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April 2, 2014

Mr. Lawrence Buechel
Waste Management of Wisconsin, Inc.
Closed Sites Management Group
W124 N9355 Boundary Road
Menomonee Falls WI 53051

Subject: Proposed Modification to Long-Term Sampling and Analysis Plan – Boundary Road Landfill

Dear Mr. Buechel:

I have reviewed your request for modifications to the Boundary Road Landfill, Long-Term Sampling and Analysis Plan which was contained in a report entitled "Proposed Modification to the Long-Term Sampling and Analysis Plan – Boundary Road Landfill, October 2013". The Department's authority to grant modifications to the plan is contained in Section VIII, 8, i, The Selected Remedy, of the EPA Superfund Record of Decision: Lauer I (aka) Boundary Road Sanitary Landfill, (ROD).

The proposed changes are in keeping with the intent of the monitoring plan required by the ROD, which is to monitor the protectiveness of the remedy and are therefore approved. The modifications can be implemented at your earliest convenience. Submittal of sampling results to the GEMS database is still required; your cover letter should reference the approved modifications.

If you have any questions please call me at 920-893-8528.

Sincerely,

Thomas A. Wentland
Remediation and Redevelopment Section



WASTE MANAGEMENT

Closed Sites Management Group
W124N9355 Boundary Road
Menomonee Falls, WI 53051
(262) 253-8626
(262) 255-3798 Fax

October 22, 2013

Mr. Thomas Wentland
Wisconsin Department of Natural Resources
Southeast Region - Plymouth Service Center
1155 Pilgrim Road
Plymouth, WI 53073-4294

**RE: Proposed Modification to Long-Term Sampling and Analysis Plan (LTSAP)
Boundary Road Landfill
Menomonee Falls, Wisconsin
WID058735994**

Dear Mr. Wentland:

Section IX - Recommendations and Follow-Up Actions, of the Third Five-Year Review Report for the Boundary Road Landfill Superfund Site (September 2012) includes a recommendation that a proposal be developed for optimization of the facility's groundwater monitoring program. Based on that recommendation, Waste Management of Wisconsin, Inc. (WMWI) hereby submits two copies of the enclosed document entitled "Proposed Modification to the Long-Term Sampling and Analysis Plan - Boundary Road Landfill, October 2013". This proposed modification has been prepared on behalf of WMWI by TRC Environmental Corporation. The modifications contained in the enclosed document include proposed changes to monitoring locations, testing frequency, and analytical parameters contained in the current LTSAP. These modifications are discussed in detail in the attached proposal.

WMWI requests your review and approval of these proposed modifications. During your review, if you have any questions or are in need of any additional information, please do not hesitate to contact me at (262) 509-5639.

Sincerely,

Waste Management of Wisconsin, Inc.

A handwritten signature in blue ink, appearing to read 'L. Buechel'.

Lawrence J. Buechel, P.E.

District Manager - Closed Sites Management Group

Enclosures

c: Boundary Road Masterfile
Greg Konsionowski, WMWI
Mike Amstadt, TRC (letter only)

Provided Alternative 3 is implemented and maintained with aggressive leachate extraction, all the alternatives would take a similar amount of time to meet cleanup objectives.

6. Ease of Implementation

Alternatives 4 and 4A would be slightly more difficult to implement than Alternative 3 because they involve using plastic liners which require more careful construction quality control.

The lack of a drainage layer over all portions of the cover may result in problems with punctures or tears of the plastic geomembrane if the quality of the rooting/frost protection zone is not controlled properly.

Alternative 4 would take slightly more effort to implement than alternative 4A because more clay and drainage layer sand would be placed.

Alternatives 3 and 4 would require a greater volume of soil from off-site sources, so they would require slightly more effort than alternative 4A.

7. Cost

The costs for the alternatives are presented with each alternative. Alternative 4 is the most expensive alternative.

Alternatives 3 and 4A have very similar present worth costs.

8. Agency Acceptance

The Department prepared this decision document and selected Alternative 3 for the site. The Environmental Protection Agency, the federal agency that administers the Superfund program, agrees with this recommendation. Their letter concurring with the selected action is attached to this document.

9. Community Acceptance

There was public support expressed for alternative 3 and no public support expressed for alternative 4A. All comments received by the Department, including those expressed verbally at the public meeting were in opposition to the selection of alternative 4A and favored the selection of alternative 3. The comments and the Department's responses to them are provided in the responsiveness summary. attached.

VIII. THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, as amended by SARA, and the NCP, the detailed analysis of the alternatives and public comments, the Wisconsin Department of Natural Resources, (in consultation with U.S. EPA), believes that Alternative 3, the selected remedy, will be the most appropriate remedy for this site. The selected remedy for the site includes the following:

1. Construction of a new landfill soil cover system meeting state solid waste requirements as outlined in ss. NR 504.07 and 506.08. Wis. Adm. Code. The cover shall consist of, from bottom to top: a minimum 6 inch grading layer, 2 feet of compacted clay soil liner, 1.5 feet of frost protection/rooting zone soil and 6 inches of topsoil. The top slope steepness shall be determined during the design, based on site conditions and rule requirements in effect at the time. Currently, the requirement in s. NR 506.08(3) (c) Wis. Adm. Code, is for the minimum top slope not to be less than 2%. The cover shall be seeded to establish new vegetation.

Design. Investigations meeting the intent of the requirements of s. NR 512.18, Wis. Adm. Code, will examine the quality of clay available on the site and the volume of soil potentially needed from off-site to construct the cover system. Due to site conditions, a site specific protocol for the on-site soils investigation that does not meet the exact requirements of s. NR 512.18, Wis. Adm. Code. may need to be established. It may be determined during the design that a composite (soil and plastic membrane) design may

be more economical to construct. Should that be the case, the design described in Alternative 4 shall be required, because the design in Alternative 4A would have reliability problems, as described above. The decision to change the design of the cover system to the composite design described in alternative 4 shall be documented with a revision to this decision.

The existing paved and graveled areas currently used by the waste hauling business on the eastern portion of the site shall be repaired and/or repaved and maintained to prevent contact with the waste and minimize infiltration. The exact extent of these areas will be determined during the design. If any of these areas ceased to be used by the hauling business, the new cover system will be constructed over them in the future.

2. Installation of leachate control measures (vertical dual extraction wells or a horizontal collection trench or trenches) in the northeast area of the site. These measures and the existing leachate collection system adjacent to the slurry cut-off wall will be connected to a new leachate forcemain (pressure pipe) to convey the leachate to the sanitary sewer system (Milwaukee Metropolitan Sewerage District system). The leachate may be discharged directly to the sewer system or it could be pretreated at the Omega Hills leachate pretreatment system. It may also be possible to treat extracted groundwater and discharge it to surface water, if it is found that discharge to the sanitary sewer is not available.

Initial leachate head level goals within the site will be set at "dry base", as defined by the most current Solid Waste Program rules and guidance. WMWI may propose and implement a detailed monitoring and evaluation program during remedial design to evaluate whether or not it is feasible to achieve the "dry base" initial leachate head level goal. If the Department determines that it is not feasible to achieve "dry base" conditions, then an alternative head level goal of maintaining an inward gradient will replace the initial leachate head level goal. A revision to this decision is not required to revise the leachate head level goals.

3. Installation of an active landfill gas extraction system to prevent gas migration. This system will consist of vertical and/or horizontal extraction pipes tied to a vacuum extraction system that should efficiently extract gas from the depths of the waste. Extracted gas would be flared or used to generate electricity. Air emissions will be monitored to make sure they remain in compliance with air emission standards.

4. Institutional controls shall be put in place, including land use/deed restrictions. These shall be designed to prevent unauthorized excavation, groundwater use or installation of water supply wells on the site.

5. Existing access controls shall be evaluated during the design and improved/replaced where necessary. Existing and new fencing is expected to be used. Temporary fencing may be used during the construction of the final remedy.

6. A groundwater quality evaluation and potential contaminant source removal in the area of monitoring well TW24. The evaluation shall consist of monitoring groundwater quality in the area of that well, through the installation of additional monitoring wells and additional investigations to determine the potential sources of the contamination, such as test pits and soil borings. Any waste contaminant sources that are located shall be removed by excavation as soon as possible. This monitoring and potential source removal shall begin during the design phase. Groundwater quality shall be monitored for 3 years after the completion of the investigation of any potential sources of contamination and the removal of any such sources. Unless the results of the evaluation and potential source removal, to be reported at the end of the 3-year evaluation period, show a significant improvement in groundwater quality in that area, showing a trend towards meeting ch. NR 140, Wis. Adm. Code. PALs within a reasonable amount of time (as determined by applying the criteria listed in s. NR 722.07(4)(a)4, Wis. Adm. Code). Groundwater extraction measures utilizing extraction trenches or wells or other suitable technology shall be implemented in that area at the end of the 3-year period to achieve ch. NR 140, Wis. Adm. Code PALs within a reasonable amount of time (as determined by applying the criteria listed in s. NR 722.07(4)(a)4, Wis. Adm. Code). A revision to this decision is not required to implement these additional groundwater extraction measures.

7. To address contamination found along the north, east and west sides of the site, the selected remedy

includes a gradient and water quality evaluation. starting after the remedy is implemented, and completed and reported on during the first 5-year review pursuant to CERCLA requirements. The monitoring in this evaluation shall include groundwater and surface water contaminant concentrations. Unless the results of the evaluation show the following, a slurry wall or sealable sheet piles (full or partial), leachate extraction measures, or other suitable technology shall be added to help achieve inward gradients and reduce groundwater flow into the site. These shall be located in areas where groundwater inflow results in difficulty in maintaining required gradients in the site. These additional measures shall be taken after the evaluation period unless:

a. A significant improvement in groundwater quality on the north and east sides of the site and surface water quality on the west side of the site is found, and groundwater quality results show a trend towards meeting ch. NR 140, Wis. Adm. Code. PALs within a reasonable amount of time (as determined by applying the criteria listed in s. NR 722.07(4)(a)4, Wis. Adm. Code in groundwater; and

b. Inward gradients are observed throughout the site and the leachate head levels within the site are at, or expected to reach in a short amount of time, the leachate head level goals ("dry base") outlined above.

If a slurry wall or sealable sheet piles (full or partial leachate extraction measures, or other suitable technology are constructed in accordance with the above, then a north and east side groundwater water quality evaluation will be conducted after the measures are constructed. The evaluation shall consist of a 3-year period of monitoring groundwater quality in areas outside the waste management area to the north and east of the site. If possible, this evaluation could be timed to be completed at the same time the second 5-year review is completed. Unless the results of the evaluation show a significant improvement in groundwater quality outside of the waste management area on the north and east sides of the site, showing a trend towards meeting ch. NR 140, Wis. Adm. Code, PALs within a reasonable amount of time (as determined by applying the criteria listed in s. NR 722.07(4)(a)4. Wis. Adm. Code), additional groundwater extraction measures utilizing extraction trenches, wells or other suitable technology shall be implemented outside of the waste management area to achieve ch. NR 140, Wis. Adm. Code. PALs within a reasonable amount of time (as determined by applying the criteria listed in s. NR 722.07(4)(a)4. Wis. Adm. Code) A revision to this decision is not required to implement any of the additional future remedial measures described in this point.

8 Long-term environmental monitoring shall initially consist of the following, with a detailed proposal developed during the remedial design:

a. Semi-annual visual inspection of the cap to identify for repair any erosion, differential settlement, or leachate seepage. Cap visual inspections are expected to be more frequent (monthly during the first year and quarterly during the second year) during the first two growing seasons after cap completion, and semi-annually after that.

b. Semi-annual visual inspection of paved surfaces on the landfill identify any cracks or damaged areas which require repair

c. Quarterly monitoring at up to 30 new and existing groundwater monitoring wells, leachate wells and private wells for the following analytes:

i. Indicator parameters (chloride, fluoride, nitrate+nitrite, and sulfate)

ii. Field parameters (pH, conductivity, temperature) on all wells and groundwater levels on all wells except private wells

iii. Volatile organic compounds (VOCs)

d. Semi-annual monitoring at up to 30 new and existing groundwater monitoring wells and leachate wells and private wells for the following analytes:

i. Metals (Al, Sb, As. Ba, Cd, Cr, Fe. Mn, Hg, and Se)

- e. Semi-annual monitoring of surface water in drainage ditches on the site and site pond outfall for VOCs.
- f. Annual monitoring of surface water in drainage ditches on the site and pond outfall for the following analytes:
 - i. Semi-volatile organic compounds
 - ii. Metals (Al and Fe)
- g. Monitoring of the pond outfall to comply with any additional WPDES permit requirements.
- h. Quarterly monitoring of landfill gas at up to 25 gas probes for the following analytes:
 - i. Oxygen
 - ii. Methane
 - iii. Pressure
- i. Quarterly monitoring of the landfill gas extraction system air emissions for the first year in accordance with the requirements of the WDNR Air Management Section and ch. NR 445. Subsequent monitoring shall be performed periodically as indicated by the results obtained during the first year.

The Department may approve revisions to the monitoring frequency and the parameters to be sampled for during the design, construction or implementation of the remedy without a revision to this decision document. The existing monitoring well network shall be evaluated during the design to determine if any wells need to be rehabilitated, abandoned and/or replaced. This evaluation shall examine the usefulness of the well(s), their location relative to the edge of the waste management area, (especially wells TW1-3) and potential construction related damage.

IX. STATUTORY DETERMINATION

A. Protection of Human Health and the Environment

The selected remedy provides adequate protection of human health and the environment through the implementation of a new cover system, leachate and gas extraction and treatment, access controls and additional future remedial actions, if found to be necessary after additional studies and monitoring. The remedy is expected to prevent persons from being exposed to site contaminants in the soil, surface water and groundwater and to restore groundwater quality to meet ch. NR 140, Wis. Adm. Code, requirements and to minimize or eliminate the movement of contaminants into surface water and groundwater.

B. Attainment of ARARs

The selected remedy will be designed to meet all applicable, or relevant and appropriate requirements under federal and state environmental laws. Since the Boundary Road Landfill is a state lead cleanup, no CERCLA on site permit exemption is available. All permits and approvals required to implement the remedy must be obtained and strictly complied with. The primary ARARs that will be achieved by the selected alternative are:

1. Action Specific ARARs

Resource Conservation and Recovery Act, as amended [42 U.S.C. Sec. 6901 et seq.], Subtitle C: Wisconsin Environmental Protection Law, Hazardous Waste Management Act [Wis. Stat. Sec. 144.60-74]

Most RCRA Subtitle C (hazardous waste) requirements are administered under the State of Wisconsin's implementing regulations. Leachate, groundwater, spoils from any extraction system construction and any other contaminated material or waste that is to be managed as part of any remedy construction and operation shall be managed in accordance with applicable solid and/or hazardous waste requirements. The Department has determined at this time that ch. NR 600, Wis. Adm. Code, hazardous waste requirements for listed hazardous waste are not applicable to this material because there is no information available to the Department

268152390



Proposed Modification to the Long-Term Sampling and Analysis Plan

**Boundary Road Landfill
Menomonee Falls, Wisconsin**

October 2013

*Prepared For
Waste Management of Wisconsin, Inc.*

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Section 1

Introduction

From June 20, 2012 through September 20, 2012, the Wisconsin Department of Natural Resources (WDNR), in consultation with Region 5 of the United States Environmental Protection Agency (U.S. EPA), conducted the Third Five-Year Review of the remedy at the Boundary Road Landfill in Menomonee Falls, Wisconsin. The review examined significant site developments over the past five years which included: operation and maintenance of a groundwater cut-off slurry wall, a landfill final cover, a leachate collection system, a landfill gas extraction system, access control features; monitoring of groundwater, surface water, leachate and landfill gas; and the filing of necessary deed instruments to recognize the risk posed by the waste material left on site.

The conclusion of the Five-year Review Report (5YRR) as stated in the Technical Assessment Summary was as follows:

“According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD [Record of Decision]. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Most groundwater cleanup goals, identified as ARARs [Applicable or Relevant and Appropriate Requirements] in the ROD, have already been met; groundwater quality sampling results show only limited exceedences of WAC [Wisconsin Administrative Code] NR 140 water quality standards. Continued implementation of the selected remedy at the site is expected to result in eventually achieving those standards. There is no other information that calls into question the protectiveness of the remedy.”

One issue, the incomplete Institutional Control (IC) Plan, was identified in the Third 5YRR as potentially affecting the future protectiveness of the remedy; however, completion of the IC Plan falls under the responsibility of the WDNR and U.S. EPA.

As part of the “Recommendations and Follow-Up Actions” contained in the Third 5YRR, the WDNR recommended that Waste Management Wisconsin Inc. (WMWI) review and optimize the current long-term groundwater monitoring plan for the future sampling to be conducted at the site. As stated in the ROD (USEPA, 1996), the department may approve revisions to the monitoring frequency and the parameters to be sampled for during the implementation of the remedy without a revision to the decision document itself. Therefore, TRC, Inc. (TRC), on

behalf of WMWI, is submitting this request to modify the groundwater, surface water, and leachate monitoring programs for the Boundary Road Landfill.

Specifically, the following four changes are being proposed to the existing Long-Term Sampling and Analysis Plan (LTSAP):

- The current monitoring plan contains the analysis of groundwater, surface water, and leachate samples for parameters that have not (or rarely) been detected to date or are naturally occurring and provide little value to assess the remedy's protectiveness of human health and the environment. Therefore, WMWI is proposing to remove these parameters from the monitoring program.
- The current monitoring program contains several groundwater monitoring locations where the monitoring results for the past five years do not indicate that the groundwater in that area is impacted by the landfill and provide little value to the assessment of the remedy's protectiveness of human health and the environment. Therefore, WMWI is proposing to remove these sampling points from the monitoring program.
- Several monitoring locations are currently monitored on a quarterly or semi-annual basis for indicator parameters and liquid elevations. An analysis of the historical data suggests that the current sampling frequency does not provide significant value. Therefore, WMWI is proposing to reduce the frequency of sampling for these parameters and elevations.
- The current groundwater monitoring program for the Boundary Road Landfill represents one of four monitoring programs at the WMWI Landfill Complex (Complex) in Germantown/Menomonee Falls, WI. The facilities within the Complex include the Boundary Road Landfill, the Omega Hills Landfill, the Parkview Recycling and Disposal Facility (RDF), and the Orchard Ridge RDF. Therefore, it is appropriate to implement a groundwater monitoring plan for the Boundary Road Landfill that is more consistent with the other landfills (e.g. consistent parameter lists, detection limits, sampling frequencies, and monitoring schedules) for a comprehensive and complete assessment of the water quality in the area of the Complex.

The following text discusses how we evaluated the current LTSAP, our findings, and conclusions.

Section 2

Scope/Methodology

To determine what parameters could be eliminated from the monitoring program, each set of parameters, grouped by testing method, was analyzed for the frequency of detections, frequency of exceedences of the WAC NR 140 water quality standards, and the value to the analysis of the effectiveness of the remedy. If it was found that a group of parameters was not providing data used to assess the remedy, the group of parameters was considered for removal from the monitoring program.

To determine whether monitoring locations provided value to the monitoring plan, each groundwater, surface water and leachate monitoring location was analyzed for the frequency and significance of the detection(s) of volatile organic compounds (VOCs). If limited VOC detections were observed at a monitoring location and the sample point was not considered integral for the remedy's assessment, the monitoring location was considered for removal from the monitoring program.

Various sampling locations and parameters are sampled on a quarterly or semi-annual basis. To determine whether the monitoring frequency provided value to the monitoring plan, figures were created to compare all of the collected data at each monitoring location to the hypothetical trend line if the sampling had occurred on a less frequent basis. If it was determined that the less inclusive data set's trend line was a sufficient representation of the complete data set, reduction of the monitoring frequency was considered.

Any potential changes to the plan were then analyzed against historical data and site conditions to ensure that ability to assess the remedy will not be compromised. No revisions to the monitoring plan were proposed if it was determined that the change would affect the ability to confirm that the site continues to be protective of human health and the environment.

TRC and WMWI lastly conducted a comparison of the Boundary Road Landfill monitoring plan to the other monitoring plans in the Complex (primarily Orchard Ridge RDF), to identify what changes could to be made to the Boundary Road Landfill LTSAP to make it more consistent with the other monitoring plans within the Complex.

Section 3 Findings

The current LTSAP is outlined in Tables 1-3. Table 1 is a list of the current parameters that are being monitored for in the groundwater, leachate, and surface water at the Boundary Road Landfill. Table 2 is a list of the groundwater, leachate, and surface water monitoring locations and Table 3 summarizes the current testing frequency. The following sections outline the proposed modifications to the parameter list, monitoring locations, and testing schedule at the Boundary Road Landfill.

3.1 Parameter List

Currently, the groundwater and leachate are being sampled for 9 metal parameters (aluminum, antimony, arsenic, barium, cadmium, chromium, iron, manganese, selenium). Due to naturally occurring levels around the site, metals including arsenic and iron are commonly detected in the groundwater monitoring wells (including the up-gradient wells) at the site but are also regularly detected across southern Wisconsin. Other metals including aluminum, antimony, barium, cadmium, chromium and selenium are detected in groundwater at the site, but are typically flagged as unquantifiable and detected at concentrations well below the NR 140 Enforcement Standards (ES) values (Refer to Appendix A).

Historically, this group of metals has not been used to assess the remedy at the facility since they are poor indicators of landfill related impacts. These parameters have a propensity to precipitate out of the groundwater and are typically immobile due to redox reactions in the geologic formation. Therefore, removing these parameters from the LTSAP for the 18 groundwater monitoring wells is not expected to impact the ability to assess the remedy's protectiveness of human health and the environment.

