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QIKIQ15 BAFFIN REGION DEW LINE SITE MONITORING

2016 DYE-M Monitoring Report

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Executive Summary

Golder Associates Ltd. (Golder) has been contracted by Public Services and Procurement Canada (PSPC), on behalf of the Department of National Defence (DND), to complete the 2015-2018 Distant Early Warning (DEW) Line Sites Landfill Monitoring Program in the Baffin Region of Nunavut. The five DEW Line sites that were monitored in 2016 as part of the QIKIQ15 contract are FOX-2, FOX-3, FOX-4, FOX-5 and DYE-M. These sites are all now in the Post-Construction Monitoring Phase of their remedial program.

This monitoring report presents the 2016 post-construction inspection and monitoring results for thirteen landfills at DYE-M:

- Lower Site North Warning System Landfill
- Lower Site Tier II Disposal Facility
- Lower Site Crossroads Landfill
- Lower Site Foundation Landfill
- Lower Site Powerhouse Landfill
- Lower Site Non-Hazardous Waste Landfill
- Upper Site Tier II Disposal Facility
- Upper Site West Landfill
- Upper Site Pallet Line Landfill
- Upper Site Non-Hazardous Waste Landfill
- Upper Site North Warning System Landfill
- Upper Site South Landfill West
- Upper Site Helipad Landfill

Lower Site North Warning System (NWS) Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site NWS Landfill. All observed features are minor and were unchanged since 2015. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals in soil were highest overall at the shallow sample location DM-07, located upgradient of the northwest side of the landfill. Concentrations of copper and zinc at this location were slightly greater than those observed in previous years, whereas all other metal concentrations were similar to or less than those observed in previous years; this was similarly the case for DM-08 for copper and chromium. At DM-09 and DM-10, all metals concentrations were less than or similar to previous monitoring results. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016. No detectable concentrations of cadmium, mercury, PHC or PCB were noted in any of the samples in 2016.

Given that a number of the environmental sampling results are the same or less than in the two previous sampling sessions, there is no evident ongoing impact of the landfill on soil quality. No modifications to the ongoing monitoring program at this landfill are recommended.

Lower Site Tier II Disposal Facility

No significant settlement, exposed waste or indications of slope instability were observed at the Lower Site Tier II Disposal Facility during the 2016 visual inspection. There are a number of locations with observed self-armouring erosion, cracking and minor sloughing on the landfill slopes and cover surface, indicating deteriorating physical landfill performance. The overall stability performance of this landfill was assessed as Marginal.

The concentrations of metals in soil were highest overall at the shallow sample location MW05-15, located downgradient of the north side of the landfill, however, similar elevated metal concentrations were also observed upgradient at MW05-16. At MW05-15, the concentration of copper was slightly greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At MW05-13, MW05-16 and MW12-01, the metal concentrations observed were less than or similar to those reported in previous years, with the exception of copper at MW05-16.

PHC were detected at the shallow MW05-13, MW05-15 and MW05-16 locations for the first time. It is noted the modified TPH concentration at MW05-15 marginally exceeded the baseline mean concentration plus 3σ and the PHC F2 concentration at this location slightly exceeded the baseline mean concentration plus 3σ; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No detectable concentrations of cadmium, arsenic, mercury or PCB were noted in any of the soil samples in 2016.

The concentration of some metals in groundwater (i.e., nickel at MW05-13 and nickel and chromium at MW12-01) increased in 2016. No exceedances of the baseline mean concentrations were noted in the groundwater samples collected in 2016. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the groundwater samples in 2016. None of the reported groundwater values exceeded their respective baseline mean concentrations plus 3σ.

Comparison of groundwater elevations based on estimated grade elevation and the measured water depth in the wells indicates that groundwater was higher at MW05-13, and lower towards the west at MW05-15 and MW12-01, which follows the topography in the area.

Overall, it was noted that a number of the soil sampling results (e.g. PHC at MW05-13, MW05-15 and MW05-16) were greater than in previous monitoring sessions, which may be indicative of influence from the landfill. It is further noted that the location where concentrations of TPH were observed at the baseline mean concentrations plus 3σ is located in the shallow soils, near to where a soft/wet area and sloughing are observed. Whereas there is no evident direct correlation between the soil quality and visual observations of landfill performance, close scrutiny of this area and consideration of the potential cause of the landfill structural performance is required in 2017. Based on the groundwater monitoring results, there does not appear to be significant impact to groundwater quality from the landfill at the monitoring well locations. No modifications to the ongoing monitoring program at this landfill are recommended.

Lower Site Crossroads Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site Crossroads Landfill. A minor tension crack on the western slope and minor settlement on the cover surface were observed in 2016, however these features do not appear to be impacting stability of the landfill. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals were generally highest at sample location DM-01, located immediately south (upgradient) of the landfill. The concentrations of some metals observed increased in 2016 (i.e., copper, cobalt and chromium at DM-01 and arsenic at DM-02), however the majority of metals concentrations were less than in previous years. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

PHC were detected at DM-01 and DM-02, with modified TPH concentrations of 84 mg/kg and 67 mg/kg, respectively. These concentrations were slightly greater than those observed in 2015. No detectable concentrations of cadmium, mercury or PCB were noted in any of the samples in 2016.

Overall, based on the results of the 2016 sampling program, there is no evident ongoing impact of the landfill on soil quality. No modifications to the ongoing monitoring program at this landfill are recommended.

Lower Site Foundation Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site Foundation Landfill. Some minor tension cracks, self-armouring erosion and a minor differential settlement area were observed. The overall stability performance of this landfill was assessed as Acceptable.

Concentrations of metals were highest overall at the shallow sample location DM-05, located downgradient of the west side of the landfill. The concentration of lead at DM-05 was considerably greater than that reported in previous years and exceeded the baseline mean concentration plus 3σ. The concentration of lead observed at DM-05 in 2016 should be confirmed following collection and review of the 2017 data. The concentrations of nickel and copper at DM-05 were also greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At DM-04, the concentrations of many metals were greater than in previous years, whereas the concentrations of most metals at DM-06 were less than those reported in previous years. PHC concentrations were noted at DM-05 (modified TPH concentration of 450 mg/kg) and DM-06 (modified TPH concentration of 31 mg/kg). Concentrations remained below the baseline mean concentration plus 3σ. The modified TPH concentration at DM-05 was greater than those in previous years, whereas PHC were detected at DM-06 for the first time. It is noted the concentrations of PHC F2 and F3 fractions at DM-05 exceeded their baseline mean concentrations plus 3σ; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No PHC were detected at DM-04 in 2016. No detectable concentrations of cadmium, arsenic, mercury or PCB were noted in any of the samples in 2016.

It is recommended the elevated concentrations of lead and PHC observed at the shallow DM-05 sampling location in 2016 be confirmed following comparison to the 2017 data from this location, prior to consideration of any further actions. It is noted that only three samples have been collected at this location, fewer than seven samples have been collected for trend confirmation. No modifications to the ongoing monitoring program at this landfill are recommended.

