessel overflow protection on tanks.

4.3 Personal Protection

Personnel working within the facility will wear the following PPE:

Respiratory Protection (mixing pits): Half-mask air purifying respirator with organic vapors/acid gases cartridges. Where splashing may occur a full facepiece air purifying respirator is required.

Body-Arm-Leg Protection:	Tyvek coveralls
Foot Protection:	Safety toed boots
Hand Protection:	Cotton/nitrile/PVC/neoprene gloves
Eye Protection:	Safety glasses with side shields. Where splashing may occur a full facepiece air purifying respirator is required
Face Protection:	See eye protection requirements
Head Protection:	Hard hat

Hearing Protection:	Ear plugs
Special Instructions:	All personnel will remove PPE, in the clean/dirty room, prior to exiting the building. The control room is considered a dirty area.

5.0 INSPECTIONS AND PREVENTATIVE MAINTENANCE

The following procedures need to be followed (when equipment is in use) to ensure quality equipment performance and long service life. All daily checks will be performed by Stabilization personnel, and all repairs and other checks will be performed by the Site Maintenance Department or an outside contractor.

5.1 Mixing Pits

Daily on Operating Days:

1) Check to see that all equipment is operational including roll-up doors, vent fans and dust-collection systems.
2) Inspect the primary steel liner in the pit for any visible damage and caking of waste or cement.
3) Check all intake louvers, slots, and ducts in the dust collection system for material build-up and blockage.
4) Check the leak detection sump in the mixing pit annular space for liquids. This part of the RCRA Inspection (attachment F of the facility's Sitewide 373 Permit).

Annually:

1) Complete a detailed assessment of each mixing pit by an independent registered professional engineer, including entering the mixing pits to perform a visual inspection of the entire primary steel liner, especially the welded areas, to detect any cracks, defects, or damage. (see Sitewide 373 Permit, Exhibit D of supplement to Module I, condition B.1.C)

As Needed:

1) Clean out dust collection ducts whenever there is a build-up of material.

5.2 Baghouses

Daily on Operating Days:

1) Insure the compressed air supply to the pulse-jet unit is free of water, oil, dirt. Remove any material if found.

Monthly during Operating Months:

1) Inspect compressor air filters and replace if needed. (Cycle task TS107.2)
2) Inspect all vee belt drives and tighten if necessary. (Cycle task TS107.2
3) Visually inspect for broken bags and replace as needed. (Cycle task ST999)

Quarterly or as needed depending on System use:

1) Check to see solenoid, diaphragm, and damper valves are operating properly.
2) Grease fan bearings.
3) Check the oil level and replace if necessary.

Annually:

1) Check seal at access door and replace gasketing as necessary.

As needed:

1) Replace bags in baghouse when needed (see section 2.2, items 5 and 6, and Cycle task ST999)

5.3 Air System Heater

Annually:

1) Check fan belts for wear and proper tensioning. Check pulleys for alignment.
2) Check around burner and repair or replace if cracked or damaged. Check all valves, piping, and connections for leaks. Drain fuel filter. Clean gas pressure regulator and check gas pressure at burners.
3) Remove pilot assembly and check spark electrode, flame rod, and pilot head.
4) Lubricate fan motor and inspect fan motor wiring for loose connections.
5) Check limit control to insure operation. Check all control settings. Open control box and make sure that all the controls are free from dust and grease. Clean units as necessary.

5.4 5 Ton Overhead Crane

As needed:

1) Check upper and lower limit switches.
2) Check controls and hoist brakes for proper operation.
3) Check for kinks, unstranding, and broken wires.
4) Check for bent or twisted hook and/or safety latches and damage or cracks on hook.
5) Remove, inspect, and clean magnetic disc brakes and linings.
6) Regrease lubrication points and check oil level in gearcase.
7) Inspect contacts of motor starters.
8) Remove any accumulated dirt/dust on exposed shafts/levers.
9) Drain and replace oil in hoist gear.
10) Check for loose bolts and/or connections on both hoist/trolley and suspension system.
11) Check all load carrying parts for wear, cracks, distortion or signs of overload.
12) Check mechanical load brake for holding action.

6.0 AIR EMISSION CONTROLS

6.1 Atmospheric Emissions

Particulate air emissions to the environment are controlled by baghouses on the reagent silos and a dust collection system in the facility. All baghouses are checked on a daily basis on operating days for visible air emissions. The Stabilization Facility is covered bythe Air State Facility Permit ID 9-2934-00022/000233, issued by the NYSDEC on October 24, 2014, in accordance with 6NYCRR Part 201.

7.0 CONTINGENCY PLAN

7.1 Container Spills and Leakage

In the event of a container spill or if a leak occurs, it will be cleaned up as soon as possible. The spilled waste will be removed and the area rinsed into the Stabilization mixing pits, or the rinse water will be otherwise contained, to remove any residues.

7.2 Tank Spills and Leakage

Waste from any hazardous waste tank leak will be removed from the containment area and the tank will be scheduled for immediate repair. The leaking tank will not be reused until the leak is repaired and the tank recertified for use by a registered professional engineer.

7.3 Spills Outside of Containment Area

In the unlikely event that a spill of solid waste occurs outside of a containment area, it will be cleaned up with shovels, brooms or other dry methods. Liquids may be cleaned up using absorbent materials, by placing or pumping into containers, or pumping via vacuum truck. Neutralizing chemicals will be used to reduce the hazards or toxicity of spilled waste, if appropriate. Spilled materials will be treated on site as needed, or disposed of at an authorized facility off-site.

7.4 Alarms and Communication Systems

The stabilization facility's emergency communications network consists of the following:

1) A CB radio system designed for communications between the operating floor and the supervisor’s office.

2) Tank high liquid level detection alarms are installed on all tanks.

7.5 Fire Fighting Equipment

The following equipment is provided:

1) Portable fire extinguishers, classification rated A,B,C, are located at exit doors and critical areas within the facility. A special 350 pound capacity, wheeled fire extinguisher is also available if needed.

2) Hose Stations consisting of fire hose reels equipped with 75 feet of fire hose are located at strategic operational locations within the stabilization process area.

7.6 Additional Emergency Equipment

Emergency showers/eye wash stations, first aid kits, stretcher, fire blankets and a self contained breathing apparatus station are installed within the facility for emergency use.

7.7 Evacuation Routes

Facility evacuation routes are identified in the CWM Contingency Plan, Attachment G of the Sitewide Part 373 Permit.