The leachate is currently being monitored for 7 additional metals (copper, cyanide, lead, mercury, nickel, silver, and zinc), which were originally included as part of the monitoring plan to assess the leachate's continuing acceptability for discharge to a municipal waste water treatment plant. WMMWI is currently testing for these parameters at another location at the Complex, which combines the leachate from Orchard Ridge RDF to that of the Boundary Road Landfill for disposal at the municipal waste water treatment plant. Testing at the leachate monitoring point for the last 5 years indicates that the leachate at the Boundary Road Landfill is well below the discharge regulations of the Milwaukee Metropolitan Sewer District (refer to Table 5). Therefore, testing for these parameters in the Boundary Road Landfill leachate and at another location at the Complex is redundant and the Boundary Road Landfill leachate

monitoring can be removed from the LTSAP without compromising the ability to assess the remedy's protectiveness of human health and the environment.

The surface water sampling currently takes place annually at two locations in the ditch that runs from the northeastern corner of the site to the southern perimeter of the landfill (Refer to Appendix B). During the 5-year monitoring period from 2007 to 2012, nine (9) SVOCs were detected at the upstream surface water sampling point, but not at the downstream location. During this same period, 4 SVOC parameters were detected in both the upstream and downstream surface water samples. In only one instance was the concentration of any SVOC higher downstream than upstream and the parameter (bis(2-ethylhexyl)phthalate) was flagged by the laboratory as being found in the method blank. The fact that there were no SVOC parameters detected at the downstream location that were not detected at the upstream location clearly demonstrates that the presence of SVOCs is not a result of the Boundary Road Landfill. Therefore, SVOCs are not an integral part of the LTSAP at the Boundary Road Landfill and can be removed from the surface water monitoring program without compromising the ability to assess the remedy's protectiveness of human health and the environment.

Remove SVOC from surface water

Currently, the groundwater, leachate, and surface water are being sampled for 43 volatile organic compounds (VOC) parameters at the Boundary Road Landfill. The data indicates that even the most persistent VOC parameters at the site (THF and benzene) are typically below the NR 140 ESs and PALs and trending downward (Refer to Appendix A). However, to remain consistent with the other monitoring programs in the Complex, WMWI proposed to add nine additional VOC parameters to the Boundary Road Landfill LTSAP (Refer to Table 4). Additionally, methods and reporting limits for the VOC parameters have evolved since the LTSAP was approved. Therefore, an update to the reporting limits for those monitoring parameters is also presented in Table 4.

The groundwater and leachate monitoring points are currently sampled for chloride, sulfate, alkalinity, conductivity, pH, and temperature. Reviews of historical monitoring results indicate that dissolved sulfate and chloride may potentially be increasing in concentration over time at certain wells at the site (MW-117, MW-116, P102, TW-9RR, TW-16R); however, the increasing concentrations are either typically below the NR 140 ESs or above the levels observed in the leachate samples (refer to Appendices A and D). The cause for the possible increasing trends is unclear; therefore all the current indicator parameters will continue to be monitored at the site. Additionally, to make the LTSAP consistent with the other monitoring plans at the Complex, several parameters (boron, hardness, sodium and fluoride) are proposed to be added to the Boundary Road Landfill LTSAP (Refer to Table 4).

3.2 Sampling Locations

Currently, there are 27 sampling locations at the site (21 groundwater monitoring wells, 3 private wells, 1 leachate sampling location, 2 surface monitoring locations.) In May 2012, one private well, PW-10 was abandoned and therefore should be removed from the monitoring program. Refer to Appendix C for the abandonment log.

Based on a review of the sampling locations, nine groundwater monitoring wells (MW-108, TW-8R, TW-6R, TW-16R, MW-107, TW-5R, P102, P101, and P117) have had no or limited (less than 2) VOC detections over the past 5-year review period (Refer to Table 2). Of these wells, three monitoring wells (TW-8R, TW-6R and P117) have had no VOC detections over the past 5-year review period. Monitoring well P-117 was determined to be necessary for the assessment of the deep groundwater at the site. Monitoring wells TW-6R and TW-8R are shallow wells that are side gradient to the Boundary Road Landfill and do not show signs of landfill related impacts. Therefore, monitoring wells TW-6R and TW-8R are not considered to be an integral part of the LTSAP at the Boundary Road Landfill and can be removed from the groundwater monitoring program without compromising the ability to assess the remedy's protectiveness of human health and the environment.

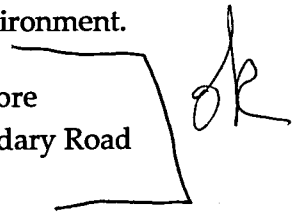
Over the past 5-year review period, only one VOC detection has occurred at MW-108. The detection of 1,4-Dichlorobenzene (0.3 µg/l), occurred during the 2009 monitoring event and was flagged as unquantifiable. In addition, concentrations of indicator parameters at MW-108 have been below the NR 140 Preventative Action Limits (PALs) and have been relatively steady over the 5-year review period (refer to Appendix D). Therefore, monitoring well MW-108 is not considered an integral part of the LTSAP at the Boundary Road Landfill and can be removed from the groundwater monitoring program without compromising the ability to assess remedy's protectiveness of human health and the environment.

3.3 Sampling Frequency and Schedule

Currently the private wells, groundwater monitoring wells, and leachate are sampled for VOC parameters annually during the month of June. In addition, three of the monitoring wells (MW-116, TW-05R, TW-24R) are also sampled in December due to their location relative to known VOC presence. Of the three wells that are sampled semi-annually, TW-05R and MW-116 have had limited VOC detections since 2007 (refer to Table 2). At TW-24R, there have been detections of benzene, chloroethane, and tetrahydrofuran; however, concentrations have been trending downward since 2007. In the most recent monitoring event evaluated (December 2012), there was only one VOC detection at TW-24R (chloroethane at 0.44 µg/l), which was well below the NR 140 PAL (80 µg/l) and flagged as unquantifiable by the laboratory. With a functioning remedy and limited detections of VOCs at MW-116, TW-05R, and TW-24R during

the most recent monitoring events, annual sampling for VOC parameters at these wells will not affect the ability to assess the remedy's protectiveness of human health and the environment.

In addition, to remain consistent with the other sites in the Complex and allow a more comparable data set, we are proposing to conduct the annual sampling at the Boundary Road Landfill in September rather than in June.



Groundwater monitoring wells are currently sampled quarterly for indicator and field parameters. A comparison of quarterly data with semi-annual data is included in Appendix D. The semi-annual sampling graph does not display the data for June and December monitoring events and presents the hypothetical trend if sampling had occurred on a semi-annual basis. This comparison indicates that switching from quarterly to semi-annual sampling for the indicator parameters does not significantly alter the observed trends in the groundwater quality at the site. Occasionally, peak concentrations are not captured by the semi-annual monitoring; however, the overall trend was not lost. Therefore, performing quarterly monitoring of the indicator parameters is not an integral part of the LTSAP at the Boundary Road Landfill and thus semi-annual monitoring of these parameters in the months of March and September can be done without compromising the ability to assess the remedy's protectiveness of human health and the environment.

The leachate is currently monitored on a quarterly basis for indicator and field parameters. A similar analysis of monitoring frequency, as described above, indicates that significant data will not be lost by monitoring annually in September (Refer to Appendix D). Over the past 5-year period, the chloride concentrations fluctuated between approximately 600 mg/L and 1,100 mg/L and exhibit a stable or decreasing trend. Similarly, the sulfate concentrations fluctuated between approximately 20 and 60 mg/L and exhibit a stable or decreasing trend as well. Considering the concentrations of the primary indicator parameters used for assessing the remedy are relatively steady, performing annual monitoring of the leachate can be done without compromising the ability to assess the remedy's protectiveness of human health and the environment.

Groundwater elevations and leachate head levels are also obtained on a quarterly basis at the Boundary Road Landfill. A review of several wells indicates that if liquid levels were obtained semi-annually versus quarterly significant information will not be lost (Refer to Appendix E). Generally, the highest groundwater or leachate elevation occurs in June, which would not be captured if sampling is reduced to semi-annual frequency; however, at this time there is not a reason to require the documentation of the seasonal high groundwater elevation. Therefore, performing quarterly monitoring of the groundwater elevations is not an integral part of the LTSAP at the Boundary Road Landfill and thus semi-annual monitoring in the months of March and September can be done without compromising the ability to assess the remedy's protectiveness of human health and the environment.

Section 4 Conclusions

Based on the above findings, the proposed LTSAP for the Boundary Road Landfill is summarized in Table 4 and 6. The proposed changes include the following:

- discontinuing sampling of 9 metal parameters at the groundwater monitoring wells,
- discontinuing sampling of 7 metal parameters at the leachate monitoring point,
- discontinuing analysis of SVOCs at the surface water monitoring points,
- adding 9 VOC parameters to the groundwater, leachate, and surface water sampling plans and updating the reporting limits and methods that are currently used by the laboratory,
- adding 4 indicator parameters to the groundwater and leachate monitoring plan,
- discontinuing groundwater sampling at TW-8R, TW-6R, and MW-108,
- conducting annual VOC sampling at MW-116, TW-05R, and TW-24 versus semi-annual sampling,
- conducting sampling for metals and field and indicator parameters at the leachate monitoring point on an annual basis versus the current quarterly basis,
- conducting the annual sampling event in the month of September versus the current sampling month of June,
- conducting the groundwater sampling for indicator parameters, groundwater elevation, and leachate elevation on a semi-annual basis versus the current quarterly basis,
- conducting the semi-annual sampling in the months of March and September versus June and December.

The Third 5YRR for the Boundary Road Landfill, states that the remedy is functioning as intended by the ROD and these proposed modifications are not expected to affect the continued ability to assess the protectiveness of the Remedy of human health and the environment. The data supporting these proposed revisions to the parameter list, monitoring locations, and the sampling frequency are located in quarterly environmental data submittals for the Boundary Road landfill during the years 2007 through 2012; in the tables referenced herein; and the Attachments. Furthermore, the modifications would be most advantageous if they are implemented before the December 2013 monitoring event is scheduled to occur.

Table 1
Current Monitoring Parameters
Boundary Road Landfill
Menomonee Falls, Wisconsin

PROTOCOL 1: Volatile Organic Compounds, Method 8260 (Target Reporting Limit)					
1,1,1- Trichloroethane	(5 ug/l)	Bromoform	(5 ug/l)	Methyl tert-butyl ether	(5 ug/l)
1,1,2,2-Tetrachloroethane	(5 ug/l)	Bromomethane	(10 ug/l)	Methylene Bromide	(5 ug/l)
1,1,2-Trichloroethane	(5 ug/l)	Carbon Disulfide	(5 ug/l)	Methylene Chloride	(5 ug/l)
1,1-Dichloroethane	(5 ug/l)	Carbon Tetrachloride	(5 ug/l)	Naphthalene	(10 ug/l)
1,1-Dichloroethene	(5 ug/l)	Chlorobenzene	(5 ug/l)	Styrene	(5 ug/l)
1,2-Dibromo-3-chloropropane	(5 ug/l)	Chloroethane	(10 ug/l)	Tetrachloroethene	(5 ug/l)
1,2-Dibromoethane	(5 ug/l)	Chloroform	(5 ug/l)	Tetrahydrofuran	(10 ug/l)
1,2-Dichloroethane	(5 ug/l)	Chloromethane	(10 ug/l)	Toluene	(5 ug/l)
1,2-Dichloroethene (total)	(10 ug/l)	cis-1,3-Dichloropropene	(5 ug/l)	Trichloroethene	(5 ug/l)
1,2-Dichloropropane	(5 ug/l)	Dibromochloromethane	(5 ug/l)	Trichlorotrifluoromethane	(10 ug/l)
2-Butanone	(10 ug/l)	m-Dichlorobenzene (1,3)	(10 ug/l)	trans-1,3-Dichloropropene	(5 ug/l)
4-Methyl-2-pentanone	(10 ug/l)	o-Dichlorobenzene (1,2)	(10 ug/l)	Vinyl Chloride	(10 ug/l)
Acetone	(34 ug/l)	p-Dichlorobenzene (1,4)	(10 ug/l)	Xylenes, Total	(10 ug/l)
Benzene	(5 ug/l)	Dichlorodifluoromethane	(2 ug/l)		
Bromodichloromethane	(5 ug/l)	Ethylbenzene	(5 ug/l)		
PROTOCOL 2: Metals, Method 6010/200.7 (Target Reporting Limit)					
Aluminum	(200 ug/l)	Barium	(200 ug/l)	Iron	(100 ug/l)
Antimony	(60 ug/l)	Cadmium	(5 ug/l)	Manganese	(15 ug/l)
Arsenic	(10 ug/l)	Chromium	(10 ug/l)	Selenium	(5 ug/l)
PROTOCOL 3: Field and Indicator Parameters and Methods (Target Reporting Limit)					
Chloride, 4110C	(500 ug/l)	Conductivity (SC)		Water Level	
Sulfate, 375.2	(5,000 ug/l)	pH			
Alkalinity, 2320B	(5,000 ug/l)	Temperature			
PROTOCOL 4: Metals and Methods (Reporting Limit)					
Copper, 6010	(10 ug/l)	Mercury, 7470	(0.2 ug/l)	Zinc, 6010	(5 ug/l)
Cyanide, 9012	(20 ug/l)	Nickel, 6010	(12 ug/l)		
Lead, 6010	(5 ug/l)	Silver, 6010	(25 ug/l)		
PROTOCOL 5: Semi-Volatile Organic Compounds, Method 8270					
1,2-Dichlorobenzene		4-Chloro-3-methylphenol		Dibenzofuran	
1,3-Dichlorobenzene		4-Chloroaniline		Diethylphthalate	
1,4-Dichlorobenzene		4-Chlorophenyl-phenylether		Dimethylphthalate	
2,2-oxybis(1-Chloropropane)		4-Methylphenol		Di-n-butylphthalate	
2,4,5-Trichlorophenol		4-Nitroaniline		Di-n-octylphthalate	
2,4,6-Trichlorophenol		4-Nitrophenol		Fluoranthene	
2,4-Dichlorophenol		Acenaphthene		Fluorene	
2,4-Dimethylphenol		Acenaphthylene		Hexachlorobenzene	
2,4-Dinitrophenol		Anthracene		Hexachlorobutadiene	
2,4-Dinitrotoluene		Benzo (a) anthracene		Hexachlorocyclopentadiene	
2,6-Dinitrotoluene		Benzo (a) pyrene		Hexachloroethane	
2-Chloronaphthalene		Benzo (b) fluoranthene		Indeno (1,2,3-cd) pyrene	
2-Chlorophenol		Benzo (g,h,i) perylene		Isophorone	
2-Methylnaphthalene		Benzo (k) fluoranthene		Naphthalene	
2-Methylphenol		bis (2-Chloroethoxy) methane		Nitrobenzene	
2-Nitroaniline		bis (2-Chloroethyl) ether		N-Nitroso-di-n-propylamine	
2-Nitrophenol		bis (2-Ethylhexyl) phthalate		N-Nitrosodiphenylamine (I)	
3,3'- Dichlorobenzidine		Butylbenzylphthalate		Pentachlorophenol	
3-Nitroaniline		Carbazole		Phenanthrene	
4,6-Dinitro-2-methylphenol		Chrysene		Phenol	
4-Bromophenyl-phenylether		Dibenz (a,h) anthracene		Pyrene	

Notes:

(1) Parameters and reporting limits obtained from Long-Term Sampling and Analysis Plan, 1999, by Earth Tech, Inc.

**Table 2
Current Sampling Locations
Boundary Road Landfill
Menomonee Falls, Wisconsin**

WELL	LOCATION	RATIONALE FOR SAMPLING ⁽¹⁾	NUMBER OF VOC DETECTIONS ⁽²⁾
Groundwater Monitoring Wells:			
Shallow (Group A):			
MW-111	436944.83N, 2516524.84E	Shallow side/downgradient across road to E	14
MW-108	437863.05N, 2515360.13E	Shallow downgradient across railroad tracks to N	1
MW-110	437066.70N, 2514413.70E	Shallow downgradient at perimeter to W	5
TW-9RR	436570.42N, 2514640.23E	Shallow downgradient at perimeter to SW	6
TW-8R	436187N, 2514721E ⁽³⁾	Shallow downgradient at perimeter to SW	0
TW-6R	435767.04N, 2514838.33E	Shallow downgradient at perimeter to S-SW	0
TW-16R	435768N, 2515345E ⁽³⁾	Shallow downgradient at perimeter to S	1
MW-117	43627n, 2516436E	Shallow downgradient at perimeter to E-SE	38
MW-107	437612N, 2516406E ⁽⁴⁾	Shallow sidegradient at perimeter to NE	1
Shallow (Group B):			
TW-24R	435736N, 2516122E ⁽³⁾	Shallow downgradient to S	32
TW-5R	435736.01N, 2516439.04E	Shallow downgradient at perimeter to SE	3
MW-116	435735N, 2515869E ⁽³⁾	Shallow downgradient to S	2
Shallow (Group C):			
TW-2R	437568N, 2515857E ⁽⁵⁾	Shallow, evaluate inward gradient	NA
TW-3R	437566.4N, 2515342.7E	Shallow, evaluate inward gradient	NA
TW-22	436146N, 2515375E ⁽⁵⁾	Shallow, evaluate inward gradient	NA
Deep (Group D):			
P102	437062.17N, 2514405.34E	Deep upgradient off-site to W	1
P104	436141.95N, 2515382.16E	Deep up/sidegradient to S	13
P101	437663.66N, 2515525.65E	Deep down/sidegradient across railroad tracks to N	1
P103/103R	436943.41N, 2516519.51E	Deep downgradient across road to E	11
P107	437616N, 2516405E ⁽³⁾	Deep downgradient at perimeter to NE	10
P117	436269N, 2516436E ⁽⁴⁾	Deep downgradient at perimeter to E-SE	0
Private Wells (Group E):			
PW-7	9050 North 124 th Street	Private well, downgradient	0
PW-8	9060 North 124 th Street	Private well, downgradient	1
PW-9	9100 North 124 th Street	Private well, downgradient	1
PW-10 ⁽⁶⁾	W124 N9391 Boundary Road	Private well, downgradient	1
Leachate Sampling Point:			
LMP-1	At metering manhole	Collection of sample prior to discharge from system	
Leachate Head Wells:			
LHW-1	437265N, 2516089E ⁽⁷⁾	NE portion of fill	NA
LHW-2	436500N, 2515859E ⁽⁷⁾	SE portion of fill	NA
LHW-3	437084N, 2514685E ⁽⁷⁾	W portion of fill	NA
LHW-4	437434N, 2515214E ⁽⁷⁾	N portion of fill	NA
LHW-5	436887N, 2515214E ⁽⁷⁾	Central portion of fill	NA
Surface Water Monitoring Locations:			
SW-1	437615N, 2514640E	Upstream sampling location	1
SW-2	435700N, 2516075E	Downstream sampling location	6

Notes:

- ⁽¹⁾ Shallow refers to monitoring zone in the shallow unconsolidated deposits. Deep refers to monitoring deeper unconsolidated deposits.
- ⁽²⁾ Number of VOC detections represents the total number of VOC detections over the review period of 2007-2012.
- ⁽³⁾ Surveyed location after well installation.
- ⁽⁴⁾ Installed in December 2006.
- ⁽⁵⁾ Updated surveyed location.
- ⁽⁶⁾ Abandoned on May 25, 2012.
- ⁽⁷⁾ Installed in April 2007.

**Table 3
Current Sampling Frequency
Boundary Road Landfill
Menomonee Falls, Wisconsin**

Group A and Group D - Groundwater Wells	Quarterly	Protocol 3
	Annual	Protocol 1
	Annual	Protocol 2
Group B - Groundwater Wells	Quarterly	Protocol 3
	Semi-Annual	Protocol 1
	Annual	Protocol 2
Group E - Groundwater Wells	Annual	Protocols 1, 2, and 3
Group C - Groundwater Wells	Quarterly	Water Levels Only
Leachate (LMP-I)	Quarterly	Protocol 2, 3, and 4
	Annual	Protocol 1
Leachate Head Wells	Quarterly	Leachate levels only
Surface Water Monitoring Locations	Annual	Protocol 1, 5

Table 4
Proposed Monitoring Parameters
Boundary Road Landfill
Menomonee Falls, Wisconsin

PROTOCOL 1: Volatile Organic Compounds, Method 8260B (Target Reporting Limit)					
1,1,1,2-Tetrachloroethane	(1 ug/l)	Bromochloromethane	(1 ug/l)	Methylene Chloride	(1 ug/l)
1,1,1- Trichloroethane	(1ug/l)	Bromodichloromethane	(1 ug/l)	Naphthalene	(1 ug/l)
1,1,2,2-Tetrachloroethane	(1 ug/l)	Bromoform	(1 ug/l)	Styrene	(1 ug/l)
1,1,2-Trichloroethane	(1 ug/l)	Bromomethane	(1 ug/l)	Tetrachloroethene	(1 ug/l)
1,2,3-Trichloropropane	(1 ug/l)	Carbon Disulfide	(1 ug/l)	Tetrahydrofuran	(5 ug/l)
1,1-Dichloroethane	(1 ug/l)	Carbon Tetrachloride	(1 ug/l)	Toluene	(1 ug/l)
1,1-Dichloroethene	(1 ug/l)	Chlorobenzene	(1 ug/l)	Trichloroethene	(1 ug/l)
1,2-Dibromo-3-chloropropane	(1 ug/l)	Chloroethane	(1ug/l)	Trichlorotrifluoromethane	(1 ug/l)
1,2-Dibromoethane	(1 ug/l)	Chloroform	(1 ug/l)	trans-1,2-Dichloro-2-Butene	(5 ug/l)
1,2-Dichloroethane	(1 ug/l)	Chloromethane	(1 ug/l)	trans-1,2-Dichloroethene	(1 ug/l)
1,2-Dichloroethene (total) ⁽¹⁾	(ug/l)	cis-1,2-Dichloroethene	(1 ug/l)	trans-1,3-Dichloropropene	(1 ug/l)
1,2-Dichloropropane	(1 ug/l)	cis-1,3-Dichloropropene	(1 ug/l)	Vinyl Chloride	(1 ug/l)
2-Butanone	(10 ug/l)	Dibromochloromethane	(4 ug/l)	Vinyl Acetate	(5 ug/l)
2-Hexanone	(5ug/l)	m-Dichlorobenzene (1,3)	(1 ug/l)	Xylene, Total	(2 ug/l)
4-Methyl-2-pentanone	(5 ug/l)	o-Dichlorobenzene (1,2)	(1 ug/l)		
Acetone	(10 ug/l)	p-Dichlorobenzene (1,4)	(1 ug/l)		
Acrolein	(20 ug/l)	Dichlorodifluoromethane	(1 ug/l)		
Acrylonitrile	(5 ug/l)	Ethylbenzene	(1 ug/l)		
Benzene	(1 ug/l)	Iodomethane	(1 ug/l)		
		Methyl tert-butyl ether	(1 ug/l)		
		Methylene Bromide	(1 ug/l)		
PROTOCOL 2: Metals and Methods (Target Reporting Limit)					
Aluminum, 6010	(200 ug/l)	Barium, 6010	(200 ug/l)	Iron, 6010	(100 ug/l)
Antimony, 6020	(0.5 ug/l)	Cadmium, 6020	(0.2 ug/l)	Manganese, 6010	(15 ug/l)
Arsenic, 6020	(1 ug/l)	Chromium, 6010	(10 ug/l)	Selenium, 6020	(1 ug/l)
PROTOCOL 3: Field and Indicator Parameters and Methods (Target Reporting Limit)					
Boron, 6010B	(10 ug/l)	Sodium, 6010B	(1,000 ug/l)	Conductivity (SC)	
Chloride, SM4110B	(500 ug/l)	Alkalinity, 310.2	(10,000 ug/l)	Temperature	
Fluoride, 300.0_28D	(250 ug/l)	Water Level		Hardness	
Sulfate, SM4110B	(2,000 ug/l)	pH			

Notes:

BOLD = Proposed parameter addition

⁽¹⁾ Methods and reporting limited obtained from Test America, Inc. 3/1/2013.