Lower Site Powerhouse Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Lower Site Powerhouse Landfill. The overall stability performance of this landfill was assessed as Acceptable.

Similar concentrations of metals were observed at all four soil sampling locations. At all four locations, the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic or mercury were noted in any of the samples in 2016. No exceedances of the baseline or background metal concentrations were reported in 2016.

PHC were detected at MW05-06 and MW05-08 in 2016. The concentrations of PHC F2 and F3 fractions at MW05-06 exceeded their baseline mean concentrations plus 3σ, whereas previous results had indicated non-detectable PHC F2 and low concentrations (14 mg/kg) of PHC F3; the modified TPH concentration remained below the baseline mean concentration plus 3σ. None of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. The modified TPH concentration at MW05-06 was greater than those observed in previous years, whereas the modified TPH concentration at MW05-08 was less than concentration reported in 2015. No PHC were detected at MW05-05 and MW05-07 in 2016. The PCB

concentration reported at MW05-08 was less than those reported in 2014 and 2015; no detectable concentrations of PCB were noted in any of the remaining samples in 2016.

In 2016, no groundwater samples were collected at this landfill. The groundwater samples at MW05-05 and MW05-06 could not be collected because the groundwater in the well was frozen. The groundwater samples at MW05-07 and MW05-08 could not be collected because the wells were dry.

Overall, there is no evident ongoing impact of the landfill on soil quality, however the increase of PHC at some locations warrants closer scrutiny of the results from this landfill following review of the data from the 2017 monitoring program. No modifications to the ongoing monitoring program at this landfill are recommended.

Lower Site Non-Hazardous Waste Landfill (NHWL)

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site Non-Hazardous Waste Landfill. Some self-armouring erosion, tension cracking and ponding of water along the toe of the landfill was observed. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals in soil were highest overall at the sample location MW09-28, located downgradient of the north side of the landfill. At MW09-28, the concentrations of copper, lead and chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At the deep MW09-27 sampling location, the concentrations of all detected metals were greater than those reported in previous years. At the remaining sampling locations, most metals concentrations were less than or similar to those observed in previous years.

PHC were detected at MW05-09 and MW09-27 at modified TPH concentrations of 65 mg/kg and 31 mg/kg, respectively. PHC were detected at MW09-27 for the first time, whereas the modified TPH concentration at MW05-09 was slightly greater than those observed previously. The PCB concentration at MW05-09 was greater than the concentration reported in 2014; no PCB were detected at this location in 2015. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the other samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the soil samples in 2016.

In 2016, groundwater samples were collected from two of five monitoring wells adjacent to the landfill. The groundwater samples at MW05-09, MW05-12 and MW09-28 could not be collected because the wells were dry. At MW09-26, the concentrations of nickel, cobalt and zinc were greater than those observed in 2014, whereas the concentrations of most other metals were similar to those observed in 2014; no sample was collected at this location in 2015. At MW09-27, the concentration of zinc was greater than those observed in 2014 and the concentrations of all other metals were less than or similar to those observed in previous years; no sample was collected at this location in 2015. No detectable concentrations of lead, arsenic, mercury, PHC or PCB were noted in either of the groundwater samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the groundwater samples in 2016.

Based on the monitoring results, there does not appear to be significant impact to groundwater quality or soil quality from the landfill. Increased concentrations of nickel, cobalt and zinc observed in the groundwater at MW09-26 in 2016, as well as increased concentrations of zinc in the groundwater at MW09-27, and should be confirmed in 2017. No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

Upper Site Tier II Disposal Facility

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site Tier II Disposal Facility. Some self-armouring erosion along the slopes of the landfill and minor tension cracks were observed. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of the metals were highest overall at the sample location MW07-22, located upgradient of the northeast side of the landfill, and at MW08-25, located downgradient of the northwest side of the landfill. At MW07-22, the concentrations of most metals were greater than those observed in previous years. At the remaining sampling locations, some metal concentrations were greater than those observed in previous years (i.e. lead at MW12-02, arsenic at MW07-23 and nickel, cobalt, lead and chromium at MW08-25); however, the concentrations of most metals were less than those reported in previous years. The concentration of arsenic at MW07-23 (17.3 mg/kg) exceeded the baseline concentration plus 3σ (12.6 mg/kg) but was similar to the concentration of 17 mg/kg reported at this location in 2014. None of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No detectable concentrations of cadmium, mercury, PHC or PCB were noted in any of the soil samples in 2016.

In 2016, groundwater samples were collected from two of the five monitoring wells adjacent to the landfill. The groundwater sample at MW07-22 could not be collected because the well was dry. The groundwater samples at MW08-25 and MW12-02 could not be collected because the groundwater in the wells was frozen. The concentrations of most metals were highest at downgradient monitoring location MW08-24. The concentration of nickel at MW08-24 was greater than those observed in previous years, whereas the concentration of all other metals were less than or similar to previous years. The concentration of zinc, the only metal detected at MW07-23, was greater than the concentration observed in 2014. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the groundwater samples in 2016.

Overall, it was noted that metals concentrations for a number of the soil sampling results (e.g. MW07-22 and MW08-25) were greater than in previous monitoring sessions; these concentrations remain below the baseline mean concentration plus 3σ and fewer than seven samples have been collected for trend confirmation.

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the observed increases in 2016 relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

Upper Site West Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site West Landfill (West, Centre, Centre Lobe A and East Lobes). Self-armouring erosion, minor tension cracks, rough cover surface areas and running water at the toe were observed. The overall stability performance of the Upper Site West Landfill areas was assessed as Acceptable.

The concentrations of metals were highest overall at the sample locations DM-45, located downgradient of the Centre Lobe of the landfill, DM-48, located downgradient of the East Lobe of the landfill and DM-49, located downgradient of the East Lobe of the landfill. At DM-45, the concentrations of all detected metals were greater than those reported in previous years and cobalt (37.1 mg/kg) marginally exceeded the baseline mean concentration plus 3σ (36.9 mg/kg). Metals exceedances of the baseline mean concentrations plus 3σ were also observed at DM-38 (lead), DM-48 (nickel and arsenic) and DM-52 (nickel), however concentrations observed in 2016 were less than in previous years. At the majority of the other sampling locations, the concentrations of metals

were less than or similar to the concentrations reported in previous years. No cadmium or mercury were detected in any of the samples in 2016.

Detectable concentrations of PHC were noted at DM-38, DM-41, DM-46, DM-47, DM-51 and DM-52, at modified TPH concentrations ranging from 16 mg/kg to 353 mg/kg. The concentrations of modified TPH were highest in the sample at DM-41, however all concentrations remained well below the baseline mean concentration plus 3σ (1,208 mg/kg). PCB (0.45 mg/kg) were detected at DM-46 for the first time. No detectable concentrations of PHC or PCB were noted in any of the other samples in 2016.

Overall, it was noted that concentrations of metals at the landfill lobes making up the West Landfill, were highest to the north of the Centre and West Lobes. Similarly, the locations where soil sample results for one or more parameters exceeded baseline mean concentration plus 3σ are located in this general area and to the south, towards the Centre Lobe A. It is further noted that the observed exceedances were not consistent for one parameter or a group of parameters, suggesting that pre-existing conditions may be responsible for the observed variation. Collection of a larger dataset of results is required to assess changes to soil quality in this area resulting from the landfill.

