

RESPONSE 72

6.0 ASSESSMENT MONITORING PLAN - §330.409 through §330.415

6.1 Assessment Monitoring

Assessment monitoring will be performed on a site-specific basis pursuant to this Assessment Monitoring Plan (AMP) whenever it is determined that there has been a SSI over background for one or more of the constituents listed in Table 5-1. The purpose of this AMP is to provide the procedures and a statistical methodology to evaluate inorganic and/or organic compound detections in groundwater against background and against health-based groundwater protection standards. This AMP is designed to meet the requirements of the §330.409 through §330.411 and federal Subtitle D (40 CFR Part 258) regulations.

In accordance with 30 TAC §330.409(b), within 90 days of determining that a SSI has occurred (i.e., after verification of the SSI and completion of any alternate source demonstrations, if conducted), and not less than annually thereafter, the groundwater monitoring system will be sampled and analyzed for the full set of constituents in Appendix II to 40 CFR Part 258. Groundwater samples collected as part of assessment monitoring will not be filtered in the field or the laboratory prior to laboratory analysis. If a SSI is verified, assessment monitoring will be initiated at the well(s) exhibiting the SSI and at the immediately adjacent wells on each side of the well(s) exhibiting the SSI, unless an alternative subset of wells is designated by the executive director. For any new constituent(s) detected in the point of compliance wells as a result of the complete Appendix II analysis, a minimum of four statistically independent samples from each background well shall be collected and analyzed to establish background levels for the additional constituent(s). After sampling point of compliance wells for Appendix II constituents, the TCEQ may specify an appropriate subset of wells to be sampled and analyzed for the Appendix II constituents during assessment monitoring and may delete any of the Appendix II constituents if WMTX can document that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit. All other groundwater wells will continue to be monitored in accordance with the existing detection monitoring protocols and statistical program.

In accordance with 30 TAC §330.409(d), WMTX will submit the results from the initial and subsequent sampling events (if applicable) to the executive director of the TCEQ and also place them in the operating record within 60 days of the sampling event. Within 90 days of

submittal of the results and on at least a semiannual basis thereafter, WMTX will collect samples from the wells specified by 30 TAC §330.403(a) and conduct analyses for the constituents listed in Table 5-1 and any additional constituents in 40 CFR Part 258, Appendix II that are detected in response to assessment monitoring. Results will be submitted to the TCEQ not later than 60 days after the sampling event and also placed in the site's operating record. At least one sample will be collected and analyzed from each background and point of compliance well during each sampling event. However, the TCEQ may specify an alternative monitoring frequency (not less than annual) during the active life and the closure and post-closure care period for the assessment monitoring constituents. The TCEQ will base the alternative frequency on the facility lithology and hydraulic conductivity, groundwater flow rate, travel distance from the waste nearest to a point of compliance monitoring well, resource value of the uppermost aquifer; and fate and transport of the constituent(s) detected.

Background concentrations will be established if any additional Appendix II constituents are detected. WMTX will also establish groundwater protection standards for the additional Appendix II constituents detected in a point of compliance well, in accordance with §330.409(h) or (i). WMTX will evaluate the results and determine whether any 40 CFR Part 258, Appendix II constituents were detected at statistically significant levels above the groundwater protection standard (GWPS) within 60 days of the sampling event. If the concentrations of all 40 CFR Part 258, Appendix II constituents are shown to be at or below background values, in accordance with the Facility's statistical procedures, for two consecutive sampling events, WMTX will notify the TCEQ in writing and return to detection monitoring, if approved. In accordance with 30 TAC §330.409(f), if the concentrations of any 40 CFR Part 258, Appendix II constituents are above background values, but all concentrations are below the GWPS, WMTX shall continue assessment monitoring. If the GWPS has been exceeded, the executive director and appropriate local government officials will be notified in writing within seven days of this determination.

If the GWPS has been exceeded, in accordance with 30 TAC §330.409(g)(1), WMTX will characterize the nature and extent of the potential release by installing additional monitoring wells as necessary, and will install at least one additional monitoring well between the affected monitoring well and the next adjacent wells along the point of compliance before the next sampling event and sample the well(s), in accordance with this GWSAP. If

contaminants have been shown to have migrated off-site, WMTX will notify in writing all persons that own or occupy the land that directly overlies any part of the affected area.

WMTX may demonstrate that a source other than the monitored municipal solid waste management unit(s) caused the contamination or that the statistically significant level resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality, in accordance with 30 TAC §330.409(g)(2). If a demonstration is to be made under this provision, WMTX will notify the TCEQ in writing within 14 days of determining a statistically significant level above the GWPS at the point of compliance and submit a report, certified by a qualified groundwater scientist, to the TCEQ that demonstrates that a source other than the monitored solid waste management unit(s) caused the impact or that the statistically significant level resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality within 90 days. Groundwater samples shall not be filtered for constituents addressed by the demonstration prior to laboratory analysis. The TCEQ may also require WMTX to provide analysis of landfill leachate to support the demonstration; and continue to monitor in accordance with the AMP. In accordance with 30 TAC §330.409(g)(3), if a successful demonstration is made, WMTX will continue monitoring in accordance with the AMP and may return to detection monitoring if the 40 CFR Part 258, Appendix II constituents are at or below background levels for two consecutive sampling events. In accordance with 30 TAC §330.409(g)(4), if WMTX determines that the AMP no longer satisfies the requirements of §330.409, WMTX will submit a permit amendment or modification to make appropriate changes to the AMP within 90 days.