Table 5
Milwaukee Metropolitan Sewer District (MMSD) Discharge Regulations
Boundary Road Landfill
Menomonee Falls, Wisconsin

PARAMETER	LIMIT (mg/L)	MAX. CONCENTRATION 2007-2012 (mg/L)
Copper, total	6	0.0138
Cyanide, total	2.9	0.012
Lead, total	2	0.0115
Mercury, total	0.0026	ND
Nickel, total	4	0.0413
Silver, total	5.8	0.0011
Zinc, total	8	0.0296

Notes:

- (1) Discharge regulations obtained from Chapter 11 of the MMSD Rules accessed from the Village of Germantown, WI's web site at <http://www.village.germantown.wi.us/Index.aspx?NID=266>

**Table 6
Proposed Monitoring Locations and Frequency
Boundary Road Landfill
Menomonee Falls, Wisconsin**

MONITORING LOCATION	FREQUENCY	PARAMETERS
MW-111 MW-116 MW-110 P102 TW-9RR P104 TW-16R P101	Semi -Annual	Protocol 3
MW-117 P103/103R MW-107 P107 TW-24R P117 TW-5R	Annual	Protocol 1
TW-2R TW-3R TW-22R	Semi- Annual	Groundwater Levels Only
PW-7 PW-8 PW-9	Annual	Protocol 1,2, and 3
Leachate Monitoring Point (LMP-1)	Annual	Protocol 1,2 and 3
Leachate Head Wells (LH1-LH-5)	Semi-Annual	Leachate Levels Only
Surface Water Monitoring Points (SW-1, SW-2)	Annual	Protocol 1

Appendix A

2007 – 2012 Exceedence Report

PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
 BOUNDARY ROAD LANDFILL
 MENOMONEE FALLS, WISCONSIN
 2007 - 2012

CHEMICAL PARAMETER	UNITS	NR140	NR140	WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
1,1-DICHLOROETHENE	UG/L	0.7	7	MW-117	6/13/2007	2	J	PAL
				MW-117	6/8/2009	1.2	J	PAL
				MW-117	6/3/2010	1.5	J	PAL
1,2-DICHLOROETHANE	UG/L	0.5	5	MW-117	6/8/2009	0.94	J	PAL
				MW-117	6/3/2010	1.3	J	PAL
ALUMINUM, DISSOLVED	UG/L	40	200	MW-107	6/8/2009	48	J	PAL
				MW-107	6/3/2010	48	B	PAL
				MW-108	6/13/2007	40.1	J	PAL
				MW-108	6/16/2008	62.8	J	PAL
				MW-108	6/15/2009	185		PAL
				MW-108	6/3/2010	103	B	PAL
				MW-108	6/7/2011	83.6	B	PAL
				MW-110	6/8/2009	42	J	PAL
				MW-110	6/3/2010	69	B	PAL
				MW-111	6/8/2009	55	J	PAL
				MW-111	6/3/2010	99	B	PAL
				MW-116	6/8/2009	91	J	PAL
				MW-116	6/3/2010	82	B	PAL
				MW-117	6/16/2008	77.8	J	PAL
				MW-117	6/8/2009	71	J	PAL
				MW-117	6/3/2010	67	B	PAL
				P101	6/15/2009	128	B	PAL
				P101	6/3/2010	143	B	PAL
				P102	6/8/2009	45	J	PAL
				P102	6/3/2010	79	B	PAL
				P103R	6/8/2009	62	J	PAL
				P103R	6/3/2010	66	B	PAL
				P103R	6/7/2012	64.2	J	PAL
				P104	6/8/2009	54	J	PAL
				P104	6/3/2010	94	B	PAL
				P104	6/7/2012	130	J	PAL
				P107	6/8/2009	61	J	PAL
				P107	6/3/2010	69	B	PAL
				P117	6/8/2009	80	J	PAL
				P117	6/3/2010	75	B	PAL
				TW-05R	6/8/2009	108	J	PAL
				TW-05R	6/3/2010	542		ES
				TW-06R	6/8/2009	70	J	PAL
TW-06R	6/3/2010	100	B	PAL				
TW-08R	6/8/2009	69	J	PAL				
TW-08R	6/3/2010	126	B	PAL				
TW-09RR	6/8/2009	65	J	PAL				
TW-09RR	6/3/2010	127	B	PAL				
TW-16R	6/13/2007	62.2	J	PAL				
TW-16R	6/8/2009	73	J	PAL				
TW-16R	6/3/2010	112	B	PAL				

PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
BOUNDARY ROAD LANDFILL
MENOMONEE FALLS, WISCONSIN
2007 - 2012

CHEMICAL PARAMETER	UNITS	NR140		WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
ALUMINUM, DISSOLVED	UG/L	40	200	TW-16R	6/7/2011	72.2	B	PAL
				TW-24R	6/13/2007	42.1	J	PAL
				TW-24R	6/8/2009	67	J	PAL
				TW-24R	6/3/2010	90	B	PAL
				TW-24R	6/7/2012	60.9	J	PAL
ALUMINUM, TOTAL	UG/L	40	200	PW-07	6/10/2010	62	J	PAL
				PW-08	6/10/2010	58	J	PAL
				PW-09	6/10/2010	45	J	PAL
				PW-10	6/18/2007	367		ES
				PW-10	6/10/2010	150	J	PAL
ANTIMONY, DISSOLVED	UG/L	1.2	6	MW-117	6/16/2008	1.9		PAL
ARSENIC, DISSOLVED	UG/L	1	10	MW-107	6/7/2011	1.1		PAL
				MW-107	6/7/2012	1.9		PAL
				MW-108	6/13/2007	2.8		PAL
				MW-108	6/16/2008	3.7		PAL
				MW-108	6/15/2009	3.2		PAL
				MW-108	6/3/2010	3.8		PAL
				MW-108	6/7/2011	3.8		PAL
				MW-108	6/7/2012	2.5		PAL
				MW-110	6/13/2007	4.8		PAL
				MW-110	6/17/2008	4.4		PAL
				MW-110	6/8/2009	5.4		PAL
				MW-110	6/3/2010	4.9		PAL
				MW-110	6/7/2011	5		PAL
				MW-110	6/7/2012	4.1		PAL
				MW-111	6/13/2007	8.4		PAL
				MW-111	6/16/2008	9.3		PAL
				MW-111	6/8/2009	9.1		PAL
				MW-111	6/3/2010	6.3		PAL
				MW-111	6/7/2011	8.4		PAL
				MW-111	6/7/2012	4.8		PAL
				MW-116	6/13/2007	4		PAL
				MW-116	6/17/2008	4.5		PAL
				MW-116	6/8/2009	5.2		PAL
				MW-116	6/3/2010	4.7		PAL
				MW-116	6/7/2011	3.5		PAL
				MW-116	6/7/2012	2.6		PAL
	P101	6/13/2007	3.1		PAL			
	P101	6/16/2008	3.3		PAL			
	P101	6/15/2009	3		PAL			
	P101	6/3/2010	3.9		PAL			
	P101	6/7/2011	3.8		PAL			
	P101	6/7/2012	3.5		PAL			
	P102	6/13/2007	4.4		PAL			
	P102	6/17/2008	4.7		PAL			
	P102	6/8/2009	1.7		PAL			
	P102	6/3/2010	2		PAL			

PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
 BOUNDARY ROAD LANDFILL
 MENOMONEE FALLS, WISCONSIN
 2007 - 2012

CHEMICAL PARAMETER	UNITS	NR140	NR140	WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
ARSENIC, DISSOLVED	UG/L	1	10	P102	6/7/2011	1.6		PAL
				P102	6/7/2012	1.8		PAL
				P103	6/13/2007	14.5		ES
				P103	6/16/2008	15.1		ES
				P103R	6/8/2009	15.5		ES
				P103R	6/3/2010	15.8		ES
				P103R	6/7/2011	16.5		ES
				P103R	6/7/2012	18		ES
				P104	6/13/2007	5		PAL
				P104	6/16/2008	5		PAL
				P104	6/8/2009	5		PAL
				P104	6/3/2010	5		PAL
				P104	6/7/2011	5		PAL
				P104	6/7/2012	5.3		PAL
				P107	6/13/2007	9.2		PAL
				P107	6/16/2008	8.5		PAL
				P107	6/8/2009	8.2		PAL
				P107	6/3/2010	7		PAL
				P107	6/7/2011	8.2		PAL
				P107	6/7/2012	7.3		PAL
				P117	6/16/2008	6.8		PAL
				P117	6/8/2009	7		PAL
				P117	6/3/2010	7.1		PAL
				P117	6/7/2011	7.3		PAL
				P117	6/7/2012	7.4		PAL
				TW-05R	6/13/2007	1.2		PAL
				TW-05R	6/17/2008	1.6		PAL
				TW-05R	6/8/2009	1.6		PAL
				TW-05R	6/3/2010	1.2		PAL
				TW-05R	6/7/2011	1.5		PAL
				TW-05R	6/7/2012	1.1		PAL
				TW-06R	6/13/2007	3.3		PAL
				TW-06R	6/17/2008	4		PAL
				TW-06R	6/8/2009	3.4		PAL
				TW-06R	6/3/2010	3.5		PAL
				TW-06R	6/7/2011	3.4		PAL
				TW-06R	6/7/2012	3.6		PAL
				TW-09RR	6/13/2007	4		PAL
				TW-09RR	6/17/2008	4		PAL
				TW-09RR	6/8/2009	3.4		PAL
				TW-09RR	6/3/2010	3.9		PAL
				TW-09RR	6/7/2011	5.2		PAL
TW-09RR	6/7/2012	4.3		PAL				
TW-16R	6/13/2007	4.3		PAL				
TW-16R	6/17/2008	4.1		PAL				
TW-16R	6/8/2009	2.6		PAL				
TW-16R	6/3/2010	2.2		PAL				
TW-16R	6/7/2011	4.3		PAL				
TW-16R	6/7/2012	2.2		PAL				
TW-24R	6/13/2007	7.1		PAL				

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		PAL	ES				FLAGS	EXCEEDANCE
ARSENIC, DISSOLVED	UG/L	1	10	TW-24R	6/17/2008	6.8		PAL
				TW-24R	6/8/2009	6.4		PAL
				TW-24R	6/3/2010	4.1		PAL
				TW-24R	6/7/2011	26.7		ES
				TW-24R	6/7/2012	4.5		PAL
ARSENIC, TOTAL	UG/L	1	10	PW-07	6/13/2007	7.3		PAL
				PW-07	6/16/2008	7.2		PAL
				PW-07	6/8/2009	7.6		PAL
				PW-07	6/10/2010	7.1		PAL
				PW-07	6/7/2011	7.2		PAL
				PW-07	6/13/2012	7.1		PAL
				PW-08	6/13/2007	8.4		PAL
				PW-08	6/16/2008	7.1		PAL
				PW-08	6/8/2009	8.1		PAL
				PW-08	6/10/2010	7.5		PAL
				PW-08	6/7/2011	8.7		PAL
				PW-08	6/13/2012	7.7		PAL
				PW-09	6/13/2007	6.5		PAL
				PW-09	6/16/2008	7		PAL
				PW-09	6/8/2009	7.4		PAL
				PW-09	6/10/2010	6.1		PAL
				PW-09	6/7/2011	7.7		PAL
				PW-09	6/13/2012	8.7		PAL
				PW-10	6/18/2007	6.3		PAL
				PW-10	6/16/2008	6.3		PAL
PW-10	6/8/2009	6.4		PAL				
PW-10	6/10/2010	6.9		PAL				
PW-10	6/7/2011	7.2		PAL				
BARIUM, DISSOLVED	UG/L	400	2000	MW-111	6/13/2007	632		PAL
				MW-111	6/16/2008	606		PAL
				MW-111	6/8/2009	558		PAL
				MW-111	6/3/2010	424		PAL
				MW-111	6/7/2011	402		PAL
				MW-117	6/13/2007	420		PAL
				P103	6/13/2007	413		PAL
				P103R	6/7/2011	407		PAL
				P103R	6/7/2012	496		PAL
				P107	6/13/2007	875		PAL
				P107	6/16/2008	899		PAL
				P107	6/8/2009	918		PAL
				P107	6/3/2010	962		PAL
				P107	6/7/2011	997		PAL
				P107	6/7/2012	922		PAL
				TW-09RR	6/13/2007	865		PAL
				TW-09RR	6/17/2008	622		PAL
				TW-09RR	6/8/2009	885		PAL
				TW-09RR	6/3/2010	1180		PAL
				TW-09RR	6/7/2011	1190		PAL
TW-09RR	6/7/2012	1310		PAL				
TW-24R	6/3/2010	469		PAL				
TW-24R	6/7/2011	402		PAL				
TW-24R	6/7/2012	428		PAL				
BENZENE	UG/L	0.5	5	MW-117	6/13/2007	0.8	J	PAL
				P104	6/13/2007	2		PAL
				P104	6/8/2009	6.7		ES
				P104	6/3/2010	3.4		PAL

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		PAL	ES				FLAGS	EXCEEDANCE
BENZENE	UG/L	0.5	5	P104	6/7/2012	0.89	J	PAL
				P107	6/13/2007	24		ES
				P107	6/16/2008	25		ES
				P107	6/8/2009	19		ES
				P107	6/3/2010	17		ES
				P107	6/7/2011	20		ES
				P107	6/7/2012	16		ES
				TW-24R	6/13/2007	5	J	ES
				TW-24R	6/17/2008	1	J	PAL
				TW-24R	12/9/2008	0.9		PAL
				TW-24R	6/8/2009	1.1		PAL
				TW-24R	6/3/2010	0.96	J	PAL
				TW-24R	12/9/2010	0.51	J	PAL
				TW-24R	6/7/2011	0.86	J	PAL
				TW-24R	6/7/2012	0.98	J	PAL
BENZO(A)PYRENE	UG/L	0.02	0.2	SW-01	6/13/2007	0.2	J	ES
BENZO(B)FLUORANTHENE	UG/L	0.02	0.2	SW-01	6/13/2007	0.4	J	ES
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	0.6	6	SW-01	6/5/2009	2.9	J	PAL
				SW-02	6/13/2007	5	B	PAL
				SW-02	6/5/2009	3.4	J	PAL
BROMODICHLOROMETHANE	UG/L	0.06	0.6	MW-117	6/16/2008	51		ES
CARBON TETRACHLORIDE	UG/L	0.5	5	MW-117	6/13/2007	2	J	PAL
				MW-117	6/16/2008	4		PAL
				MW-117	6/7/2011	0.69	J	PAL
CHLORIDE, DISSOLVED	MG/L	125	250	MW-107	3/5/2008	134		PAL
				MW-107	3/2/2009	220		PAL
				MW-107	3/3/2011	362		ES
				MW-107	3/2/2012	138		PAL
				MW-110	9/4/2012	138		PAL
				MW-111	3/7/2007	760		ES
				MW-111	6/13/2007	960		ES
				MW-111	9/11/2007	616		ES
				MW-111	12/10/2007	577		ES
				MW-111	3/5/2008	686		ES
				MW-111	6/16/2008	965		ES
				MW-111	9/2/2008	686		ES

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		PAL	ES				FLAGS	EXCEEDANCE
CHLORIDE, DISSOLVED	MG/L	125	250	MW-111	12/9/2008	630		ES
				MW-111	3/2/2009	640		ES
				MW-111	6/8/2009	900		ES
				MW-111	9/1/2009	659		ES
				MW-111	12/9/2009	661		ES
				MW-111	3/1/2010	647		ES
				MW-111	6/3/2010	623		ES
				MW-111	9/9/2010	455		ES
				MW-111	12/9/2010	512		ES
				MW-111	3/3/2011	591		ES
				MW-111	6/7/2011	599		ES
				MW-111	9/2/2011	615		ES
				MW-111	12/6/2011	503		ES
				MW-111	3/2/2012	492		ES
				MW-111	6/7/2012	436		ES
				MW-111	9/4/2012	431		ES
				MW-111	12/10/2012	487		ES
				MW-116	3/1/2010	130		PAL
				MW-116	6/7/2011	162		PAL
				MW-116	9/2/2011	159		PAL
				MW-116	12/6/2011	196		PAL
				MW-116	3/2/2012	203		PAL
				MW-116	6/7/2012	184		PAL
				MW-116	9/4/2012	176		PAL
				MW-116	12/10/2012	130		PAL
				MW-117	3/7/2007	1200		ES
				MW-117	6/13/2007	1220		ES
				MW-117	9/11/2007	987		ES
				MW-117	12/10/2007	1150		ES
				MW-117	3/5/2008	1140		ES
				MW-117	6/16/2008	1010		ES
				MW-117	9/2/2008	1160		ES
				MW-117	12/9/2008	1340		ES
				MW-117	3/2/2009	1500		ES
				MW-117	6/8/2009	1400		ES
				MW-117	9/1/2009	1530		ES
				MW-117	12/9/2009	2430		ES
				MW-117	3/1/2010	1180		ES
				MW-117	6/3/2010	1860		ES
				MW-117	9/9/2010	1160		ES
				MW-117	12/9/2010	2400		ES
				MW-117	3/3/2011	1880		ES
MW-117	6/7/2011	1350		ES				
MW-117	9/2/2011	2330		ES				
MW-117	12/6/2011	2590		ES				
MW-117	3/2/2012	3110		ES				
MW-117	6/7/2012	1700		ES				
MW-117	9/4/2012	2730		ES				
MW-117	12/10/2012	2690		ES				
				P103	3/7/2007	567		ES

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		PAL	ES				FLAGS	EXCEEDANCE
CHLORIDE, DISSOLVED	MG/L	125	250	P103	6/13/2007	642		ES
				P103	9/11/2007	488		ES
				P103	12/10/2007	528		ES
				P103	3/5/2008	479		ES
				P103	6/16/2008	516		ES
				P103	9/2/2008	514		ES
				P103	12/9/2008	439		ES
				P103R	3/2/2009	550		ES
				P103R	6/8/2009	550		ES
				P103R	9/1/2009	530		ES
				P103R	12/9/2009	540		ES
				P103R	3/1/2010	509		ES
				P103R	6/3/2010	499		ES
				P103R	9/9/2010	535		ES
				P103R	12/9/2010	508		ES
				P103R	3/3/2011	604		ES
				P103R	6/7/2011	470		ES
				P103R	9/2/2011	552		ES
				P103R	12/6/2011	490		ES
				P103R	3/2/2012	490		ES
				P103R	6/7/2012	580		ES
				P103R	9/4/2012	501		ES
				P103R	12/10/2012	450		ES
				P107	3/7/2007	132		PAL
				P117	12/10/2012	248		PAL
				TW-05R	3/7/2007	400		ES
				TW-05R	6/13/2007	320		ES
				TW-05R	9/11/2007	406		ES
				TW-05R	12/10/2007	370		ES
				TW-05R	3/5/2008	362		ES
				TW-05R	6/17/2008	359		ES
				TW-05R	9/3/2008	351		ES
				TW-05R	12/9/2008	315		ES
				TW-05R	3/2/2009	450		ES
				TW-05R	6/8/2009	340		ES
				TW-05R	9/1/2009	374		ES
				TW-05R	12/7/2009	376		ES
				TW-05R	3/1/2010	451		ES
				TW-05R	6/3/2010	366		ES
				TW-05R	9/9/2010	359		ES
				TW-05R	12/9/2010	386		ES
				TW-05R	3/3/2011	473		ES
TW-05R	6/7/2011	331		ES				
TW-05R	9/2/2011	395		ES				
TW-05R	12/6/2011	386		ES				
TW-05R	3/2/2012	480		ES				
TW-05R	6/7/2012	419		ES				
TW-05R	9/4/2012	372		ES				
TW-05R	12/10/2012	422		ES				
TW-09RR	9/2/2011	134		PAL				