No modifications to the ongoing monitoring program at this landfill are currently recommended. Additional data is required to assess if the elevated concentrations relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

Upper Site Pallet Line Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site Pallet Line Landfill. Some minor settlement (including two small sinkholes), self-armouring erosion, minor tension cracks and ponding of water along the toe of the landfill were observed. A sheen was observed in one instance on ponded water at the eastern toe of the slope of the Lobe 1. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals were highest overall at the sample location DM-50 downgradient of Lobe 1. At DM-50, the concentrations of all metals were less than or similar to those reported in previous years, however, the concentration of chromium exceeded the baseline mean concentration plus 3σ for the second time in three consecutive years of monitoring. At DM-53, DM-54, DM-57 and DM-60, concentrations of most metals were slightly greater than those reported in previous years. At the majority of the remaining sampling locations, the concentrations of most metals were generally less than or similar to those reported in previous years. It is noted that the concentration of zinc at DM-58 was considerably greater than those reported in previous years and exceeded the baseline mean concentration plus 3σ. This should be confirmed following review of the 2017 data.

The only detectable concentrations of PHC were reported at DM-51 and DM-59; a PHC odour was noted during the sample collection at DM-59. PHC were detected at DM-51 for the first time, however, the modified TPH concentration remained below the baseline mean concentration. At DM-59, the PHC F2 concentration exceeded the baseline mean concentration plus 3σ, however, the modified TPH concentration (937 mg/kg) remained well the baseline mean concentration plus 3σ (2,051 mg/kg). A modified TPH concentration of 244 mg/kg was reported at this location in 2014, whereas no PHC were detected in 2015. No detectable concentrations of cadmium, mercury or PCB were noted in any of the soil samples in 2016.

Overall, it was noted that concentrations of metals at the landfill lobes making up this Pallet Line landfill, were highest to the north towards the West Landfill. It is further noted that the observed exceedances were not consistent for one parameter or a group of parameters, suggesting that pre-existing conditions may be responsible

for the observed variation. Collection of a larger dataset of results is required to assess changes to soil quality in this area resulting from the landfills.

It is recommended the elevated concentration of zinc observed at shallow DM-58 sampling location in 2016 be confirmed following comparison to the 2017 data from this location. It is recommended that soil samples be collected in 2017 near the sheen that was observed on ponded water at the eastern toe of the slope of Lobe 1. It is further recommended that consideration be given to collecting soil samples in the vicinity of the other ponded water features. The purpose of these samples would be for comparison to the standards for this landfill, to determine if the seeps are influenced by the landfills. No additional modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

Upper Site NHWL

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site Non-hazardous Waste Landfill. Some areas with cover material segregation and cracking on the cover surface the landfill were observed. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals in soil were highest overall at the sample location MW06-20, located downgradient of the north side of the landfill. The concentrations of all detected metals observed at MW06-20 were also significantly greater than those reported in previous years. At MW06-18 and MW06-19, the metal concentrations were slightly greater than or similar to those reported in 2014. No cadmium, arsenic or mercury were detected in any of the soil samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the soil samples in 2016.

PHC were detected at upgradient location MW06-18 for the first time, however, the modified TPH concentration (42 mg/kg) remained well below the baseline mean concentration (216 mg/kg). PCB were detected at MW06-18 in 2016; the concentration (0.06 mg/kg) was greater than reported in 2014 (0.034 mg/kg). No detectable concentrations of PHC or PCB were noted in any of the remaining soil samples in 2016.

At MW06-19 and MW0-21, low concentrations of some metals were detected in groundwater for the first time. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in either of the groundwater samples in 2016.

Based on the results, there does not appear to be significant impact to groundwater quality from the landfill at the monitoring wells adjacent to the landfill.

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases at MW06-20 relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

Upper Site NWS Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Upper Site NWS Landfill. Self-armouring erosion channels were observed along the south slope and at the west end of the landfill. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals were highest overall at the sample location DM-18, located upgradient of the north side of the landfill and at the deep sample location DM-22, located downgradient of the southwest toe of the landfill. At DM-18, DM-19, DM-20, DM-22 and DM-23, the concentrations of most metals were less than or similar those reported in previous years, whereas at DM-21, the concentrations of most metals were greater than those reported in 2014. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

There is no evident ongoing impact of the NWS landfill on soil quality. No modifications to the ongoing monitoring program at this landfill are recommended.

Upper Site South Landfill West

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site South Landfill West. Some self-armouring erosion and minor cracking were observed on the cover surface. The overall stability performance of this landfill was assessed as Acceptable.

The concentrations of metals were highest overall at the sample location DM-24, DM-25 and DM-26, located downgradient of the south side of the landfill. At DM-26 concentrations of nickel, cobalt and chromium were greater than those reported in 2014, whereas the concentrations of all other metals were less than those in 2014. At DM-24 and DM-25, the concentrations of most metals were less than those reported in previous years, which was similarly the case for all other sampling locations. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

There is no evident ongoing impact of the Upper Site South Landfill West on soil quality. No modifications to the ongoing monitoring program at this landfill are recommended.

Upper Site Helipad Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Upper Site Helipad Landfill. Some minor settlement, rough grading and tire tracks were observed in this landfill. The overall stability performance of this landfill was assessed as Acceptable.

Concentrations of the metals were highest at the sample locations DM-11, located upgradient of the landfill and at downgradient sampling locations DM-12 and DM-13. At DM-11, DM-12, DM-16 and DM-17, the concentrations of most metals were less than in 2015 whereas at DM-13, DM-14, DM-15, the concentrations of some metals (four metals at each location) were greater than in 2015. None of the reported metals concentrations exceeded their respective baseline mean concentrations plus 3σ

PHC were detected at DM-12, DM-13 and DM-17, at modified TPH concentrations ranging from 52 mg/kg to 98 mg/kg. At DM-12, the concentration increased from the modified TPH concentration reported in 2015, whereas no PHC were detected at DM-13 or DM-17 in 2015. Elevated concentrations of PCB are noted at DM-12, DM-13, DM-14 and DM-17, at concentrations ranging from 0.13 mg/kg to 1.17 mg/kg; these concentrations were greater than those reported in 2015. The concentrations of PCB at DM-12 and DM-14 exceeded the baseline concentration plus 3σ. No detectable concentrations of PCB or PHC were noted in 2016 at any other sampling locations at this landfill.

Overall, it was noted that a number of the soil sampling results (e.g., metals at DM-13, DM-14 and DM-15 and PCB at DM-12, DM-13, DM-14 and DM-17) were greater than in previous years. This may be reflective of an ongoing impact from the landfill, however fewer than seven samples have been collected for trend confirmation.