6.2 Assessment Statistics

Statistical analysis of the assessment monitoring constituents detected above background is based on the 1989-2009 EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. The statistical methodology will closely follow the methods presented in ASTM D-7048-04, *Standard Guide for Applying Statistical Methods for Assessment and Corrective Action Environmental Monitoring Programs*, 2004 and includes the following methods:

- A) For each constituent, set background to the upper 95% confidence prediction limit as described in ASTM D-7048-04 and Gibbons (1994). The prediction limits are computed

from all available data collected from upgradient wells only. The data are first screened for outliers and then tested for normality and log normality.

- 1) If the test of normality cannot be rejected, background is equal to the 95% confidence normal prediction limit.
- 2) If the test of normality is rejected but the test of log normality cannot be rejected, background is equal to the 95% confidence lognormal prediction limit.
- 3) If the data are neither normal nor lognormal, or the detection frequency is less than 50%, background is the nonparametric prediction limit, which is computed as the maximum number of upgradient measurements.

Data evaluation during assessment monitoring will consist of the establishment of 95% Lower Confidence Limits (LCLs) for any Appendix II constituent detected in concentrations greater than the PQL, assuming that a minimum of four (4) background samples exist for each parameter detected during the assessment monitoring program. If inadequate background data exists, sufficient background data will be collected to provide adequate sample size for statistical analysis. According to USEPA technical guidance, if the 95% Lower Confidence Limit (LCL) of one parameter exceeds action levels defined as Maximum Contaminant Level (MCLs), if applicable, or a health-based alternate GWPS the facility is to initiate an assessment of corrective measures.

The use of LCLs for assessment monitoring is stipulated by USEPA in the ~~1989~~ 2009 statistical guidance document and supported by Dr. Kirk Cameron (statistical consultant to USEPA), Jim Brown (EPA), and Dr. Robert Gibbons. In accordance with the USEPA document entitled "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance" ~~"Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities, Interim Final Guidance"~~ dated April ~~1989~~ March 2009, Section 6.2.1 Chapter 21,

"Confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring. Groundwater monitoring data must typically be compared to a fixed numerical limit set as a GWPS. In compliance/assessment, the comparison is made to determine whether groundwater concentrations have increased above the compliance standard. In corrective action, the test determines whether concentrations have decreased below a clean-up criterion or compliance level. In compliance/assessment monitoring, the lower confidence limit [LCL] is of primary interest, while the upper confidence limit [UCL] is

~~most important in corrective action. When a regulated unit is in compliance monitoring with a fixed compliance limit (either an MCL or an Alternate Concentration Limit [ACL]) confidence intervals are the recommended procedure. If the entire confidence interval exceeds the compliance limit, this is statistically significant evidence that the mean concentration exceeds the compliance limit." Furthermore, it is stated in Section 6.2.1.1 "If any well confidence interval's lower limit exceeds the compliance limit, this is statistically significant evidence of contamination."~~

~~In accordance with 30 TAC §330.409(d), within 60 days of each sampling event, the results from the initial and subsequent sampling events will be submitted to the executive director and placed in the operating record. Results will be evaluated within 60 days of each sampling event to determine if constituents were detected at statistically significant levels above the GWPS. If the GWPS has been exceeded, the executive director and appropriate local government officials will be notified in writing within seven days of this determination.~~

~~If the concentrations of all 40 CFR Part 258, Appendix II constituents are detected at or below background values, in accordance with the Facility's statistical procedures, for two consecutive sampling events, WMTX will notify the executive director in writing and, return to detection monitoring if approved.~~

6.3 Assessment of Corrective Measures

An assessment of corrective measures (30 TAC §330.411) will be initiated within 90 days of finding that any of the assessment constituents have been detected at a statistically significant level exceeding the GWPS defined under 30 TAC §330.409(h), (i), or (j). Such an assessment will be completed within 180 days of initiating the assessment. WMTX will continue to monitor in accordance with the assessment monitoring program as specified in 30 TAC §330.409. The assessment shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy in accordance with 30 TAC §330.413 (Selection of Remedy). The assessment shall address the requirements outlined in 30 TAC §330.411(c). WMTX will also provide information concerning the costs of remedy implementation; and any institutional requirements that may substantially affect implementation of the remedy or remedies. Once the assessment report is completed, WMTX will arrange a public meeting and provide notice in accordance with 30

TAC §39.501(e)(3) to discuss the results of the corrective measures assessment, prior to the selection of a remedy, with interested and affected parties.

If statistically significant levels of constituents are detected greater than the groundwater protection standards established in §330.409(h), (i), or (j) and are related to a release from the landfill unit, WMTX will specify a schedule for initiating and evaluating the goals and performance standards of the remedial activities in accordance with §330.415(a) through (h).