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		PAL	ES				FLAGS	EXCEEDANCE
CHLORIDE, DISSOLVED	MGL	125	250	TW-24R	3/7/2007	596		ES
				TW-24R	6/13/2007	622		ES
				TW-24R	9/11/2007	392		ES
				TW-24R	12/10/2007	271		ES
				TW-24R	3/5/2008	500		ES
				TW-24R	6/17/2008	560		ES
				TW-24R	9/3/2008	519		ES
				TW-24R	12/9/2008	328		ES
				TW-24R	3/2/2009	510		ES
				TW-24R	6/8/2009	520		ES
				TW-24R	9/1/2009	290		ES
				TW-24R	12/7/2009	408		ES
				TW-24R	3/1/2010	462		ES
				TW-24R	6/3/2010	458		ES
				TW-24R	9/9/2010	363		ES
				TW-24R	12/9/2010	413		ES
				TW-24R	3/3/2011	415		ES
				TW-24R	6/7/2011	395		ES
				TW-24R	9/2/2011	512		ES
				TW-24R	12/6/2011	327		ES
TW-24R	3/2/2012	321		ES				
TW-24R	6/7/2012	357		ES				
TW-24R	9/4/2012	330		ES				
TW-24R	12/10/2012	371		ES				
CHLOROFORM	UG/L	0.6	6	MW-117	6/13/2007	37		ES
				MW-117	6/16/2008	51		ES
				MW-117	6/8/2009	12		ES
				MW-117	6/3/2010	3		PAL
				MW-117	6/7/2011	29		ES
				MW-117	6/7/2012	2.1		PAL
CHRYSENE	UG/L	0.02	0.2	SW-01	6/17/2008	0.5	B	ES
				SW-02	6/17/2008	0.5	B	ES
IRON, DISSOLVED	UG/L	150	300	MW-107	6/8/2009	380		ES
				MW-107	6/3/2010	150		PAL
				MW-107	6/7/2011	650		ES
				MW-110	6/13/2007	1400		ES
				MW-110	6/17/2008	420		ES
				MW-110	6/8/2009	1990		ES
				MW-110	6/3/2010	1300		ES
				MW-110	6/7/2011	1600		ES
				MW-110	6/7/2012	180		PAL
				MW-111	6/13/2007	4700		ES
				MW-111	6/16/2008	10000		ES
				MW-111	6/8/2009	10100		ES
				MW-111	6/3/2010	3950		ES
				MW-111	6/7/2011	7900		ES
				MW-116	6/13/2007	2000		ES

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		PAL	ES				FLAGS	EXCEEDANCE
IRON, DISSOLVED	UG/L	150	300	MW-116	6/17/2008	1300		ES
				MW-116	6/8/2009	2760		ES
				MW-116	6/3/2010	2480		ES
				MW-116	6/7/2011	1800		ES
				MW-116	6/7/2012	720		ES
				P103	6/16/2008	160		PAL
				P103R	6/8/2009	196		PAL
				P107	6/8/2009	257		PAL
				P107	6/7/2011	270		PAL
				TW-06R	6/13/2007	210		PAL
				TW-06R	6/17/2008	670		ES
				TW-08R	6/17/2008	690		ES
				TW-09RR	6/13/2007	480		ES
				TW-09RR	6/17/2008	1200		ES
				TW-09RR	6/3/2010	256		PAL
				TW-09RR	6/7/2011	3500		ES
				TW-16R	6/13/2007	3400		ES
				TW-16R	6/17/2008	2500		ES
				TW-16R	6/8/2009	2310		ES
				TW-16R	6/3/2010	1560		ES
				TW-16R	6/7/2011	3200		ES
				TW-16R	6/7/2012	2800		ES
				TW-24R	6/13/2007	1000		ES
				TW-24R	6/17/2008	2600		ES
				TW-24R	6/8/2009	1100		ES
				TW-24R	6/3/2010	544		ES
IRON, TOTAL	UG/L	150	300	PW-07	6/13/2007	1000		ES
				PW-07	6/16/2008	1100		ES
				PW-07	6/8/2009	945		ES
				PW-07	6/10/2010	1390		ES
				PW-07	6/7/2011	2200		ES
				PW-07	6/13/2012	1500		ES
				PW-08	6/13/2007	770		ES
				PW-08	6/16/2008	860		ES
				PW-08	6/8/2009	959		ES
				PW-08	6/10/2010	533		ES
				PW-08	6/7/2011	660		ES
				PW-08	6/13/2012	800		ES
				PW-09	6/16/2008	170		PAL
				PW-09	6/7/2011	420		ES
				PW-09	6/13/2012	340		ES
				PW-10	6/18/2007	270		PAL
				PW-10	6/16/2008	210		PAL
				PW-10	6/8/2009	271		PAL
				PW-10	6/10/2010	313		ES
				PW-10	6/7/2011	220		PAL
MANGANESE, DISSOLVED	UG/L	25	50	MW-107	6/16/2008	48.4		PAL
				MW-107	6/8/2009	98.6		ES
				MW-107	6/3/2010	61.1		ES
				MW-107	6/7/2011	54.8		ES
				MW-107	6/7/2012	53.7		ES

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		PAL	ES				FLAGS	EXCEEDANCE
MANGANESE, DISSOLVED	UG/L	25	50	MW-111	6/13/2007	69.2		ES
				MW-111	6/16/2008	106		ES
				MW-111	6/8/2009	131		ES
				MW-111	6/3/2010	134		ES
				MW-111	6/7/2011	146		ES
				MW-111	6/7/2012	147		ES
				MW-116	6/13/2007	329		ES
				MW-116	6/17/2008	248		ES
				MW-116	6/8/2009	350		ES
				MW-116	6/3/2010	360		ES
				MW-116	6/7/2011	295		ES
				MW-116	6/7/2012	329		ES
				MW-117	6/13/2007	183		ES
				MW-117	6/8/2009	114		ES
				MW-117	6/3/2010	233		ES
				MW-117	6/7/2011	78.9		ES
				MW-117	6/7/2012	529		ES
				P102	6/13/2007	53.9		ES
				P102	6/17/2008	39.6		PAL
				P102	6/8/2009	52.5		ES
				P102	6/3/2010	28		PAL
				P103	6/13/2007	43.3		PAL
				P103	6/16/2008	42.6		PAL
				P103R	6/8/2009	62.5		ES
				P103R	6/3/2010	57.3		ES
				P103R	6/7/2011	45.5		PAL
				P103R	6/7/2012	36.6		PAL
				TW-05R	6/8/2009	149		ES
				TW-09RR	6/13/2007	38.7		PAL
				TW-09RR	6/17/2008	106		ES
				TW-09RR	6/8/2009	33.7		PAL
				TW-09RR	6/3/2010	42.5		PAL
				TW-09RR	6/7/2011	43.4		PAL
				TW-09RR	6/7/2012	50.3		ES
				TW-16R	6/13/2007	118		ES
				TW-16R	6/17/2008	140		ES
				TW-16R	6/8/2009	127		ES
				TW-16R	6/3/2010	106		ES
				TW-16R	6/7/2011	203		ES
				TW-16R	6/7/2012	137		ES
TW-24R	6/13/2007	64.2		ES				
TW-24R	6/17/2008	64.1		ES				
TW-24R	6/8/2009	53.5		ES				
TW-24R	6/3/2010	44.4		PAL				
TW-24R	6/7/2011	38.1		PAL				
TW-24R	6/7/2012	38.9		PAL				
MANGANESE, TOTAL	UG/L	25	50	PW-07	6/7/2011	32.2		PAL
				PW-09	6/10/2010	28.7		PAL

PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
 BOUNDARY ROAD LANDFILL
 MENOMONEE FALLS, WISCONSIN
 2007 - 2012

CHEMICAL PARAMETER	UNITS	NR140		WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
METHYLENE CHLORIDE	UG/L	0.5	5	MW-111	6/13/2007	1	J	PAL
				MW-116	12/10/2007	4	B	PAL
				MW-116	6/7/2011	2.3	J	PAL
				MW-117	6/13/2007	1	J	PAL
				P103	6/13/2007	1	J	PAL
				TW-05R	12/10/2007	4	B	PAL
				TW-05R	6/7/2011	3.7	J	PAL
				TW-24R	12/10/2007	4	B	PAL
SULFATE	MG/L	125	250	MW-111	3/7/2007	216		PAL
				MW-111	6/13/2007	281		ES
				MW-111	9/11/2007	263		ES
				MW-111	12/10/2007	236		PAL
				MW-111	3/5/2008	262		ES
				MW-111	6/16/2008	246		PAL
				MW-111	9/2/2008	330		ES
				MW-111	12/9/2008	248		PAL
				MW-111	3/2/2009	260		ES
				MW-111	6/8/2009	220		PAL
				MW-111	9/1/2009	221		PAL
				MW-111	12/9/2009	190		PAL
				MW-111	3/1/2010	167		PAL
				MW-111	6/3/2010	226		PAL
				MW-111	9/9/2010	176		PAL
				MW-111	12/9/2010	208		PAL
				MW-111	3/3/2011	186		PAL
				MW-111	6/7/2011	176		PAL
				MW-111	9/2/2011	186		PAL
				MW-111	12/6/2011	139		PAL
				MW-111	3/2/2012	137		PAL
				MW-111	6/7/2012	152		PAL
				MW-111	9/4/2012	158		PAL
				MW-111	12/10/2012	161		PAL
				MW-116	3/7/2007	127		PAL
				MW-116	6/13/2007	260		ES
				MW-116	12/9/2008	177		PAL
				MW-116	3/2/2009	140		PAL
				MW-116	6/8/2009	290		ES
				MW-116	9/1/2009	221		PAL
				MW-116	12/7/2009	185		PAL
				MW-116	3/1/2010	267		ES
MW-116	6/3/2010	270		ES				
MW-116	6/7/2011	160		PAL				
MW-116	9/2/2011	157		PAL				
MW-116	12/6/2011	133		PAL				

**PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
BOUNDARY ROAD LANDFILL
MENOMONEE FALLS, WISCONSIN
2007 - 2012**

CHEMICAL PARAMETER	UNITS	NR140		WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
SULFATE	MG/L	125	250	MW-116	3/2/2012	157		PAL
				MW-116	6/7/2012	196		PAL
				MW-116	9/4/2012	238		PAL
				MW-116	12/10/2012	249		PAL
				MW-117	3/7/2007	171		PAL
				MW-117	6/13/2007	194		PAL
				MW-117	9/11/2007	156		PAL
				MW-117	12/10/2007	200		PAL
				MW-117	3/5/2008	184		PAL
				MW-117	9/2/2008	161		PAL
				MW-117	12/9/2008	140		PAL
				MW-117	6/8/2009	130		PAL
				MW-117	12/9/2009	148		PAL
				MW-117	12/9/2010	145		PAL
				MW-117	9/2/2011	132		PAL
				MW-117	12/6/2011	127		PAL
				MW-117	3/2/2012	136		PAL
				TW-05R	3/7/2007	144		PAL
				TW-05R	6/13/2007	166		PAL
				TW-05R	9/11/2007	154		PAL
				TW-05R	12/10/2007	130		PAL
				TW-05R	3/5/2008	133		PAL
				TW-05R	6/17/2008	150		PAL
				TW-05R	9/3/2008	147		PAL
				TW-05R	3/2/2009	150		PAL
				TW-05R	6/8/2009	160		PAL
				TW-05R	9/1/2009	144		PAL
				TW-05R	12/7/2009	140		PAL
				TW-05R	3/1/2010	148		PAL
				TW-05R	6/3/2010	138		PAL
				TW-05R	9/9/2010	136		PAL
				TW-05R	9/2/2011	131		PAL
				TW-05R	3/2/2012	131		PAL
				TW-05R	6/7/2012	136		PAL
				TW-05R	12/10/2012	159		PAL
				TW-16R	9/4/2012	269		ES
				TW-16R	12/10/2012	443		ES
				TW-24R	6/13/2007	138		PAL
				TW-24R	9/11/2007	285		ES
				TW-24R	12/10/2007	496		ES
TW-24R	3/5/2008	180		PAL				
TW-24R	12/9/2008	291		ES				
TW-24R	3/2/2009	150		PAL				
TW-24R	9/1/2009	275		ES				
TW-24R	12/7/2009	160		PAL				
TW-24R	12/9/2010	158		PAL				
TW-24R	9/4/2012	307		ES				
TW-24R	12/10/2012	415		ES				

PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
 BOUNDARY ROAD LANDFILL
 MENOMONEE FALLS, WISCONSIN
 2007 - 2012

CHEMICAL PARAMETER	UNITS	NR140		WELL ID	DATE	RESULT	DATA	
		PAL	ES				FLAGS	EXCEEDANCE
TETRAHYDROFURAN	UG/L	10	50	MW-111	6/13/2007	18		PAL
				MW-111	6/16/2008	10	J	PAL
				MW-111	6/8/2009	11		PAL
				MW-111	6/3/2010	12		PAL
				MW-111	6/7/2011	12		PAL
				MW-111	6/7/2012	16		PAL
				P103	6/13/2007	36		PAL
				P103	6/16/2008	22		PAL
				P103R	6/8/2009	31		PAL
				P103R	6/3/2010	20		PAL
				P103R	6/7/2011	21		PAL
				P103R	6/7/2012	20		PAL
				P107	6/13/2007	13	J	PAL
				VINYL CHLORIDE	UG/L	0.02	0.2	MW-117
MW-117	6/8/2009	1.6	J					ES

DATA FLAGS:

B - Analyte present in method blank.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Appendix B Site Map

Appendix C

Well Abandonment Log

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

Drinking Water Watershed/Wastewater Waste Management Remediation/Redevelopment Other: _____

1. Well Location Information

County: Waukesha WI Unique Well # of Removed Well: _____ Hicap #: _____

Latitude / Longitude (Degrees and Minutes): 43.11.090' N Method Code (see instructions): G.P.S.
88.43.970' W

1/4 or Gov't Lot #: _____ Section: _____ Township: N Range: E W

Well Street Address: N124 W19391 Boundary Rd

Well City, Village or Town: Menomonee Falls Well ZIP Code: 53051

Subdivision Name: _____ Lot #: _____

2. Facility / Owner Information

Facility Name: _____

Facility ID (FID or PWS): _____

License/Permit/Monitoring #: _____

Original Well Owner: _____

Present Well Owner: Waste Management

Mailing Address of Present Owner: W124 W19355 Boundary Rd

City of Present Owner: Menomonee Falls State: WI ZIP Code: 53051

Lot #: _____

3. Well / Drillhole / Borehole Information

Reason For Removal From Service: _____ WI Unique Well # of Replacement Well: _____

Monitoring Well Water Well Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): _____

Construction Type: Drilled Driven (Sandpoint) Dug Other (specify): _____

Formation Type: Unconsolidated Formation Bedrock

Total Well Depth From Ground Surface (ft.): 137' Casing Diameter (in.): 6

Lower Drillhole Diameter (in.): 3 Casing Depth (ft.): 137'

Was well annular space grouted? Yes No Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet): 19'

Pump, Screen, Casing & Sealing Material

Pump and piping removed? Yes No N/A

Liner(s) removed? Yes No N/A

Screen removed? Yes No N/A

Casing left in place? Yes No N/A

Was casing cut off below surface? Yes No N/A

Did sealing material rise to surface? Yes No N/A

Did material settle after 24 hours? Yes No N/A

If yes, was hole retopped? Yes No N/A

If bentonite chips were used, were they hydrated with water from a known safe source? Yes No N/A

Required Method of Placing Sealing Material

Conductor Pipe-Gravity Conductor Pipe-Pumped

Screened & Poured (Bentonite Chips) Other (Explain): _____

Sealing Materials

Neat Cement Grout Clay-Sand Slurry (11 lb./gal. wt.)

Sand-Cement (Concrete) Grout Bentonite-Sand Slurry

Concrete Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

Bentonite Chips Bentonite - Cement Grout

Granular Bentonite Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

3/4" BENTONITE CHIPS Surface: 137'

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Waste Management License #: 24627 Date of Filling & Sealing (mm/dd/yyyy): 5-25-12

Street or Route: W124 W19355 Boundary Rd Telephone Number: (262) 51-2630

City: Menomonee Falls State: WI ZIP Code: 53051 Signature of Person Doing Work: _____ Date Signed: 6-4-12

WELL/DRILL/BOREHOLE OWNER

Appendix D

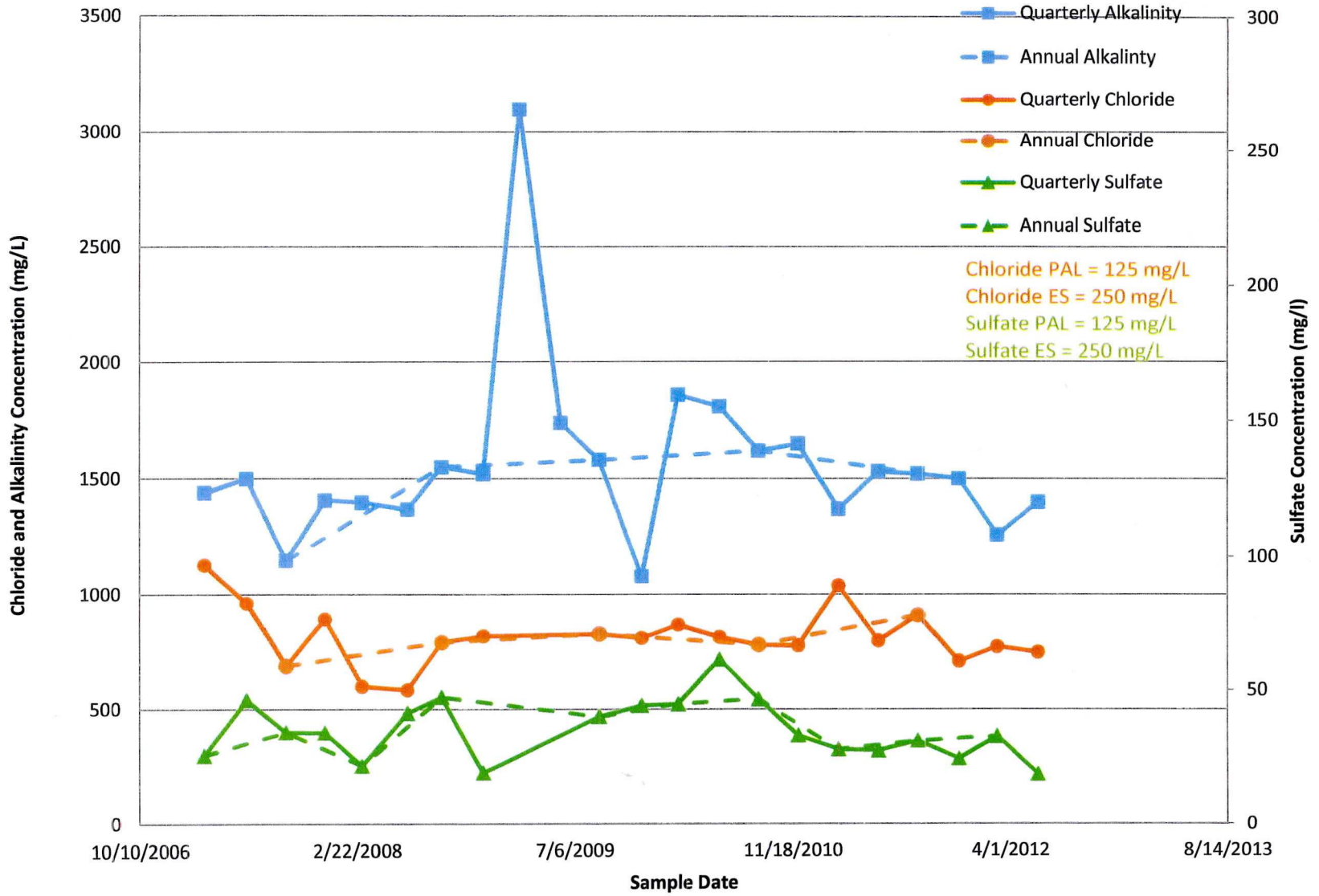
Monitoring Frequency Comparison

TRC Environmental Corporation | Waste Management of
Wisconsin, Inc. – Boundary Road Landfill