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) has been contracted by Public Services and Procurement Canada (PSPC), on behalf of the Department of National Defence (DND), to complete the 2015-2018 Distant Early Warning (DEW) Line Sites Landfill Monitoring Program in the Baffin Region of Nunavut (hereafter referred to as the "Project"). The contract number with PSPC is W6837-151002/001/NCS. The DND file number for the Project is QIKIQ15. The contracted scope of work is in accordance with the project Terms of Reference (TOR) dated April 2015, Golder Proposal P1530908 dated June 16, 2015 ("Golder Proposal") and the minutes of the May 12, 2016 meeting attended by Golder and DND.

The five DEW Line sites that were monitored in 2016 as part of the QIKIQ15 contract are FOX-2, FOX-3, FOX-4, FOX-5 and DYE-M. These sites are all now in the Post-Construction Monitoring Phase of their remedial program. Post-Construction Monitoring was carried out in accordance with the TOR and implemented as per Golder's Logistics and Work Plan (LWP) dated July 25, 2016. Monitoring activities included geotechnical visual inspection, thermal monitoring, soil sampling and groundwater sampling.

This monitoring report presents the 2016 post-construction inspection and monitoring results for DYE-M (the site). The 2016 monitoring was Year 3 for DYE-M; remediation was completed in 2013. DYE-M has been monitored annually from 2014 to 2016.

Appendix A is a summary of the report limitations and forms part of the report.

1.1 Objective of the Study

The objective of the landfill monitoring program is to collect sufficient information to assess the performance, integrity, and stability of the landfills from a geotechnical and environmental perspective for the protection of human health and the environment. The monitoring program is designed to monitor landfill integrity and to determine, in the event of any evident deterioration or impacts identified from sampling results, if remedial measures are required.

1.2 Scope of Work

The scope of work for this project includes the following:

1) Project management including liaison with DND, project team coordination, scope management, cost management, schedule management and resource coordination;

2) Preparation of a site-specific Health Safety and Environment Plan (HASEP) and procurement of safety equipment and supplies (e.g., personal protective equipment, first aid kits and satellite phones);

3) Development of a Logistics and Work Plan (LWP) for each field season that outlines the field schedule, travel plans, accommodation, hiring of local Inuit contract workers, all-terrain vehicle (ATV) and charter aircraft rental;

4) Completion of field work consisting of visual inspection, photographic documentation, thermistor data collection and soil and water sample collection;

5) Preparation of a Field Work Progress Report that summarizes field work activities completed each year (submitted under separate cover);

6) Preparation of a Consultant's Inuit Participation Plan (CIPP) and Report (CIPR), that contains the Inuit employment and subcontracting content (submitted under separate cover); and,

7) Preparation of draft and final monitoring reports for each site with visual inspection results, photographic log, thermistor data collection, figures of inspection features and photograph locations, soil and groundwater quality monitoring results, Quality Analysis / Quality Control (QA/QC) and data interpretation.

2.0 BACKGROUND

2.1 Site Description

DYE-M is a former Distant Early Warning Line (DEW Line) site, located at Cape Dyer, Nunavut, on the Cumberland Peninsula on the easternmost point of Baffin Island. It is bordered by Davis Strait, Exeter Bay and Sunneshine Fjord, at 66° 40' N, 61° 21' W. The DYE-M station is currently operated by Canada's Department of National Defence (DND) as a North Warning System (NWS) long-range radar (LRR) site.

The elevation across the site varies from less than 300 m to over 500 m above sea level. The site is divided into three areas connected by a road: Upper Site, Middle Site and Lower Site. The main site facilities (the Upper Site-Station Area) are located at the top of a summit, approximately 13 km east-northeast of the Lower Site-Airstrip and Camp Area, where vehicle maintenance and airstrip facilities are located. The Lower Site-Beach Area consists of petroleum, oil and lubricant (POL) storage facilities, and open storage areas. The former DEW Line site was comprised of communications, accommodations and maintenance facilities. In 1993, the site was upgraded to an unmanned LRR site as part of the NWS. Much of the station infrastructure was no longer required, and most buildings were subsequently decommissioned. Only those structures required to support the NWS site and house the remotely operated communications systems are still present.

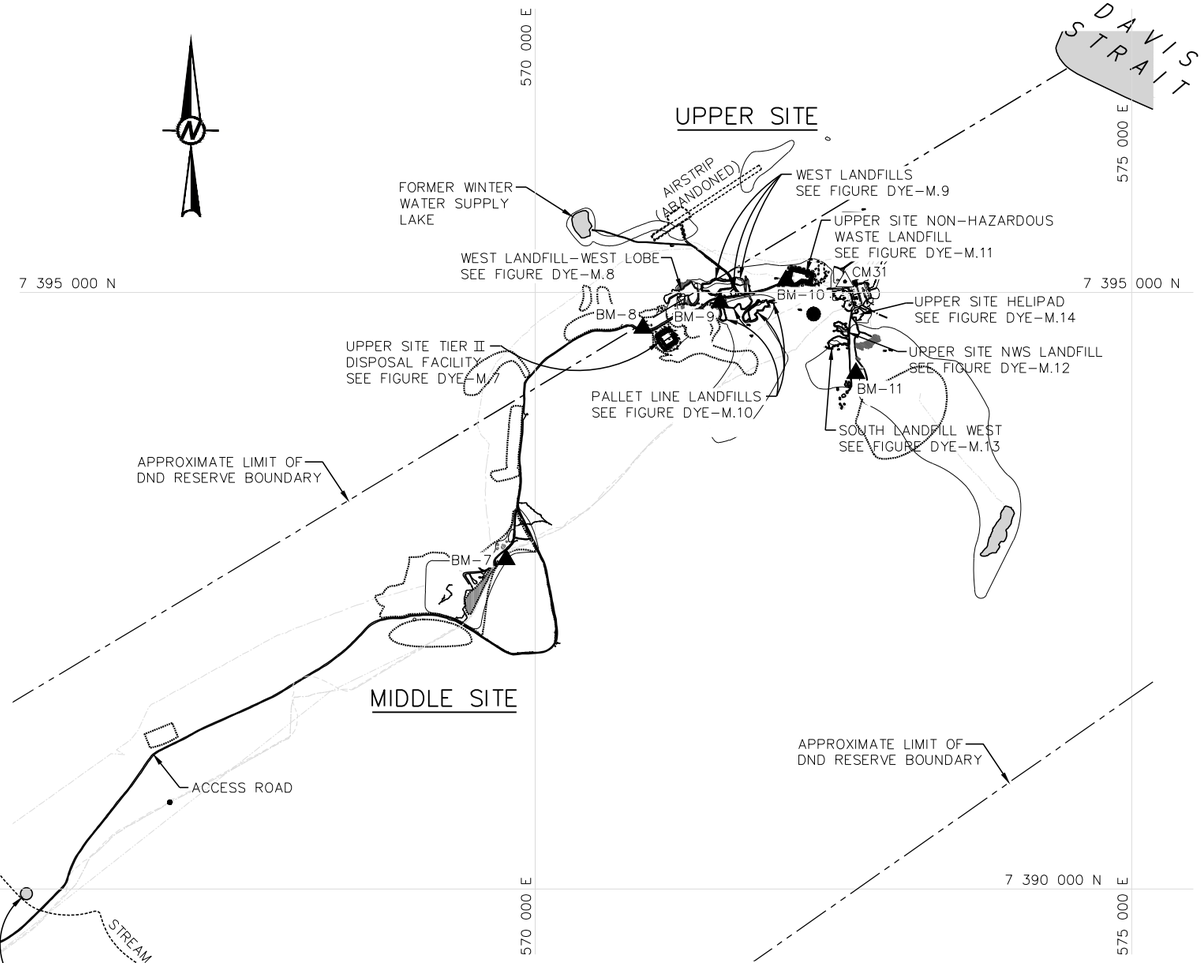
The Site clean-up included the remediation of existing landfills and the construction of new landfills for the disposal of non-hazardous wastes generated from demolition and collection of site debris and the construction of new Tier II Disposal Facilities for the disposal of Tier II contaminated soil. The landfills included in the long term monitoring program are shown on the overall site plan, Figure DYE-M.1, and are listed below:

- Lower Site North Warning System Landfill
- Lower Site Tier II Disposal Facility
- Lower Site Crossroads Landfill
- Lower Site Foundation Landfill
- Lower Site Powerhouse Landfill
- Lower Site Non-Hazardous Waste Landfill
- Upper Site Tier II Disposal Facility
- Upper Site West Landfills
- Upper Site Pallet Line Landfill
- Upper Site Non-Hazardous Waste Landfill
- Upper Site North Warning System Landfill
- Upper Site South Landfill West
- Upper Site Helipad Landfill



LOCATION OF CAPE DYER WITHIN NUNAVUT TERRITORY

SCALE: NTS



LEGEND:

- APPROXIMATE LIMIT OF DND RESERVE BOUNDARY
- CM1 — SURVEY CONTROL MONUMENT (2)
- BM-1 — PERMANENT BENCHMARK LOCATION (11)
- ARCHAEOLOGICAL FEATURES
- BODY OF WATER

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 1,000 2,000
1:50,000 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
OVERALL SITE PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.1

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2.2 Site Geology, Hydrogeology and Hydrology

The site is on the northeastern edge of the Precambrian (Canadian) Shield. Most Precambrian bedrock has been metamorphosed (altered by intense heat and pressure) into granite. Surficial soils have been formed by the erosive forces of glaciation and deposited by retreating glaciers. Glacial retreat has deposited glacial till moraine, boulders and talus slopes over the landscape. The landscape is dominated by bedrock outcrops and boulder fields; tundra vegetation is generally limited to valleys.

The groundwater flow processes at the site are expected to be significantly influenced by the presence of continuous permafrost. Annual active thaw layers are typically limited to a few metres below ground surface, depending on ground cover, soil materials and surface water features. Shallow groundwater representing meltwater (both surficial and within the active layer) and infiltration from precipitation during the summer thaw is perched within the active layer during the short summer season. Movement of the groundwater is dictated by soil type, presence of shallow permafrost and hydraulic pressures resulting from topographic differences and distribution (elevation) of the water within the soils. Water elevations are only measured at some wells, and therefore the use of terms upgradient or downgradient may not be truly reflective of the actual flow direction. Nevertheless, for the purposes of this report, upgradient and downgradient are used to maintain consistency with the identification of monitoring locations in previous annual reports.

The landscape at DYE-M varies from a shallow marine beach to the southwest, broad glacial U-shaped valleys, broad rounded hills, boulder covered uplands, to sheer cliff walls along the eastern coast. Rugged topography and the presence of permafrost at the site have created many small, shallow perched lakes and seasonal streams from drainage of melting snow. Smaller, shallow surface water features typically freeze solid during the winter months. Some of the larger, deeper lakes may not freeze solid, which may therefore support fish populations.

2.3 Land-Use Description

In the 1950s, DEW Line sites were constructed across a number of locations in the northern parts of Alaska, Canada and Greenland, between latitudes 65 and 70 degrees to maintain surveillance of the North American Airspace. In 1963, improvements in surveillance technology led to the closure of most of the DEW Line sites and their replacement with the NWS. Since the 1990s, investigations, decommissioning, and clean-up activities have been undertaken at the DEW Line sites. Clean-up and decommissioning activities involved the demolition of surplus buildings and structures, excavation of contaminated soils, and the regrading of existing landfills. New engineered landfills were also constructed for the disposal of excavated soils and building materials.

Landfills at DEW Line sites can be categorized as follows:

- **Regraded:** Existing landfills that were regraded and capped with gravel;
- **Leachate Contained:** Existing landfills that were capped with gravel and provided with an impermeable membrane keyed into the permafrost (either only on the sides or over the surface) to contain leachate;
- **New NH:** New non-hazardous waste landfills; and,
- **New Tier II:** New Tier II disposal facilities (used for the disposal of Tier II soils as described by the DEW Line Cleanup Criteria) with an impermeable liner underneath and on top of the contaminated soil to encapsulate the contents (leachate contained). Tier II landfills have a saturated granular perimeter berm keyed into the permafrost and sufficient cover of granular material to promote permafrost aggradation into the landfilled materials.

The airstrips remain in place for ongoing site operations, maintenance and monitoring.

2.4 Field Program Staff and Schedule

Table 2-1 presents a list of field personal, roles, responsibilities and dates for the DYE-M 2016 monitoring program.

Table 2-1: Field Personnel and Roles

Name (Affiliation)	Role / Responsibility	Site	Date
Kevin Rattray (Golder)	Field Geotechnical Lead / Sampling	DYE-M	August 10-13
Joanne Bisson (Golder)	Field Environmental Lead/ Soil and Water Sampling	DYE-M	August 10-13
Jamie Bonany (Golder)	Environmental Field Technician/ Soil and Water Sampling	DYE-M	August 12-13
Jaypootie Moesesie (Inuit Subcontractor)	Wildlife Monitor	DYE-M	August 10-13
Jeremiah Toomasie (Inuit Subcontractor)	Wildlife Monitor	DYE-M	August 10-13
Jonah Audlakiak (Inuit Subcontractor)	Wildlife Monitor	DYE-M	August 12-13
Ricky Nookiguak (Inuit Subcontractor)	Environmental Assistant / Sampling	DYE-M	August 10-13

2.5 Weather Conditions

Table 2-2 presents a summary of weather conditions on each day of the DYE-M monitoring program.

Table 2-2: Summary of Weather Conditions

Date	Weather
August 10	Morning: Foggy, 0°C Afternoon: Overcast, 1°C to 4°C
August 11	Overcast, 2°C to 0°C
August 12	Overcast, 0°C to 7°C
August 13	Clear with some clouds, 3°C to 9°C

2.6 Project References

Canadian Council of Ministers of the Environment (CCME, 1993), “Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volumes I and II, Main Report and Analytical Methods.”

Department of National Defence (DND, 2015), “Terms of Reference, DEW Line Monitoring Program CAM-5, FOX-M, 2, 3, 4, 5, DYE-M”, QIKIQ15 Contract, April 2015.