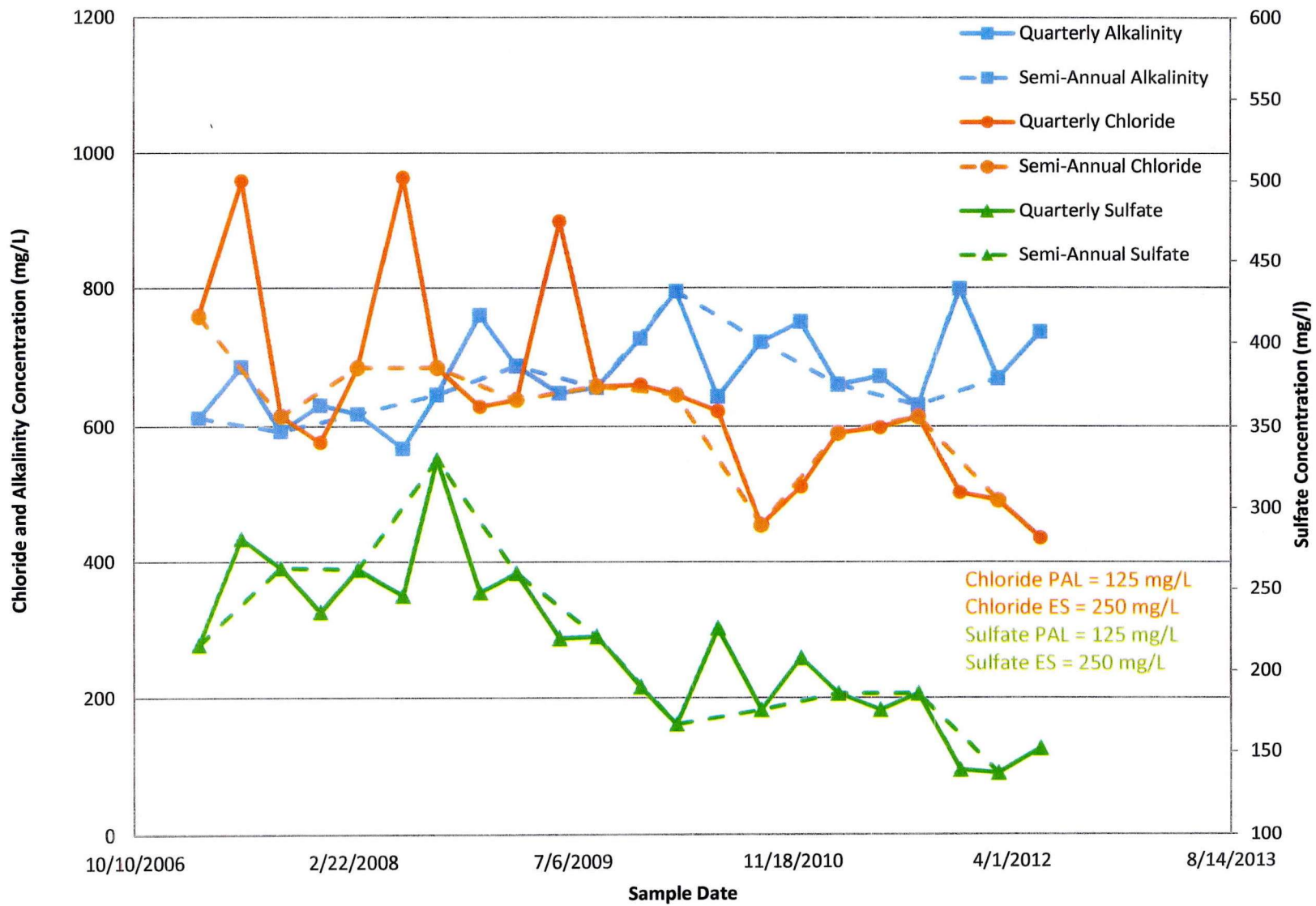
\\NTFPB-MADISON\MSN-VOL6\WPMSN\PT2\189804\0001\F189804001-001.DOCX 9/19/13

Final October 2013

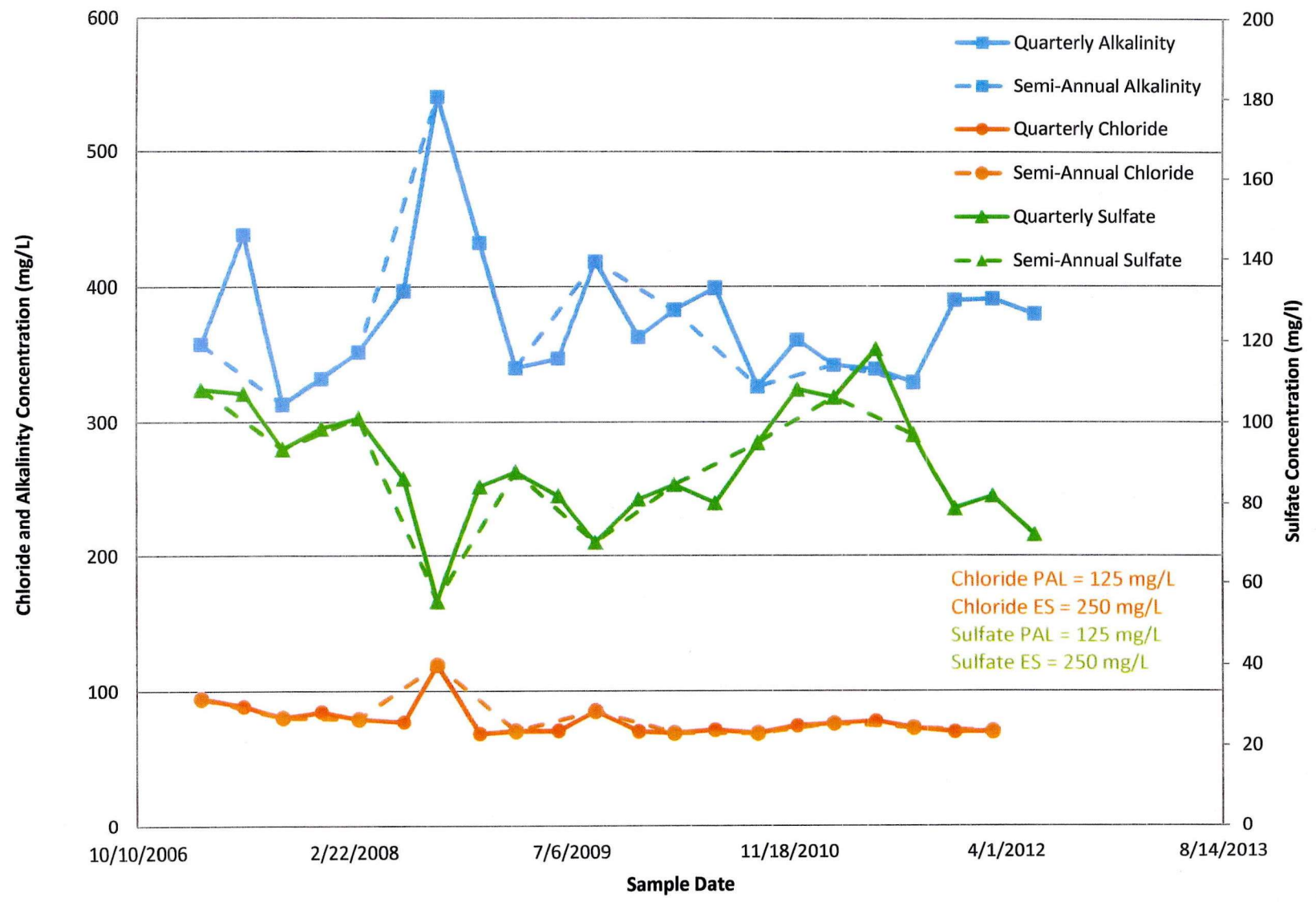
Leachate Sample
Boundary Road Landfill 2007-2012