Environmental Sciences Group (ESG 2002a), “DYE-Main, Cape Dyer, Nunavut: Lower Site Investigation, 1997-2001”, Royal Military College of Canada, Kingston, Ontario.

Environmental Sciences Group (ESG 2002b), “DYE-Main, Cape Dyer, Nunavut: Upper Site Investigation, 1997-2001”, Royal Military College of Canada, Kingston, Ontario.

Environmental Sciences Group (ESG 2015), "DYE-M Cape Dyer, Nunavut Baseline and First Year Environmental Monitoring Report 2014", Royal Military College, Kingston, Ontario.

Golder Associates Ltd. (Golder, 2015a), "Solicitation No. W6837-151002/A Baffin Region Dew Line Sites Monitoring Program", Report P1530908, dated June 16, 2015.

Golder Associates Ltd. (Golder, 2016a), "*2015 DYE-M Monitoring Report*", Report 1530908-1600-Rev2, dated March, 2016.

Golder Associates Ltd. (Golder, 2016b). "*Baffin Region DEW Line Site Monitoring Health Safety and Environment Plan*", Report 1530908-2000-V2, dated July 25, 2016.

Golder Associates Ltd. (Golder, 2016c), "*2016 Landfill Monitoring Program for QIKIQ15 Contract: Logistics and Work Plan*", Report 1530908-2000-R1-V2, dated July 25, 2016.

Golder Associates Ltd. (Golder, 2016d). "*2016 Baffin Region DEW Line Site Landfill Monitoring Field Work Progress Report*", Report 1530908-2000-R2-V2, dated October 7, 2016.

2.7 Report Structure

This report describes the monitoring program carried out in August 2016 at DYE-M. Results from soil and groundwater sampling, thermal monitoring and visual inspection activities are presented in Section 4 in accordance with the TOR.

Each of the landfills is described in separate sub-sections (Sections 4.1 to 4.13). Each section contains the following 2016 monitoring information for that landfill:

- Scope deviations summary;
- Visual Inspection Checklist;
- Preliminary Stability Assessment Table;
- Table of visual inspection photographs;
- Landfill plan with photograph locations and observed features;
- Summary of thermal monitoring (if applicable for landfill);
- Summary of soil sampling analytical results;
- Summary of groundwater sampling analytical results (if applicable for landfill); and,
- Discussion of overall landfill performance based on available monitoring data.

The methodology for the monitoring program is described in Section 3. Information on the development of Background and Baseline data used for comparison of soil and groundwater samples described herein is provided at the beginning of Section 4. The Quality Analysis / Quality Control (QA/QC) data interpretation is contained in Section 5.

Appendix A provides a Limitation of Responsibilities and forms part of the report. Thermal and groundwater monitoring field record sheets are included in Appendix B. Laboratory certificates of analysis, historical landfill monitoring results and QA/QC reports are included in Appendix C. A photographic log is included in Appendix D.

An electronic version of the report, tables, figures, full resolution photos and laboratory certificates of analysis are saved on a DVD-ROM, which is appended to the hardcopy of the report.

3.0 APPROACH & METHODOLOGY (GENERAL)

3.1 Summary of Work

3.1.1 Health and Safety

Golder developed a Health, Safety and Environment Plan (Golder, 2016b) for the QIKIQ15 field program that described potential hazards, risks and proposed mitigation measures. Unique health and safety risks included the potential for wildlife encounters, long distances to the nearest emergency health care facilities and variable weather conditions. In addition, Golder developed a Logistics and Work Plan (Golder, 2016c) for the field program that outlined travel plans, contact information, accommodation details, transportation, communications, field equipment and sampling protocols.

3.1.2 Field Program

Table 3-1 provides a summary of the monitoring schedule for the seven DEW Line sites that are part of the QIKIQ15 Project. DYE-M was monitored in 2016 (Year 3) and will be monitored again in 2017 (Year 4). The field monitoring program consisted of the following activities:

- Visual inspection including photographic documentation of observed conditions;
- Thermal monitoring (i.e., datalogger downloading at landfills with thermistors);
- Soil sampling; and,
- Groundwater sampling (at landfills with monitoring wells).

Table 3-2 provides a summary of monitoring activities by landfill.

Table 3-1: Summary of QIKIQ15 Project Monitoring Schedule

DEW Line Site	Year			
	2015	2016	2017	2018
CAM-5 Mackar Inlet	Year 5		Year 7	
FOX-M Hall Beach			Year 10	
FOX-2 Longstaff Bluff	Year 4	Year 5		Year 7
FOX-3 Dewar Lakes	Year 4[(a)]	Year 5[(a)]		Year 7
FOX-4 Cape Hooper		Year 18		Year 20
FOX-5 Broughton Island		Year 10		
DYE-M Cape Dyer	Year 2	Year 3	Year 4	Year 5

Legend	
	Phase I Monitoring
	Phase II Monitoring

Note:

a) At FOX-3 in 2015 and 2016 (Years 4 and 5) – Complete a geotechnical inspection of the thermokarst regrade.

Table 3-2: Summary of Monitoring Requirements by Landfill

Landfill Designation	Type of Landfill	Visual Inspection	Soil Sampling[(a)]	Groundwater Sampling	Thermal Monitoring
		✓ = yes	# of Locations	# of Monitoring Wells	# of Thermistors
DYE-M					
Lower Site NWS	Regraded	✓	4 x 2		
Lower Site Tier II Disposal Facility	New Tier II	✓	4 x 2	4	4 + 1 (background)
Lower Site Crossroads Landfill	Regraded	✓	3 x 2		
Lower Site Foundation Landfill	Regraded	✓	3 x 2		
Lower Site Powerhouse Landfill	Leachate contained	✓	4 x 2	4	3
Lower Site NHWL	New NH	✓	5 x 2	5	
Upper Site Tier II Disposal Facility	New Tier II	✓	5 x 2	5	5 + 1 (background)
West Landfill – West Lobe	Regraded	✓	9 x 2		
West Landfill – Centre Lobe and East Lobe	Regraded	✓	13 x 2		
Pallet Line Landfill – Lobes 1 to 5, and Abandoned Lobe	Regraded	✓	10 x 2		
Upper Site – NHWL	New NH	✓	4 x 2	4	
Upper Site NWS Landfill	Regraded	✓	5 x 2		
Upper Site South Landfill West	Regraded	✓	8 x 2		
Upper Site Helipad Area Landfill	Regraded	✓	7 x 2		
	TOTAL	**14**	**168**	**22**	**14**

Notes:

a) (# x #) Indicates approximate number of sampling points at each landfill and requirement to collect samples from 2 depths at each sampling point; from 0-15 cm and from 40-50 cm (or at refusal).

3.1.3 Visual Inspection

At each of the landfill locations mentioned above, a visual inspection was conducted to observe whether there were any visual signs of erosion, cracking, seepage, ponded water, stressed vegetation (potentially caused by the landfill) and for physical stability. Photographic records of the landfill were taken to document the observed condition of the landfill and other notable features that were observed. Northing and Easting coordinates were recorded for all photograph and feature locations using a Garmin GLO portable GPS receiver (2-5 m accuracy) with Bluetooth connection to a field tablet.

Visual inspection information was used to complete a Preliminary Stability Assessment for each landfill. Each observed feature was assigned a Severity Rating (Acceptable, Marginal, Significant or Unacceptable) and Extent (Isolated, Occasional, Numerous or Extensive) and then the landfill was assigned an overall Performance Rating (Acceptable, Marginal, Significant or Unacceptable). If a type of feature was not observed during the inspection then the Severity Rating was reported as “Not Observed” in the Preliminary Stability Assessment. Definitions of these terms are as follows:

Feature Severity Rating / Landfill Performance Rating	Description
Not Observed	This type of feature was not observed at the landfill during the inspection.
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.

Extent	Description
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacting less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

3.1.4 Thermal Monitoring

The landfills that require leachate containment (e.g., Tier II disposal facilities) and rely on permafrost aggradation incorporate ground temperature monitoring systems with vertical thermistor strings that measure temperature at various depths and automated data loggers that allow for data collection. The data recorded on the data loggers was downloaded using a laptop computer and Prolog software from Lakewood Systems Ltd. Thermistor inspection and data downloading details were recorded on field record sheets included in Appendix B.

3.1.5 Soil Sampling

Soil samples were collected in accordance with the TOR, the Golder Proposal, Logistics and Work Plan and Canadian Council of Ministers of the Environment (CCME) Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites – Volumes I and II, Main Report and Analytical Methods (CCME, 1993). Soil sampling procedures of note are as follows (deviations from the TOR are noted *in italics*):

- Soil samples were collected within 2 to 4 metres of monitoring wells (where applicable). Where there was no corresponding monitoring well soil samples were collected within 2 to 4 metres of previous sample locations. Previous consultants left pins and tags in the ground to indicate where they sampled soil. Golder sampled away from those locations and did not leave pins in the ground.
- Coordinates of the 2016 soil sampling locations were recorded using a field tablet equipped with a Garmin GPS and confirmed to be consistent with previous/required sampling locations prior to sampling.
- Test pits were dug with a shovel that was washed between sample locations. The shovel was decontaminated with soap and water, methyl hydrate and rinsed with distilled water before each use. Soil samples were collected by hand using a single-use disposable nitrile glove and placed into new/clean glass sample jars provided by the laboratory that were labelled with the sample location ID and depth.
- Soil samples were generally collected at 0 to 15 centimetres (cm) depth and at 40 to 50 cm depth at the locations in accordance with the TOR. *At some locations, the sample collection depth was adjusted where soil was frozen or refusal on rock was encountered. Where refusal on a large rock(s) was encountered near surface, the sampling location was moved slightly to avoid the large rock(s). When rocks were encountered prior to reaching the target sampling depth, the test pit was enlarged and the rock(s) were excavated if possible. If the specified sampling depth could not be reached after expending reasonable effort to enlarge the hole in an attempt to remove rock(s), a sample was collected at or near the zone of refusal (in accordance with the TOR). If refusal was encountered after the shallow soil sample depth and even with additional effort it was not possible to remove the rock(s) causing refusal, then only one soil sample was collected at that location (noted as "refusal" in summary tables below).*
- *At locations where the ground was covered with snow and ice, excavation of the snow was attempted but, in general, it was impossible to dig through the ice and frozen ground beneath the snow and soil samples were not collected (noted as "frozen" in summary tables below).*
- Inter-lab field duplicates were collected for approximately 10% of the total soil samples collected. The field duplicates were collected from relatively homogenous soil material *in the test pit*, such that the composition of the samples was the same and to minimize escape of volatile compounds.

In order to assess the effectiveness of decontamination of the shovel used for soil sampling, an equipment rinsate (equipment blank) sample was completed following a typical decontamination procedure. This was conducted during sampling of the FOX-4 landfill, by pouring distilled water over the decontaminated shovel and capturing it in water sample bottles.

3.1.6 Groundwater Sampling

Groundwater samples were collected in accordance with the TOR, the Golder Proposal, Logistics and Work Plan and CCME (1993). Groundwater sampling procedures of note are as follows (*deviations in italics*):

- Water levels in the wells were measured with an interface probe that was decontaminated with soap and water, methyl hydrate and rinsed with distilled water before each use.
- *At monitoring well locations where there was snow on the ground surrounding the well and no measurable water level or water that could be pumped with the peristaltic pump, water samples were not collected (noted as "frozen" in the summary tables below).*
- *At monitoring well locations that had no measurable water level or water that could be pumped with the peristaltic pump, water samples were not collected (noted as "dry" in summary tables below).*

- *In wells with limited water depth and/or slow recharge, purging was only carried out until the field parameters were observed to stabilize* and then sampling was commenced in the priority order outlined in the TOR. *The number of water sample bottles collected and parameters that could not be analysed are listed in footnotes following the respective summary tables below.*
- Purging and sampling was carried out using a peristaltic pump and a low-flow purge rate of less than 100 mL/min was maintained. Peristaltic pump flexible tubing and nylon tubing extending down the well was single-use and disposed after use at each well (i.e., not reused). Sample tubing was removed from the wells after completion of the sampling event and disposed off-site.
- Groundwater samples were pumped directly from the well into analysis-specific bottles provided by the laboratory that were labelled with the sample location ID. Groundwater samples were not field filtered and were not field-acidified or preserved (in accordance with the TOR).
- Where groundwater was insufficient, sampling was prioritized in the following order:
  - Petroleum hydrocarbons: F1 fraction;
  - Inorganic elements – total concentrations: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc and mercury. Samples were not filtered (which is why low turbidity is so important) or preserved;
  - Petroleum hydrocarbons: F2, F3 and F4 fractions; and
  - PCBs (polychlorinated biphenyls – Total Aroclor analysis).
- Inter-lab duplicates were collected for 10% of the total groundwater samples collected.
- A field blank was filled in the field with distilled water and analyzed for all parameters.
- A travel blank of laboratory prepared water accompanied the sampling containers for the whole duration of the program, and analyzed for the entire suite of parameters.
- In order to assess the effectiveness of decontamination of the groundwater level / interface probe, an equipment rinsate (equipment blank) sample was completed following a typical decontamination procedure. This was conducted during sampling of the FOX-2 landfill, by pouring distilled water over the decontaminated probe and capturing it in water sample bottles.

No equipment blanks were required for the sample collection tubing as new tubing was used at each sampling location.

3.2 Field Notes and Data

Visual inspection photographs, features, locations and notes were recorded in the field with a tablet computer equipped with a camera and Global Positioning System (GPS). Field data and photographs from the tablet were uploaded to an online Geographic Information System (GIS) database that was used to generate the photograph log and figures presented in this report.

Thermistor inspection and monitoring data were recorded on field record sheets included in Appendix B. Thermistor locations were recorded with either the field tablet or a hand-held GPS.

Soil sampling locations were photographed before test pit excavation, at the maximum depth of the test pit excavation and after backfilling. Soil sampling locations were recorded with either the field tablet or a hand-held GPS.