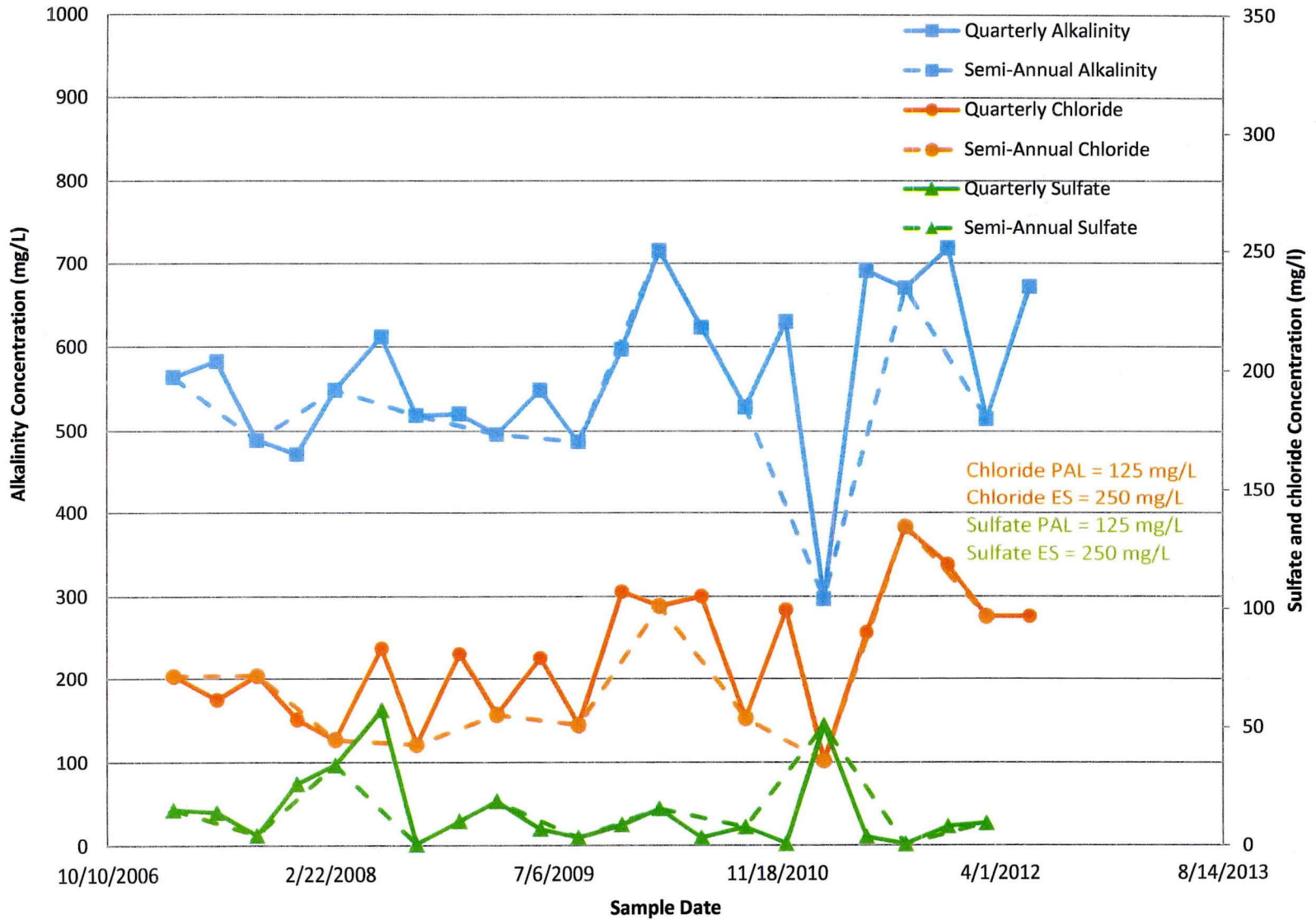
MW-111
Boundary Road Landfill 2007-2012



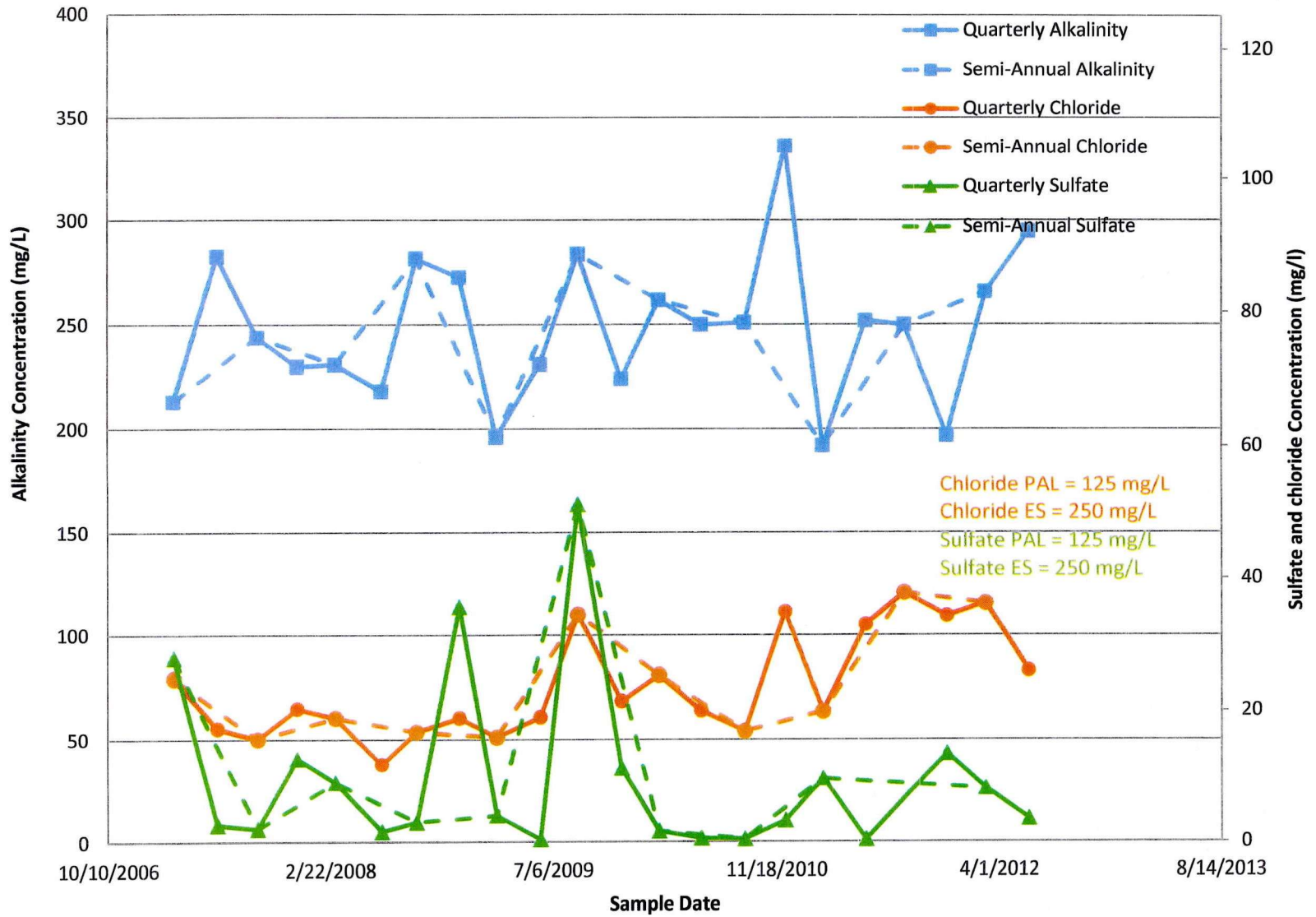
MW-110
Boundary Road Landfill 2007-2012



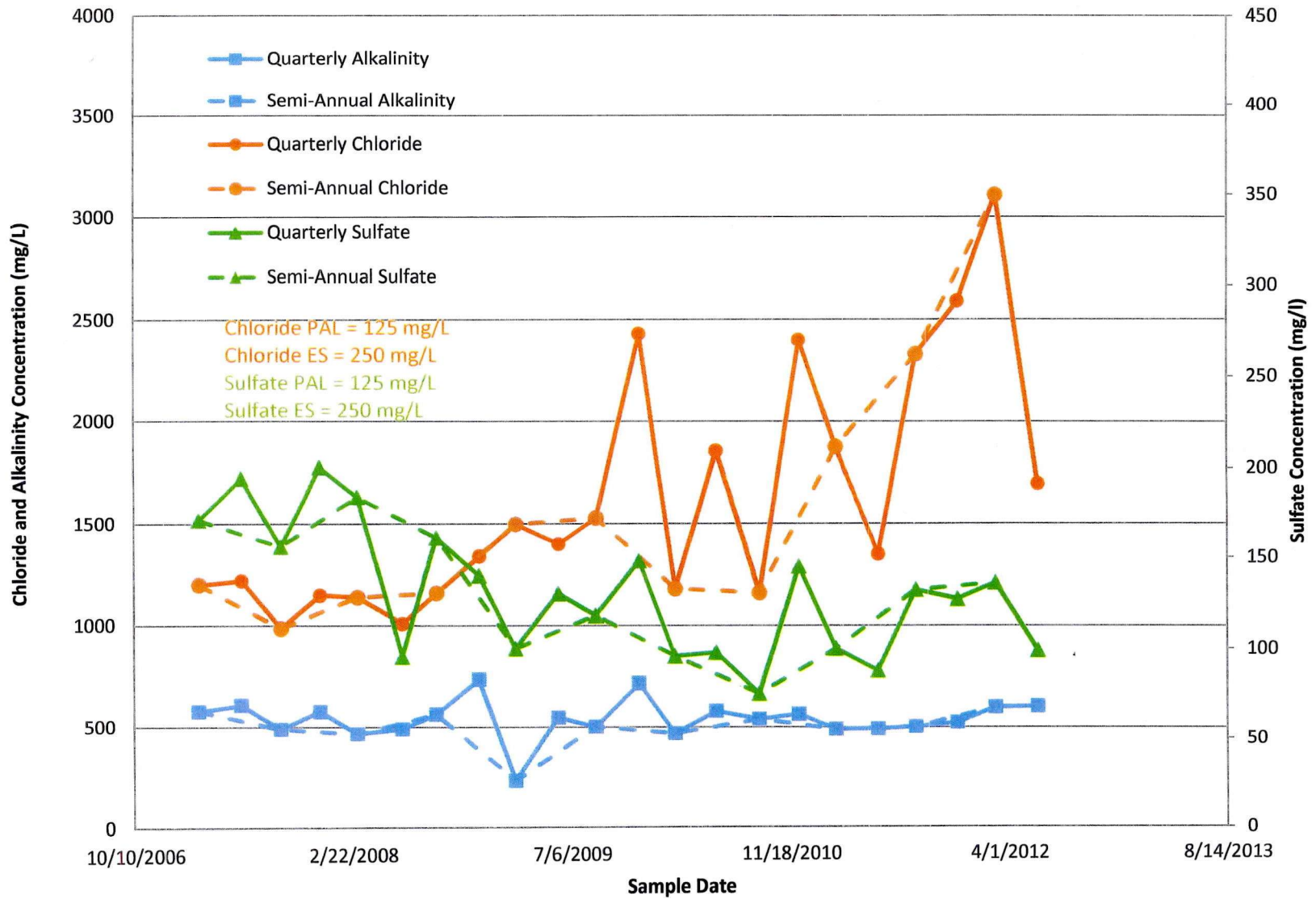
TW-9RR
Boundary Road Landfill 2007-2012



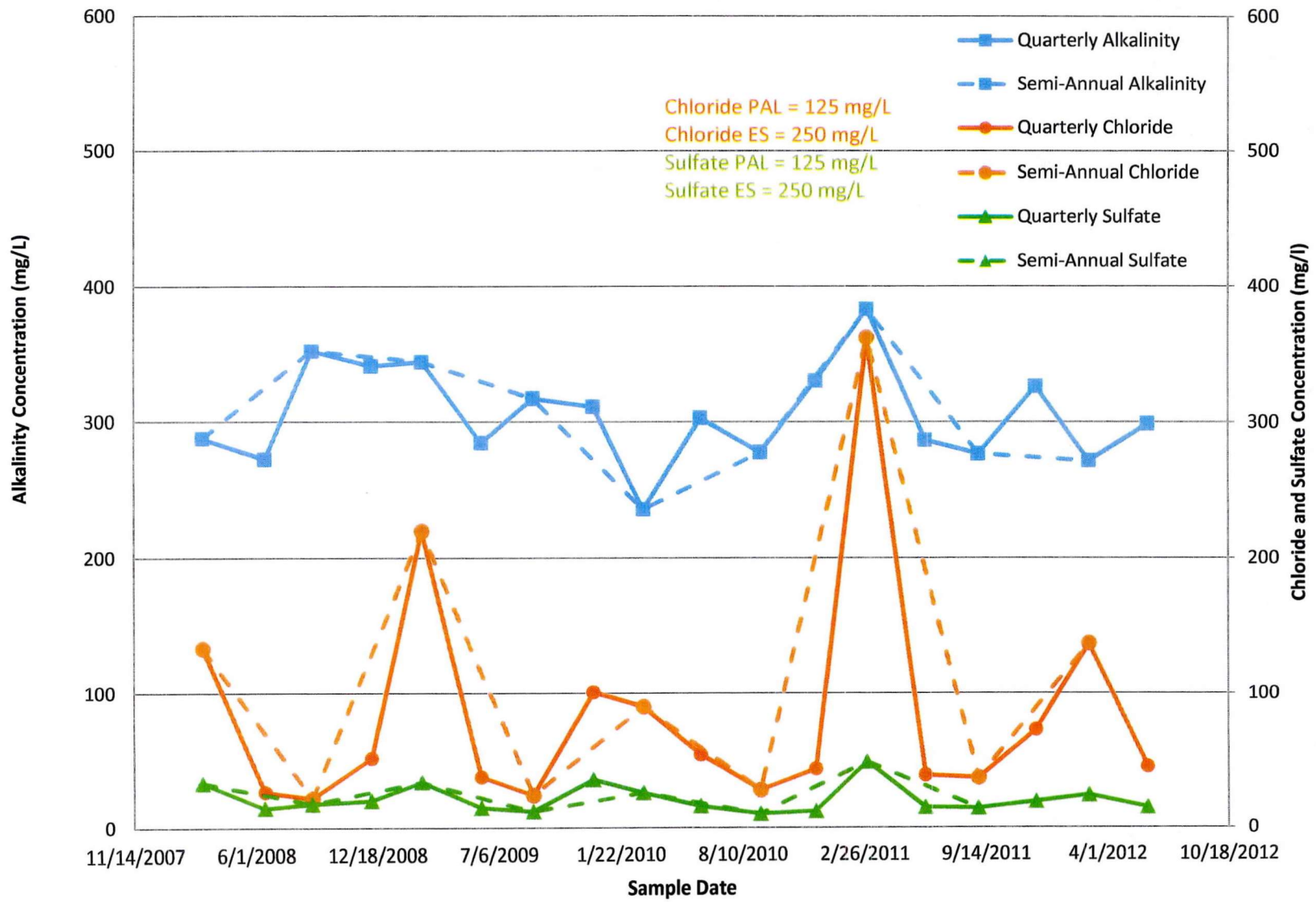
TW-16R
Boundary Road Landfill 2007-2012



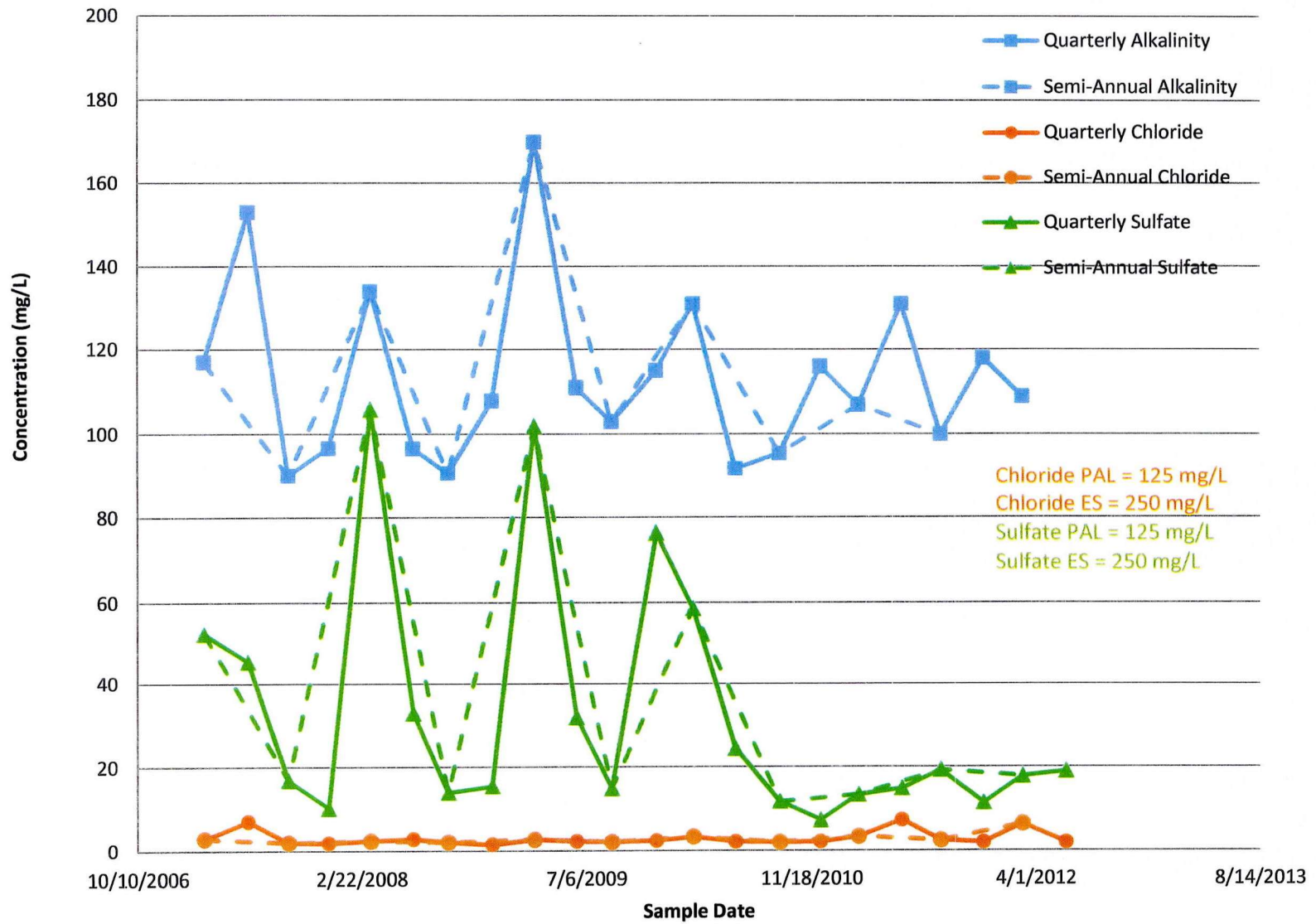
MW-117
Boundary Road Landfill 2007-2012



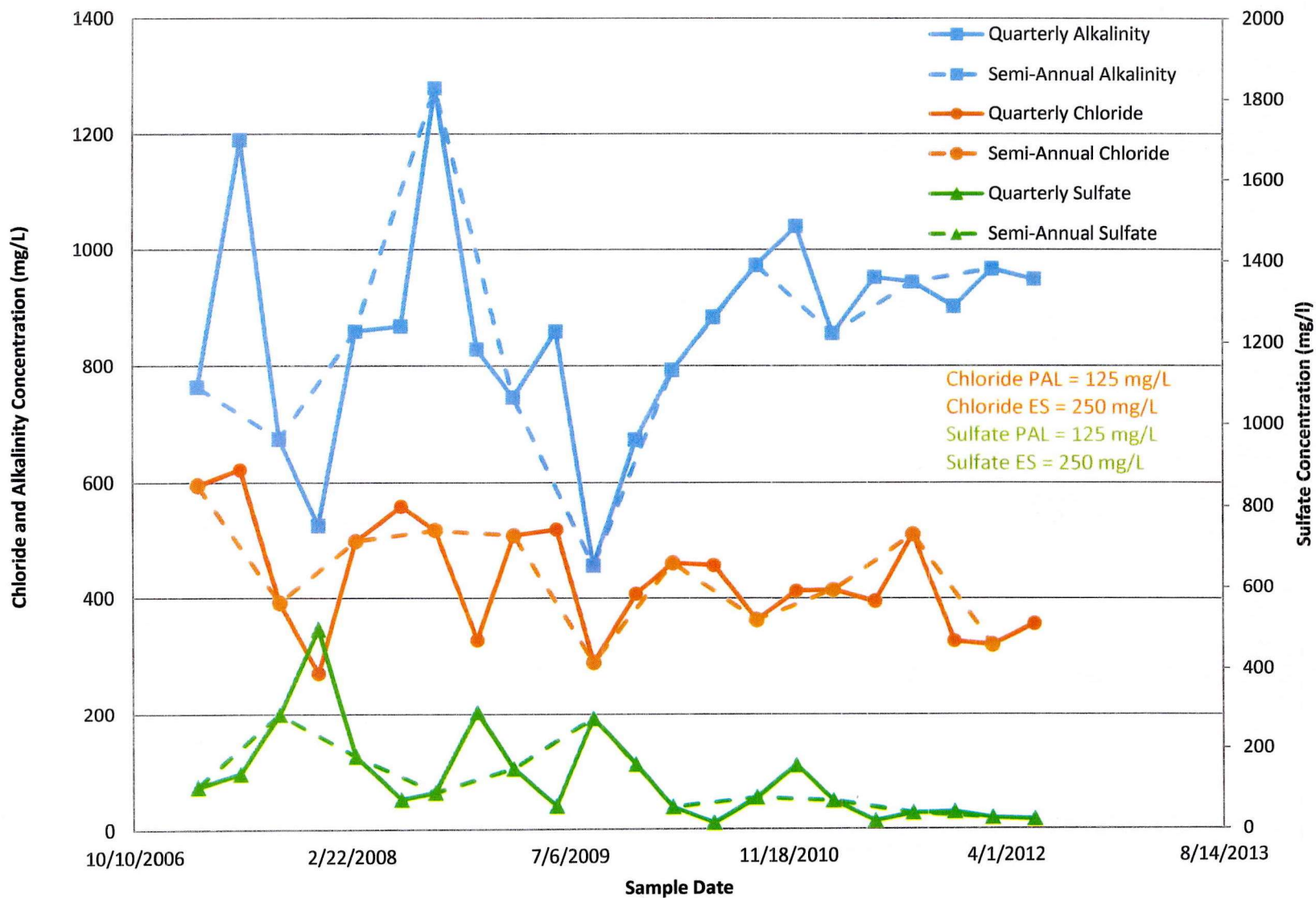
MW-107
Boundary Road Landfill 2007-2012



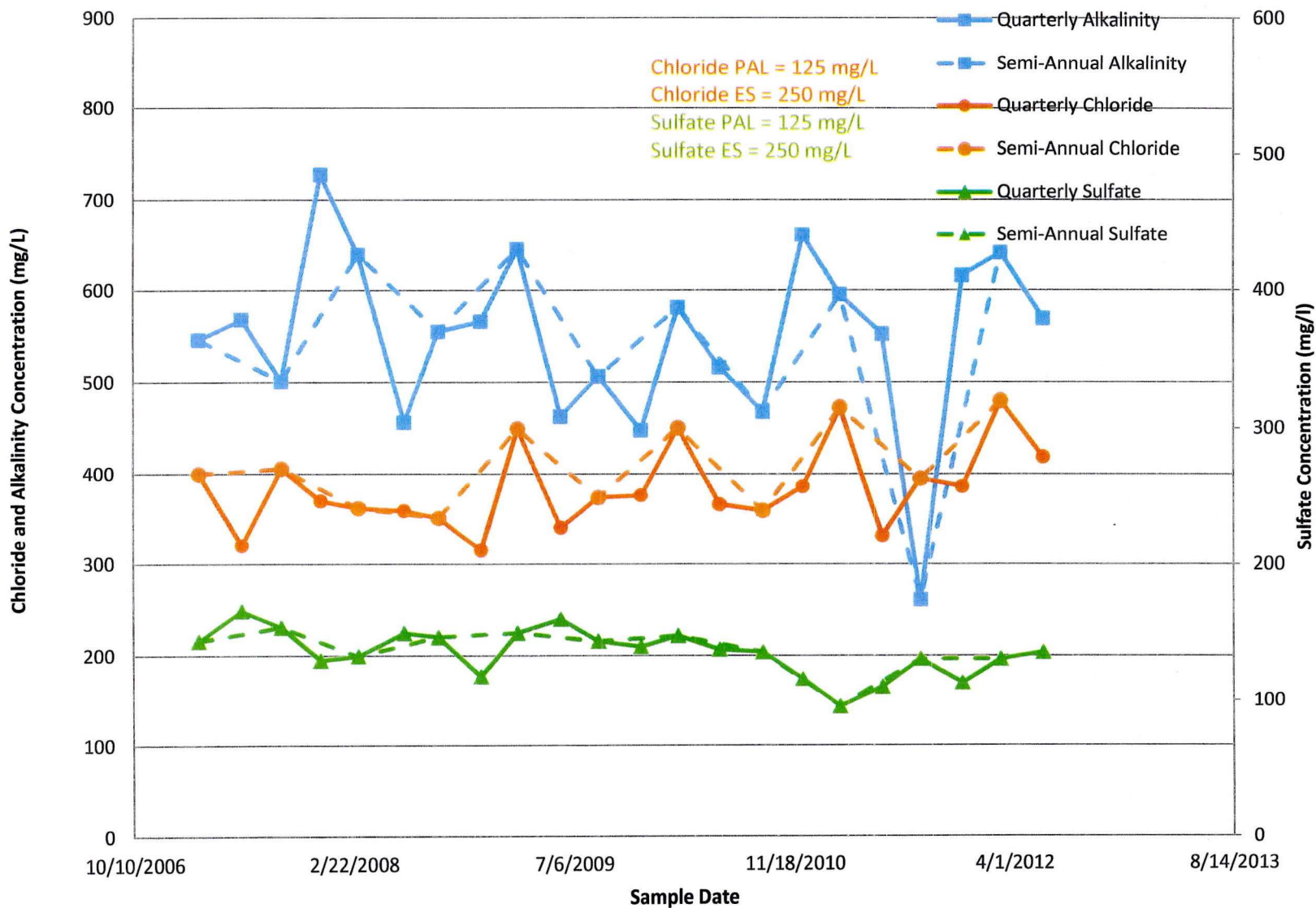
MW-108
Boundary Road Landfill 2007-2012



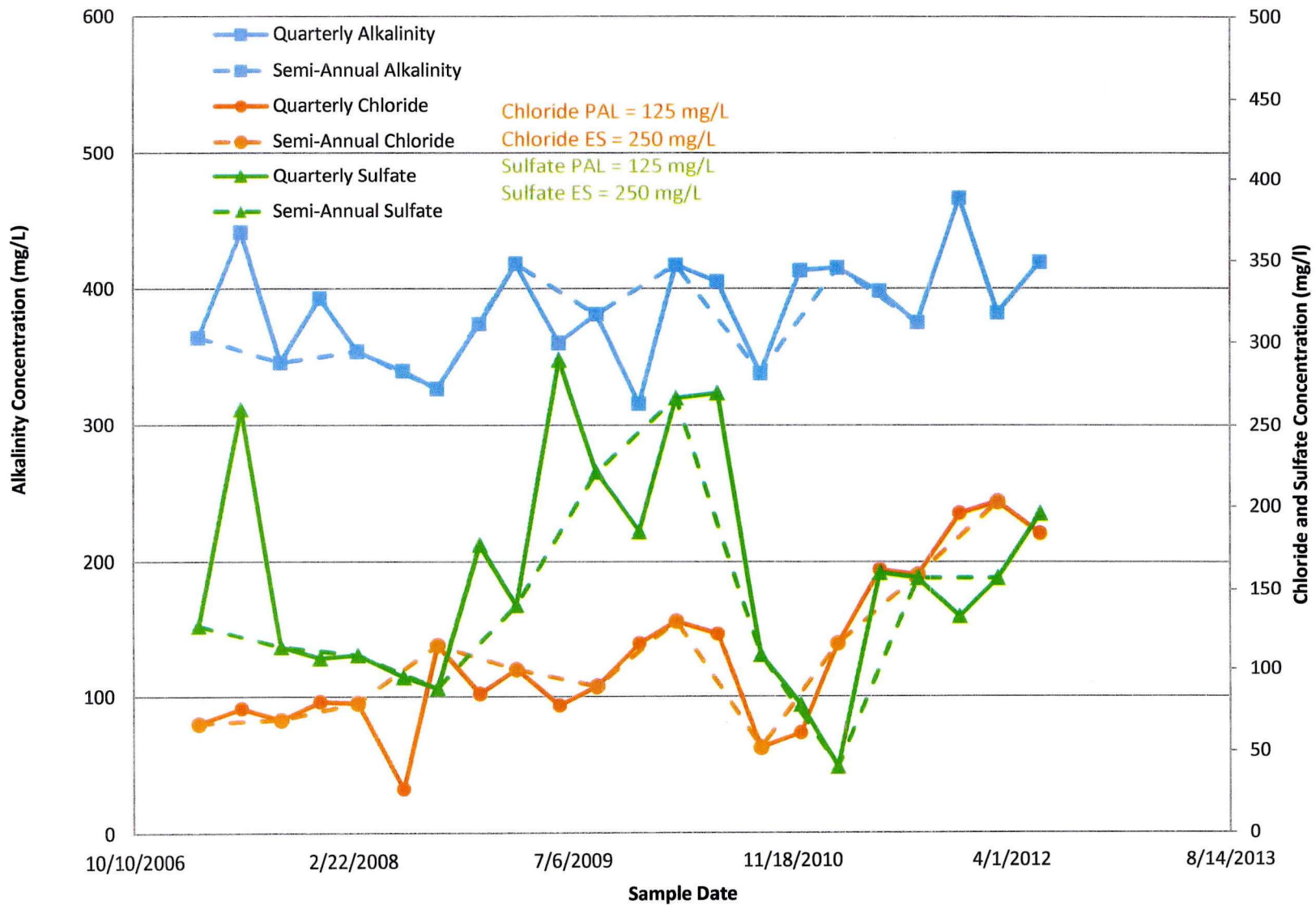
TW-24R
Boundary Road Landfill 2007-2012



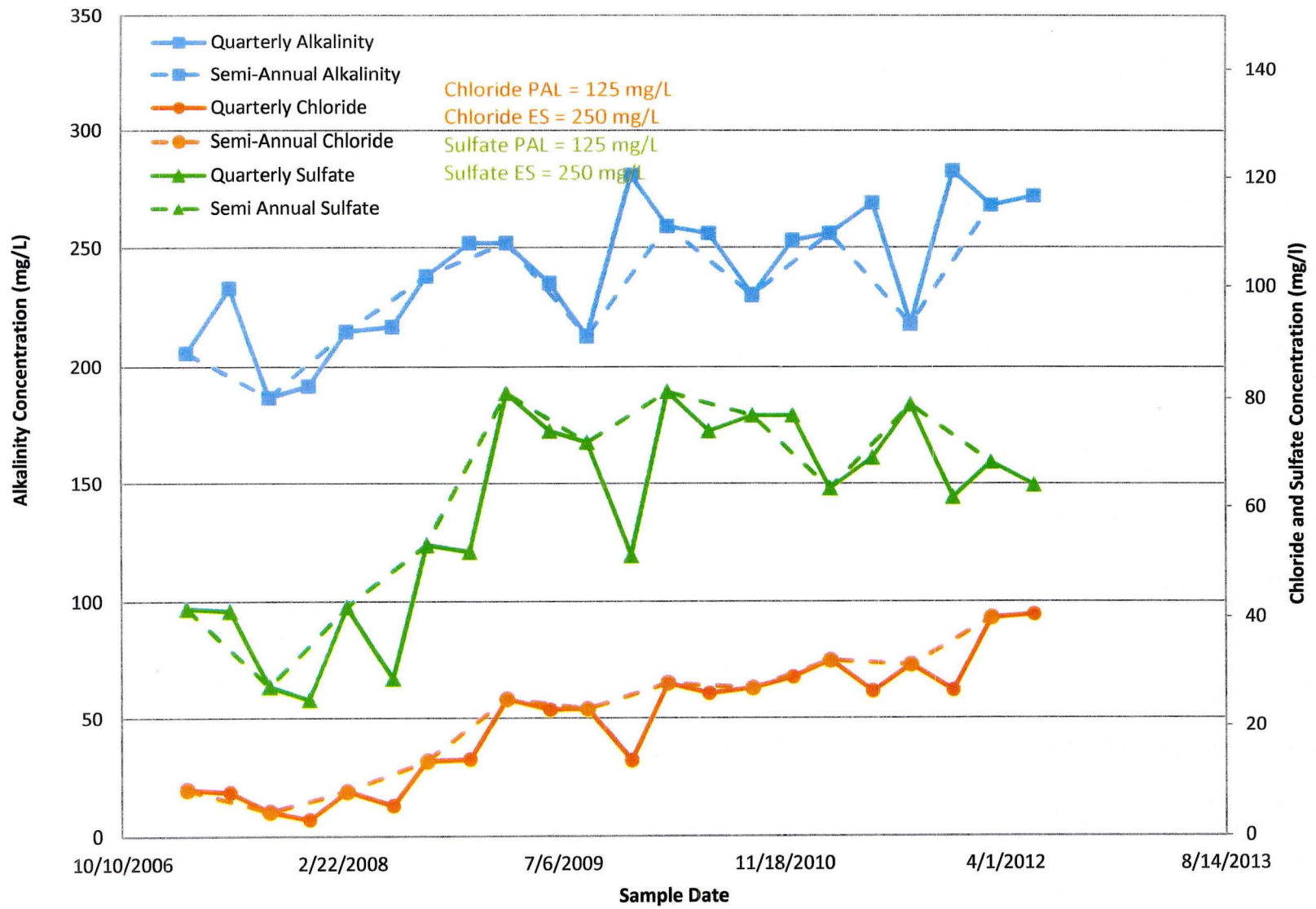
TW-5R
Boundary Road Landfill 2007-2012



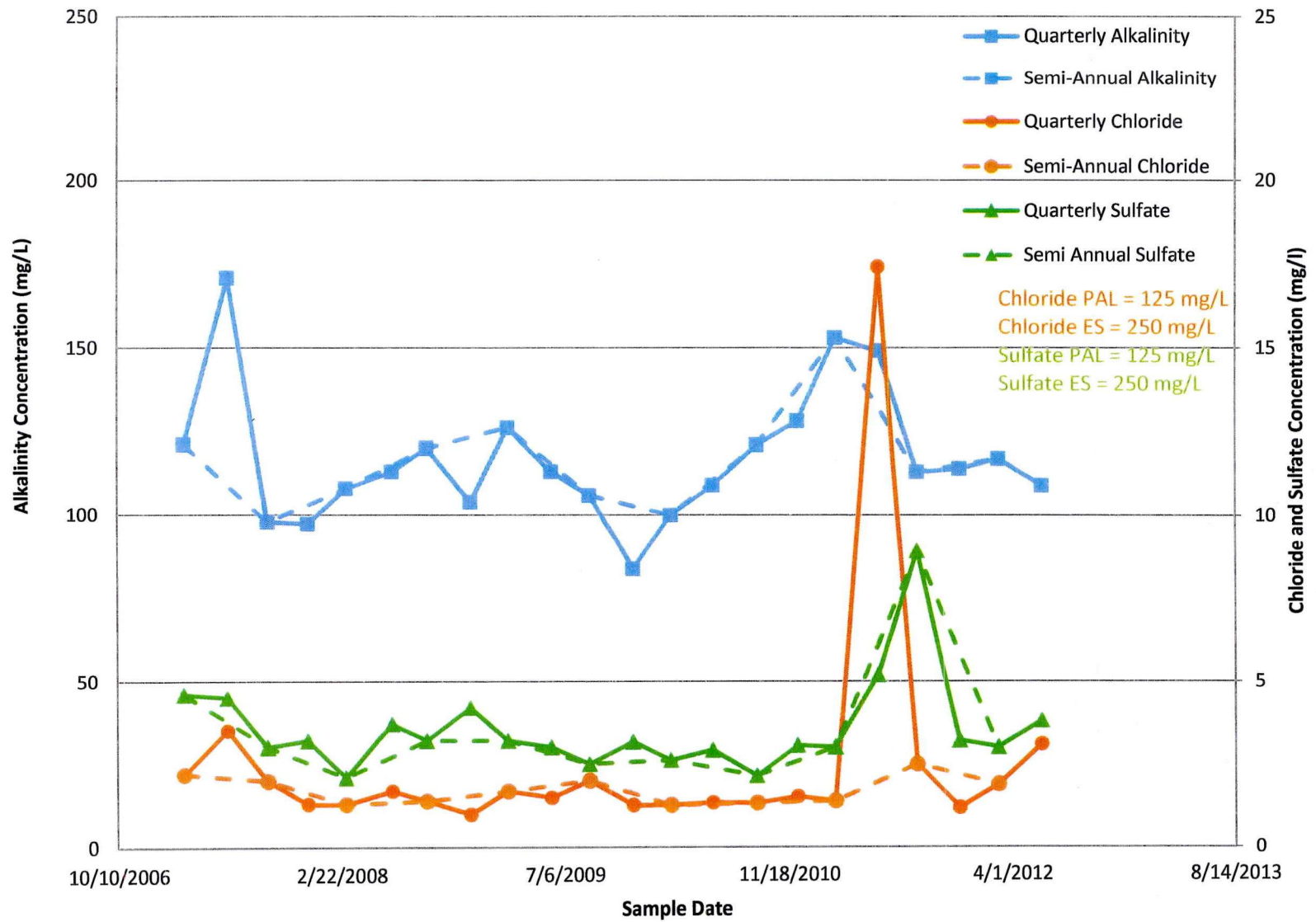
MW-116
Boundary Road Landfill 2007-2012



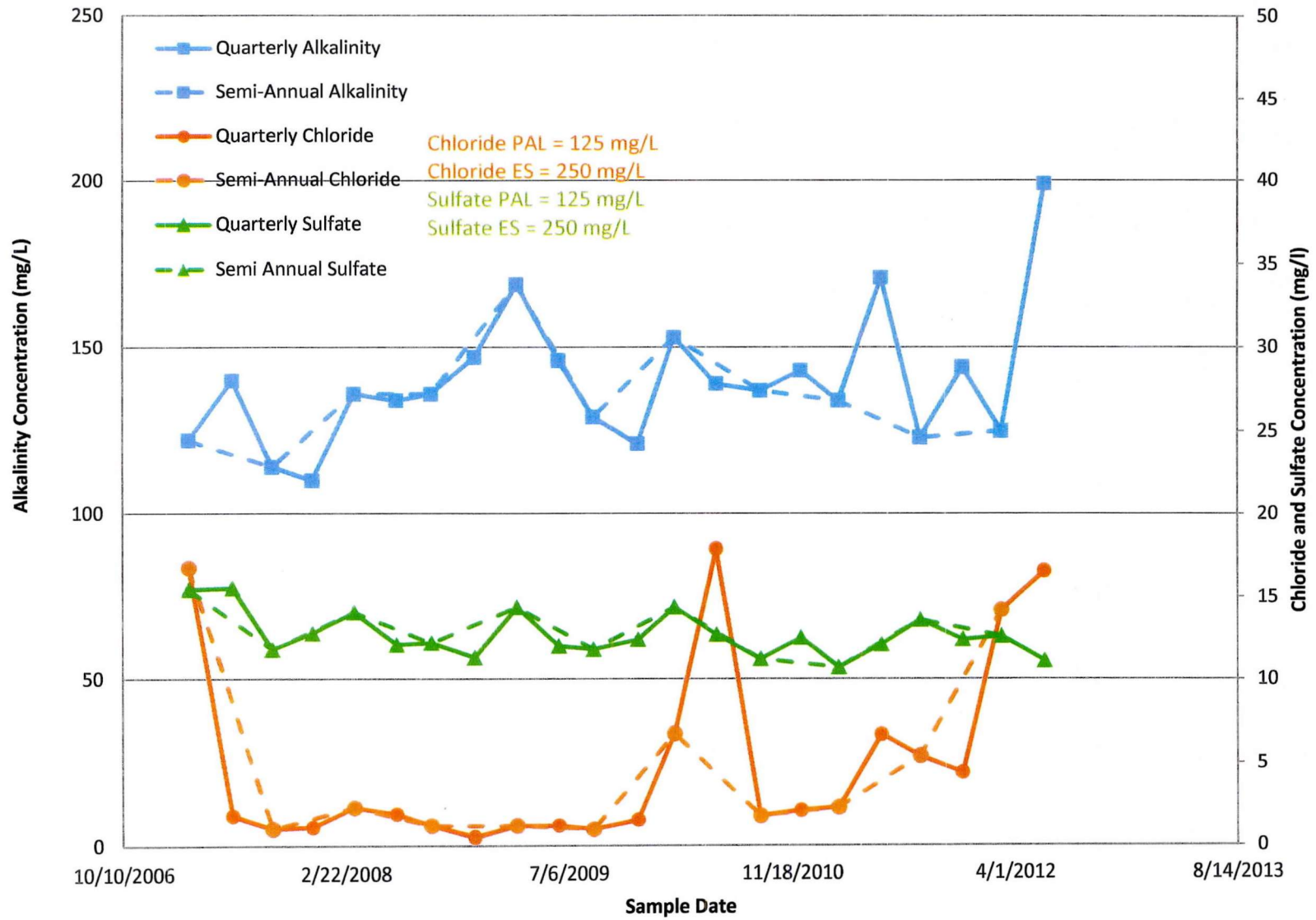
P102
Boundary Road Landfill 2007-2012



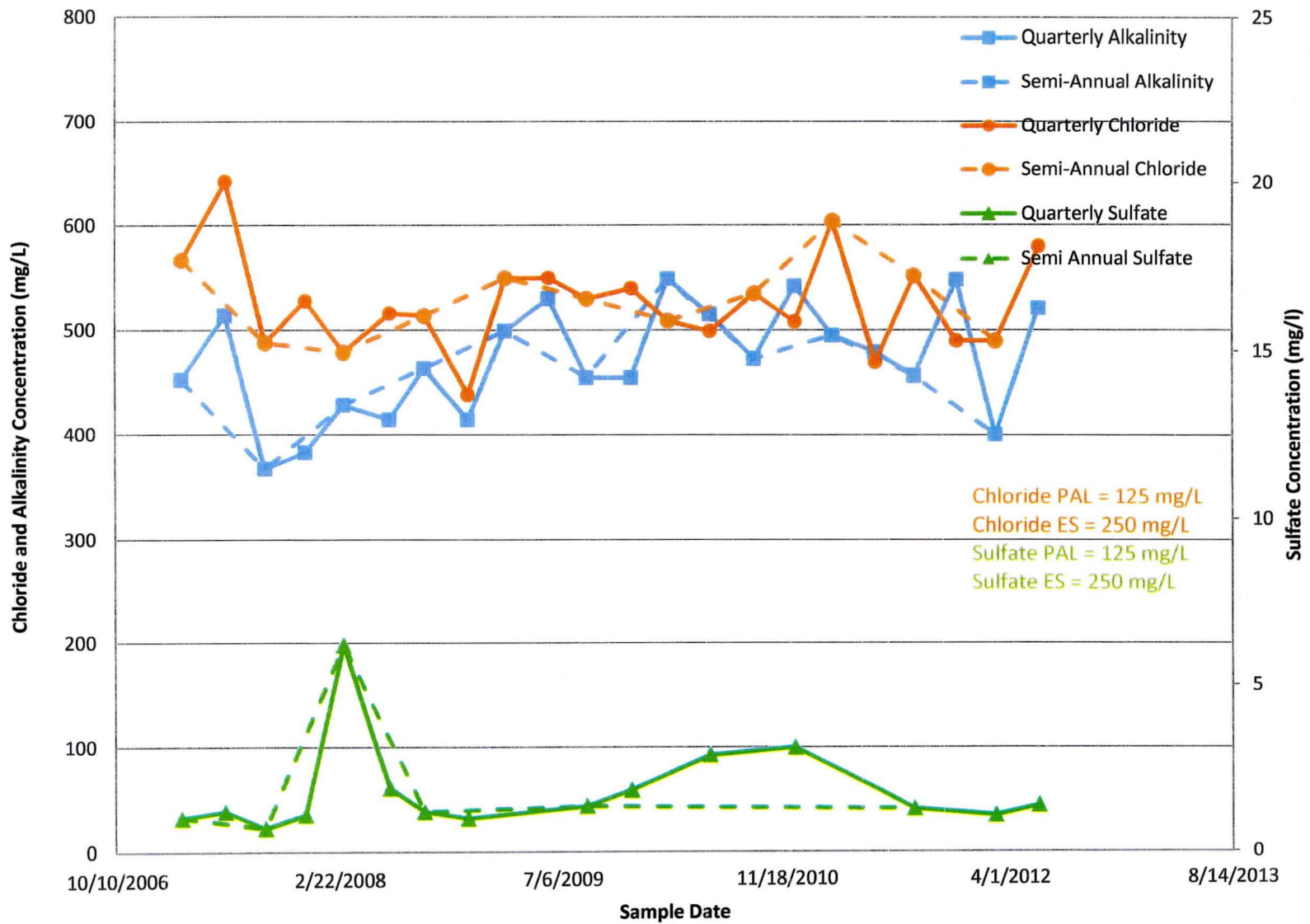
P104
Boundary Road Landfill 2007-2012



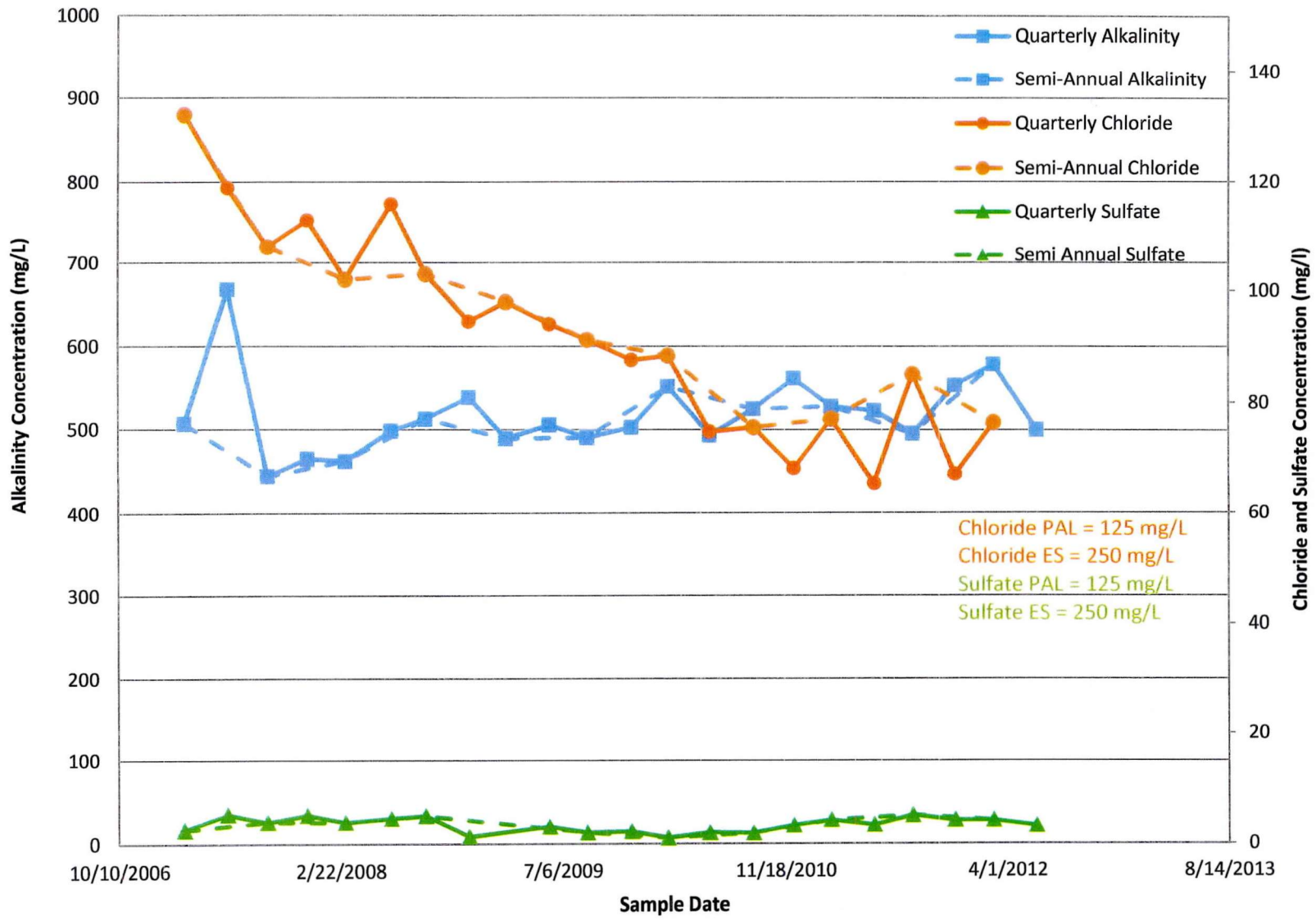
P101
Boundary Road Landfill 2007-2012



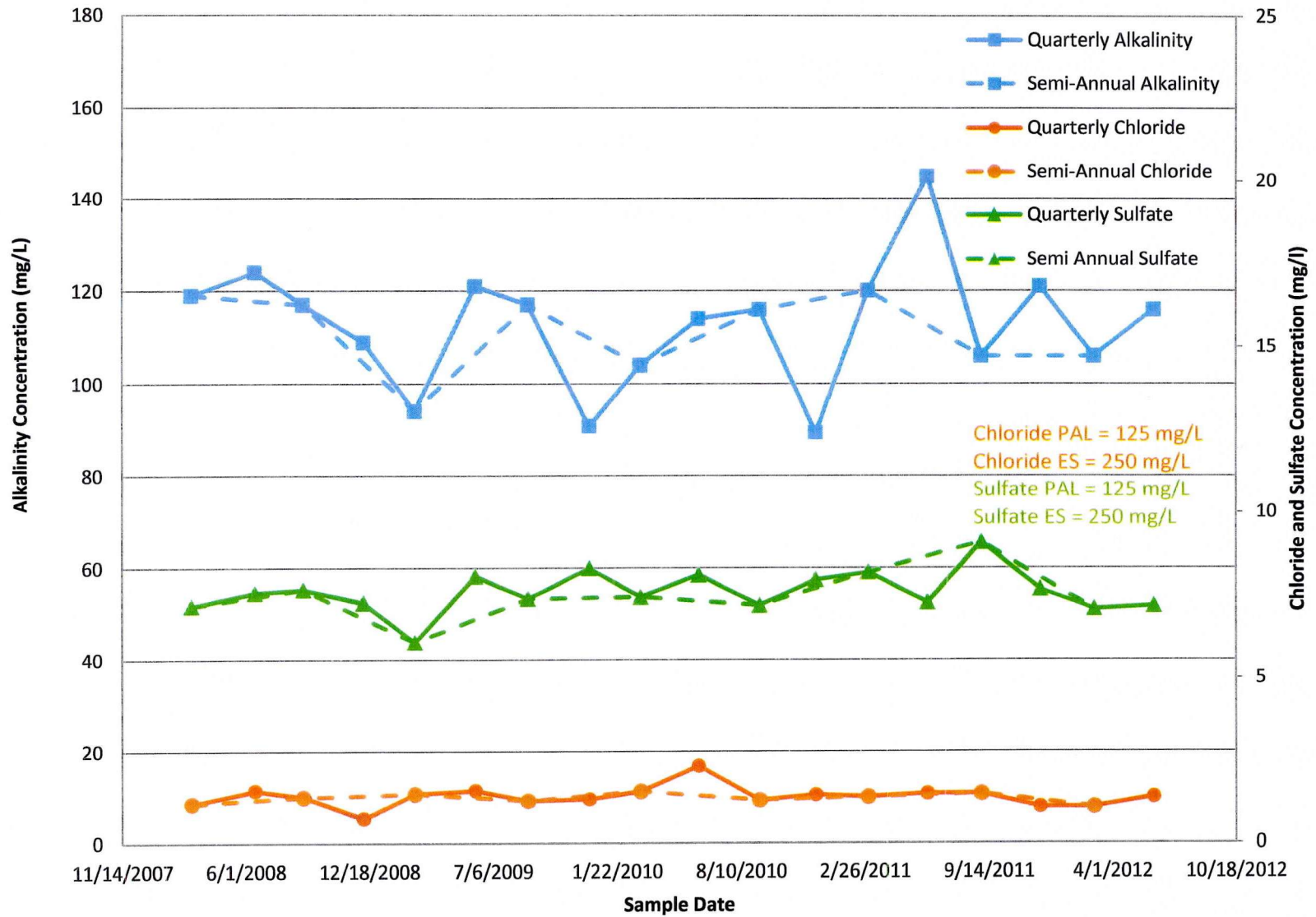
P103/P103R
Boundary Road Landfill 2007-2012



P107
Boundary Road Landfill 2007-2012



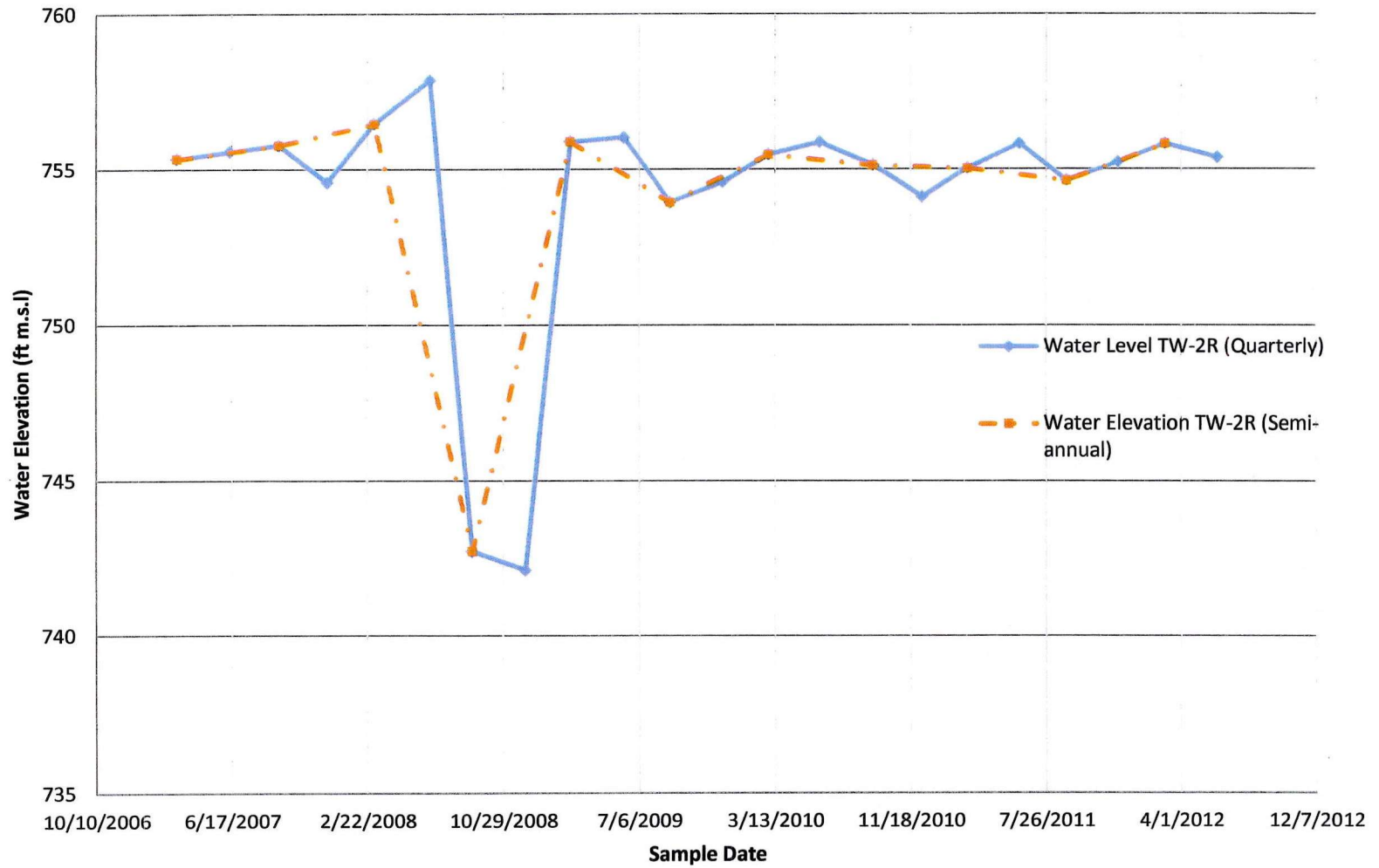
P117
Boundary Road Landfill 2007-2012



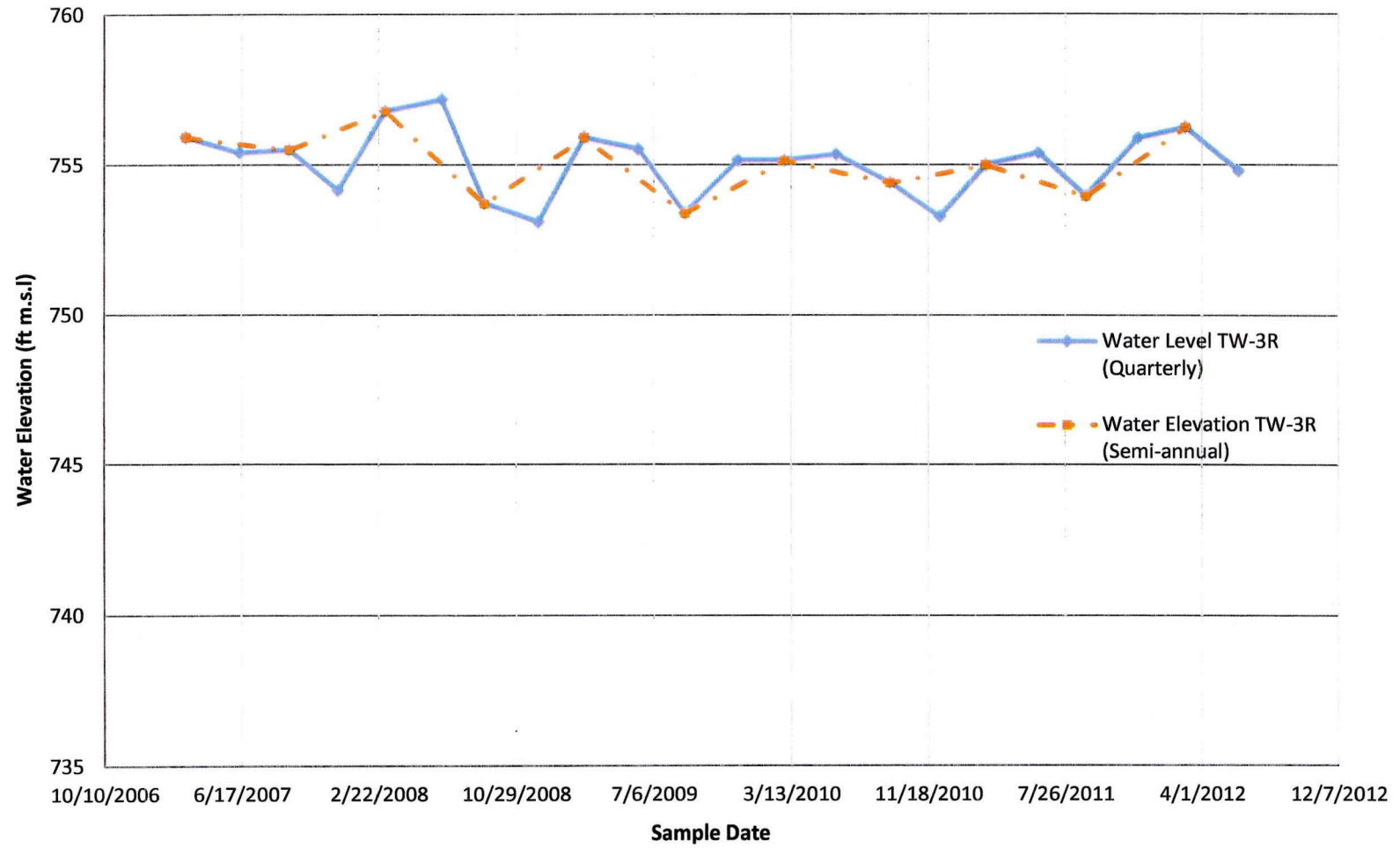
Appendix E

Groundwater and Leachate Level Monitoring Frequency Comparison

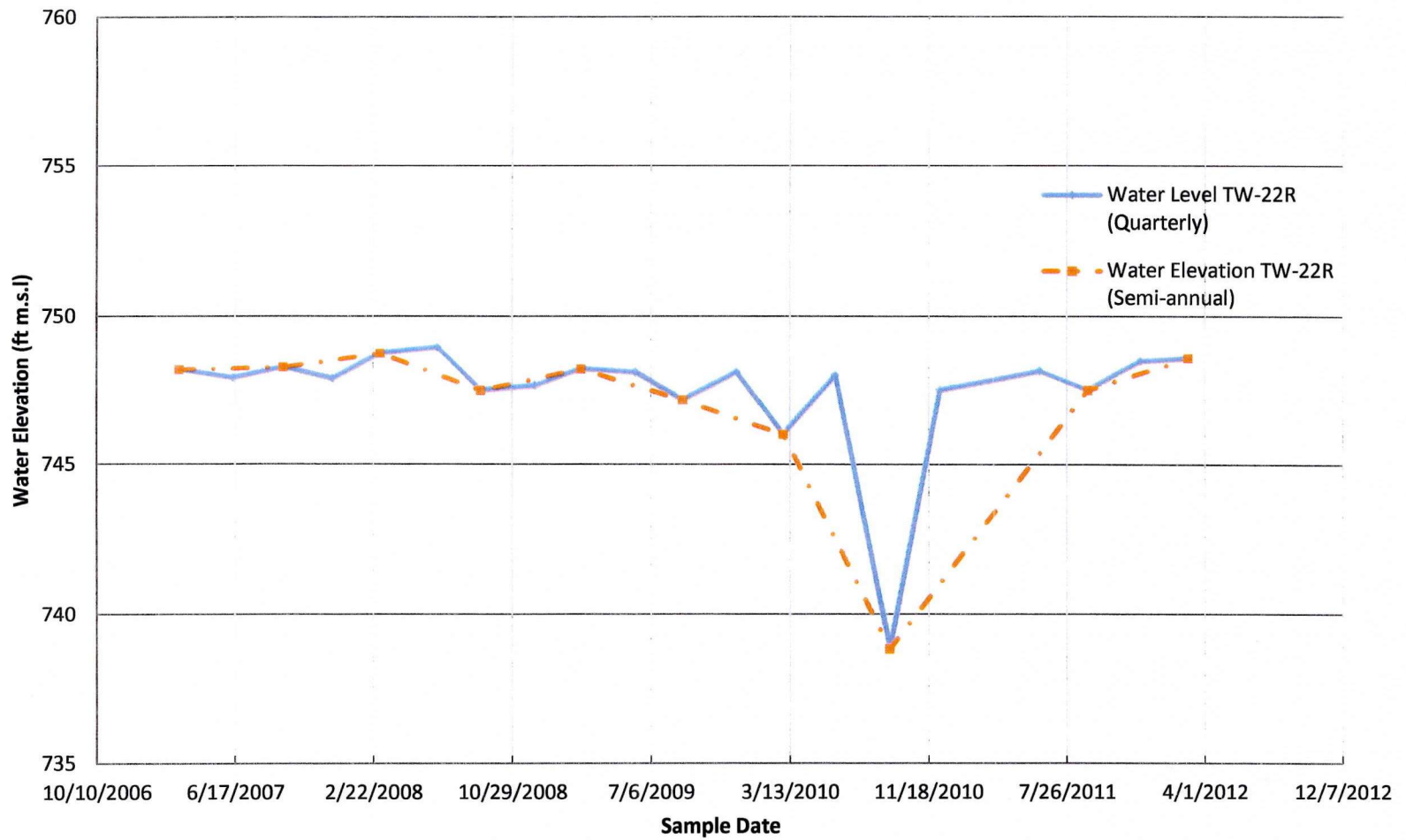
**Water Elevation
TW-2R
Boundary Road Landfill 2007- 2012**



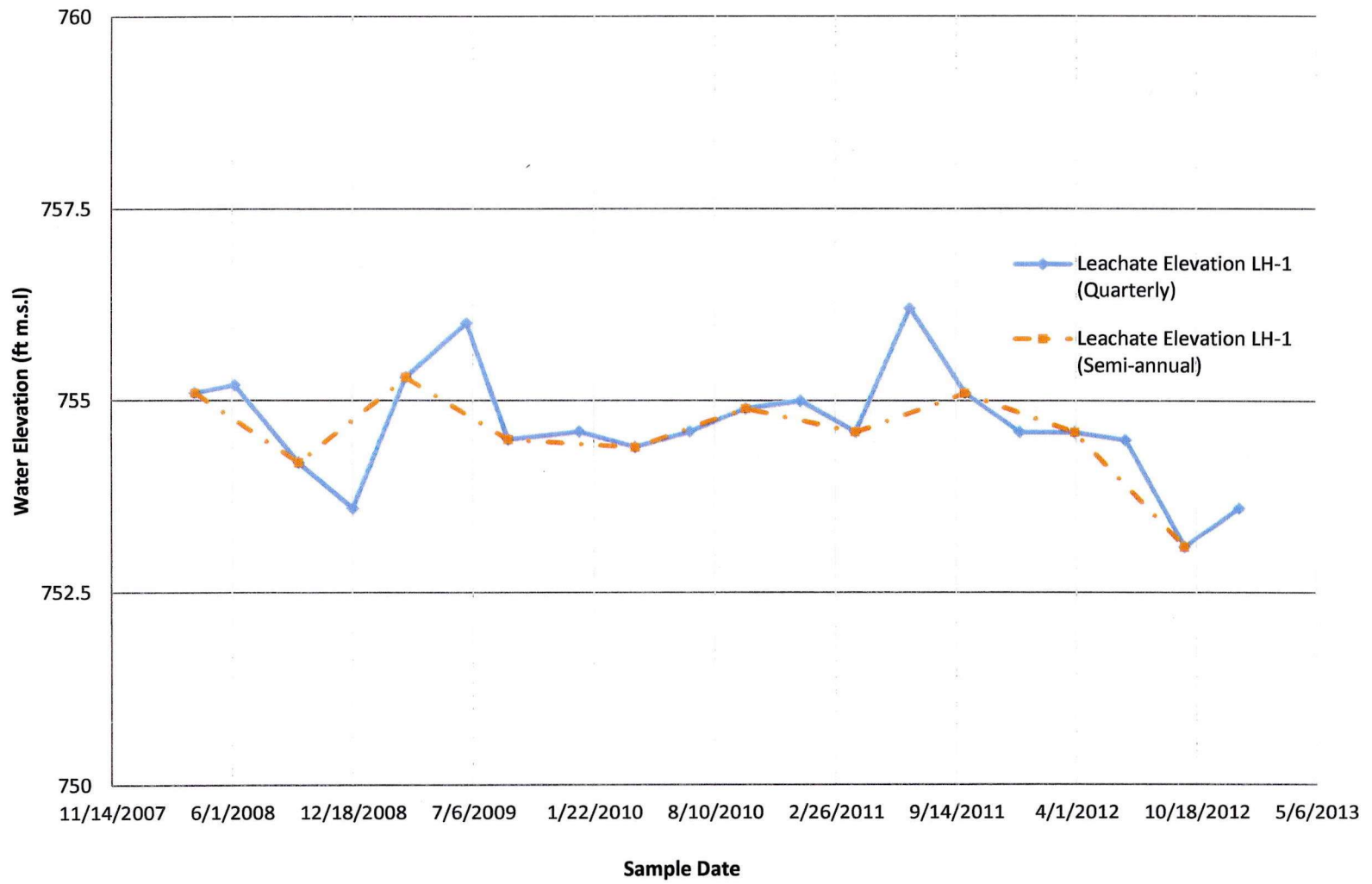
**Water Elevation
TW-3R
Boundary Road Landfill 2007-2012**



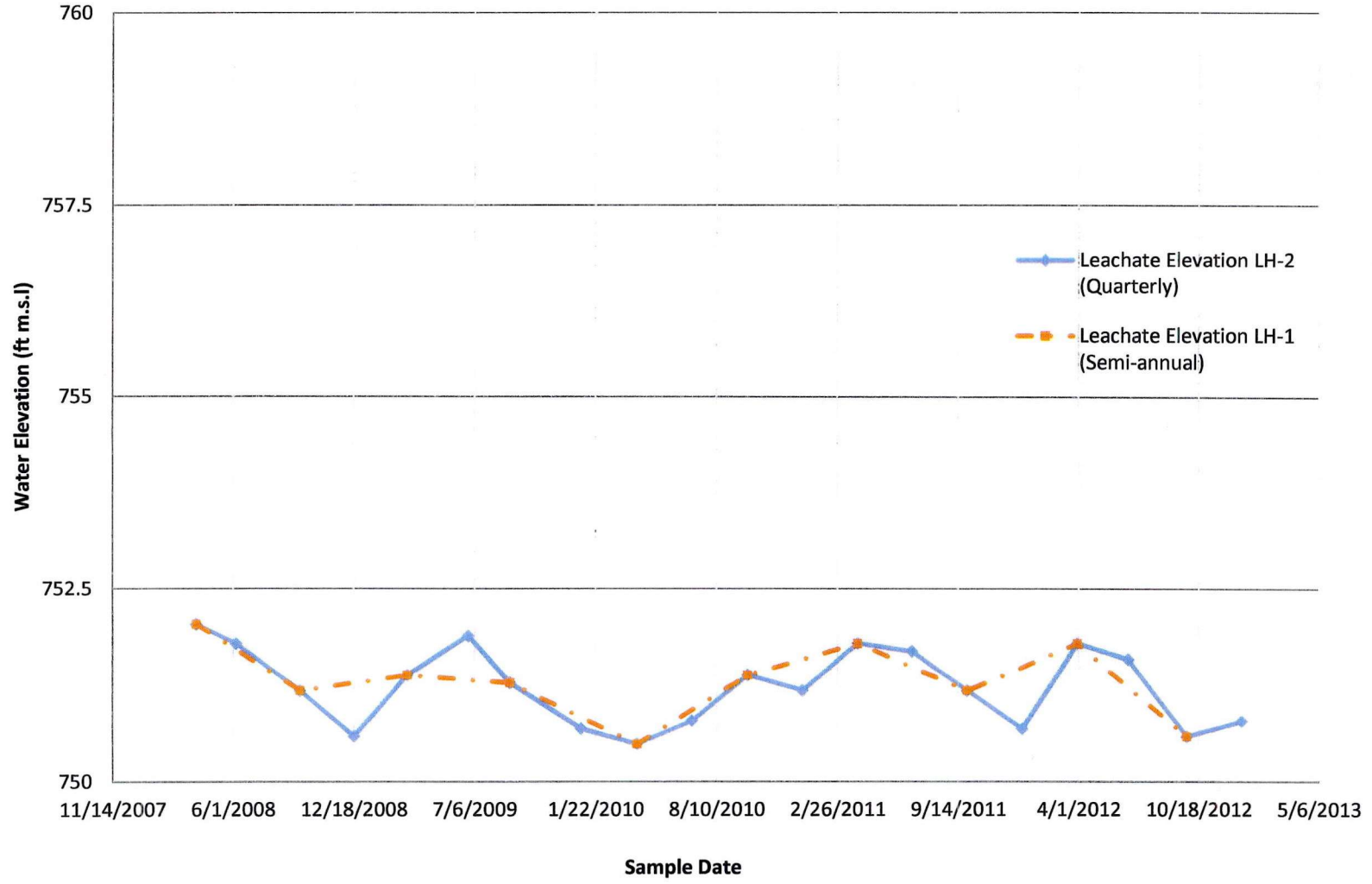
**Water Elevation
TW-22R
Boundary Road Landfill 2007-2013**



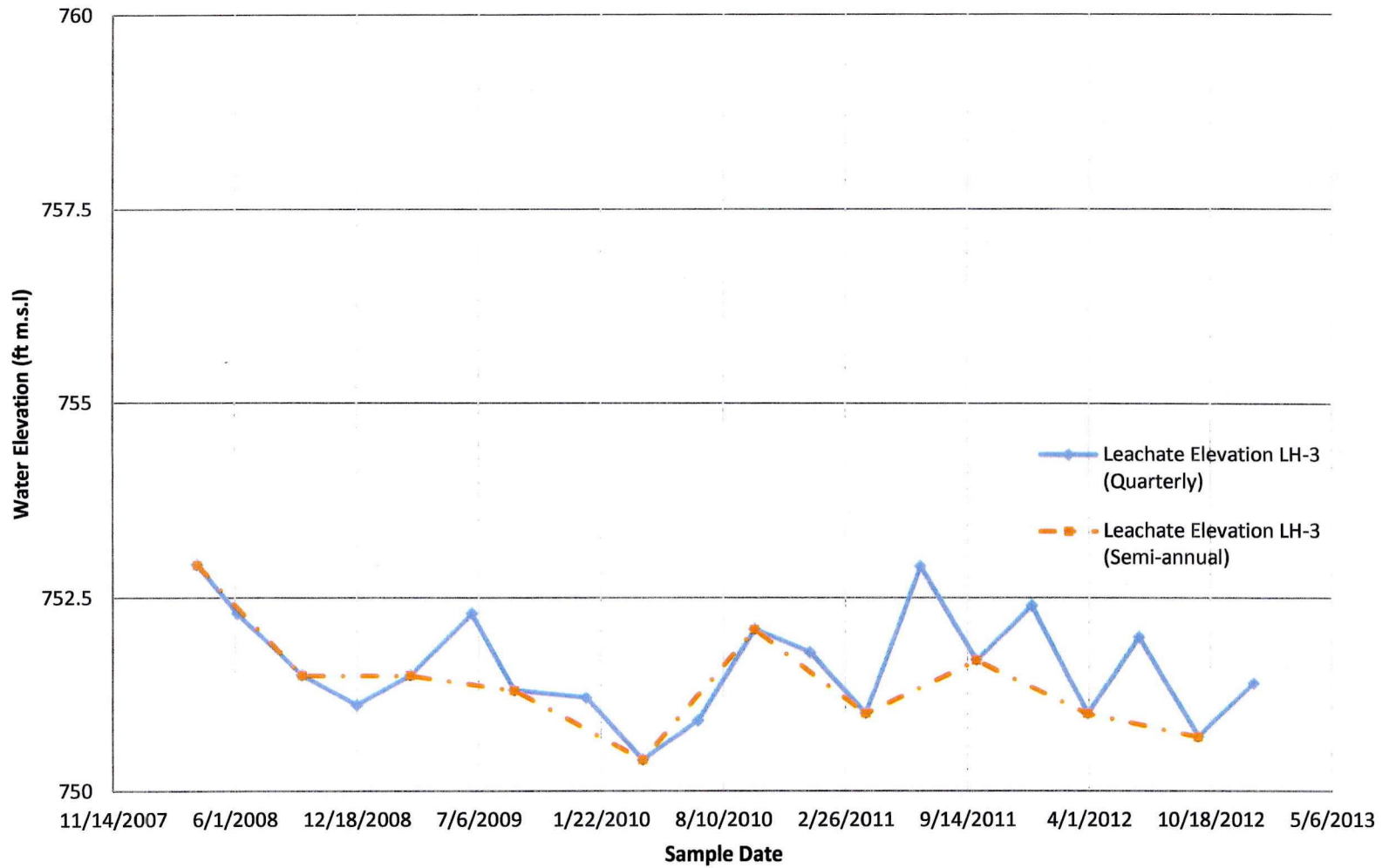
**Leachate Elevation
LH-1
Boundary Road Landfill 2008-2012**



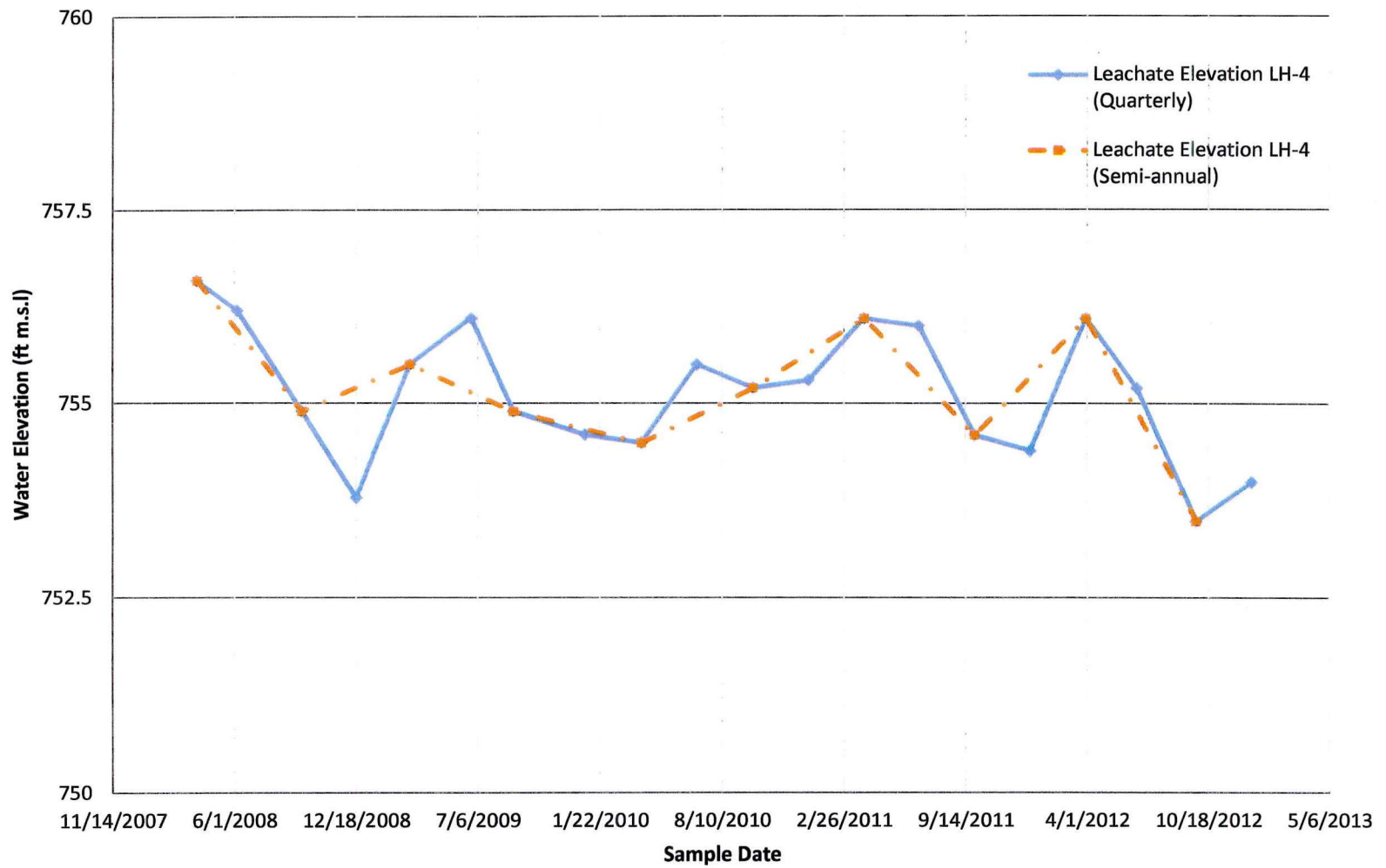
**Leachate Elevation
LH-2
Boundary Road Landfill 2008-2012**



**Leachate Elevation
LH-3
Boundary Road Landfill 2008-2012**



Leachate Elevation
LH-4
Boundary Road Landfill 2008-2012



Leachate Elevation
LH-5
Boundary Road Landfill 2008-2012