Groundwater monitoring data was recorded on field record sheets included in Appendix B. Monitoring well locations were recorded with either the field tablet or a hand-held GPS.

3.3 QA/QC

Quality Assurance (QA) is the system of validation checks performed to measure quality in order to determine if the quality objectives have been met. Quality Control (QC) is the set of procedures which are incorporated into the project's standard operating procedures to ensure that it achieves its quality objectives.

The QC procedures incorporated into the monitoring program carried out at DYE-M included:

- Using only ISO 17025 certified environmental labs to perform the soil and groundwater analyses. Golder used Paracel Laboratories Ltd. (Paracel) of Ottawa as the primary lab and AGAT Environmental (AGAT) of Mississauga for the duplicate samples. Both of these laboratories are ISO 17025 certified for the analyses performed. The laboratories also exchanged their "Standard Methods" for the analyses in the program to harmonize their procedures for the duplicate analysis;
- The field sampling for soil and groundwater was completed by a two-person team, which helped to ensure that all of the sampling and field identification procedures were followed in order;
- Duplicate soil samples were collected from relatively homogenous soil material *in the test pit*, such that the composition of the samples was the same and to minimize escape of petroleum hydrocarbon (F1 fraction) compounds;
- Duplicate groundwater samples were prepared by alternately filling bottles for each lab for each parameter type; the yield of the wells in some cases prevented filling the whole suite of sample bottles;
- To minimize the possibility of cross contamination, soil samples were collected directly from the test pits with nitrile gloved hands, at the designated depth intervals, and placed into lab-supplied sample jars leaving no headspace. New gloves were used for each sample. The shovel and trowel used to open the test pits were cleaned manually then rinsed with methyl hydrate and distilled water;
- To minimize the risk of cross-contamination, groundwater samples were pumped from the monitoring wells using dedicated tubing inserted into the well and another dedicated length of tubing between the rollers in the peristaltic pump. Staff holding the sample bottles wore nitrile gloves. Samples were labelled at the monitoring well with identification, time and date;
- Groundwater samples were neither filtered nor preserved in the field. The low-flow sampling technique was employed to minimize the presence of sediment in the water sample;
- Soil samples were not preserved in the field;
- To minimize the time delay from actual sample collection to receipt at the lab, Golder sent coolers from the site to the staging point every time a resupply flight occurred. From the staging point communities, the coolers were sent via First Air to Ottawa Airport where Golder picked them up and took them to Golder's office in Ottawa, where they were checked for breakage, legibility of the labels and accuracy and completeness of the chain of custody. After being checked in Ottawa, the samples were dispatched to the primary and duplicate labs. The maximum allowable hold times for samples were largely met; where they were exceeded, it was due to the logistical limitations of flying in and out of the sites and the long chain of transport from the staging points to the labs.

QA was measured by the duplicate analysis and review of the QA/QC data contained in each laboratory certificate of results. In addition to the duplicate analyses, a field blank (consisting of bottles filled with distilled water in the field) was submitted to Paracel for analysis of all specified parameters. Trip blanks consisted of bottles filled with distilled water and sealed at the laboratory. A trip blank was brought to the field for the overall 2016 program and back, then submitted to Paracel for analysis of all specified parameters.

The soil samples and groundwater samples were collected with only dedicated single use equipment. The water sampling tubing was single-use from the well to sample bottle, and soil samples were collected from the test pits into sample jars using single-use gloves. This was possible because the texture of the soil samples was generally loose sandy soil. Nevertheless, equipment blanks were prepared for each type of sample. For groundwater sampling, the equipment blank was a sample of water poured over the water level probe, after it had been washed off, and for soil sampling it was a sample of water poured over the trowel after it had been washed between samples.

A discussion of the QA/QC results is provided in Section 5.

4.0 2016 MONITORING PROGRAM RESULTS

Photographs 1 through 636 (in Appendix D) document the observed conditions during the visual inspection including features on the cover/toe of the landfills, the groundwater monitoring wells, soil sample locations before excavation, after excavation and after backfilling as well as the condition of thermistors. The photographs taken at each of the landfill sites to document the observed conditions are organized as follows:

- **Lower Site NWS Landfill** – Photographs 1 through 25;
- **Lower Site Tier II Disposal Facility** – Photographs 26 through 79;
- **Lower Site Crossroads Landfill** – Photographs 80 through 85 and 93 through 109;
- **Lower Site Foundation Landfill** – Photographs 86 through 92 and 110 through 126;
- **Lower Site Powerhouse Landfill** – Photographs 127 through 154;
- **Lower Site Non-Hazardous Waste Landfill** – Photographs 155 through 210;
- **Upper Site Tier II Disposal Facility** – Photographs 211 through 250;
- **Upper Site West Landfills** – Photographs 251 through 372;
- **Upper Site Pallet Landfill** – Photographs 373 through 476;
- **Upper Site Non-Hazardous Waste Landfill** – Photographs 477 through 516;
- **Upper Site NWS Landfill** – Photographs 517 through 550;
- **Upper Site South Landfill West** – Photographs 551 through 602; and,
- **Upper Site Helipad Landfill** – Photographs 603 through 636.

A complete log of all photographs are included in Appendix D. Copies of all digital photograph files are included on a DVD attached to this report. Visual inspection photographs are identified by an “ATT number” in the file name which are noted in brackets in the visual inspection photograph log tables.

Many of the acceptable features observed during the inspection do not appear to be related to landfill performance. For example, shallow depressions that appear to be unchanged since construction of the landfill (i.e., as-built condition) or minor hydrocarbon staining from post-construction anthropogenic activities (e.g., ATV tracks). These acceptable features that do not appear to be related to landfill performance have been reported as “*not a concern*”. Self-armouring erosion, minor water ponding and seepage without staining have also been reported as “*not a concern*” because they are not indicative of deteriorating landfill performance and/or may be weather related. In addition, some minor cracking that appears to be related to thaw creep does not indicate slope instability and is not considered to be a concern at the present time. Significant features that are related to landfill performance have been photographed and described in detail.

The monitoring program results are listed for each landfill in the sections below. In the tables contained within the text and Appendix C, data which exceed the arithmetic mean background data and baseline arithmetic mean data are identified by <u>underlined</u> and **bold** fonts, respectively. The background arithmetic mean limits for each landfill have been previously established using the arithmetic mean concentrations for soil samples collected outside the landfill areas in 1989 and 2003. The baseline arithmetic mean limits were calculated based on the concentrations for soil samples collected at each of the current soil sampling locations adjacent to the landfills, between 1997 and 2013. Soil and groundwater quality data are also compared to the baseline mean concentration plus three standard deviations (3σ); exceedances of this standard are shaded. This limit is based on the “three-sigma rule of thumb”, wherein it is expected that nearly all values not influenced by changes in impact lie within three standard deviations of the arithmetic mean.

A modified total petroleum hydrocarbons (TPH) value, calculated as the sum of the PHC F1, F2 and F3 fractions, is discussed throughout this report to allow for comparison to TPH baseline data.

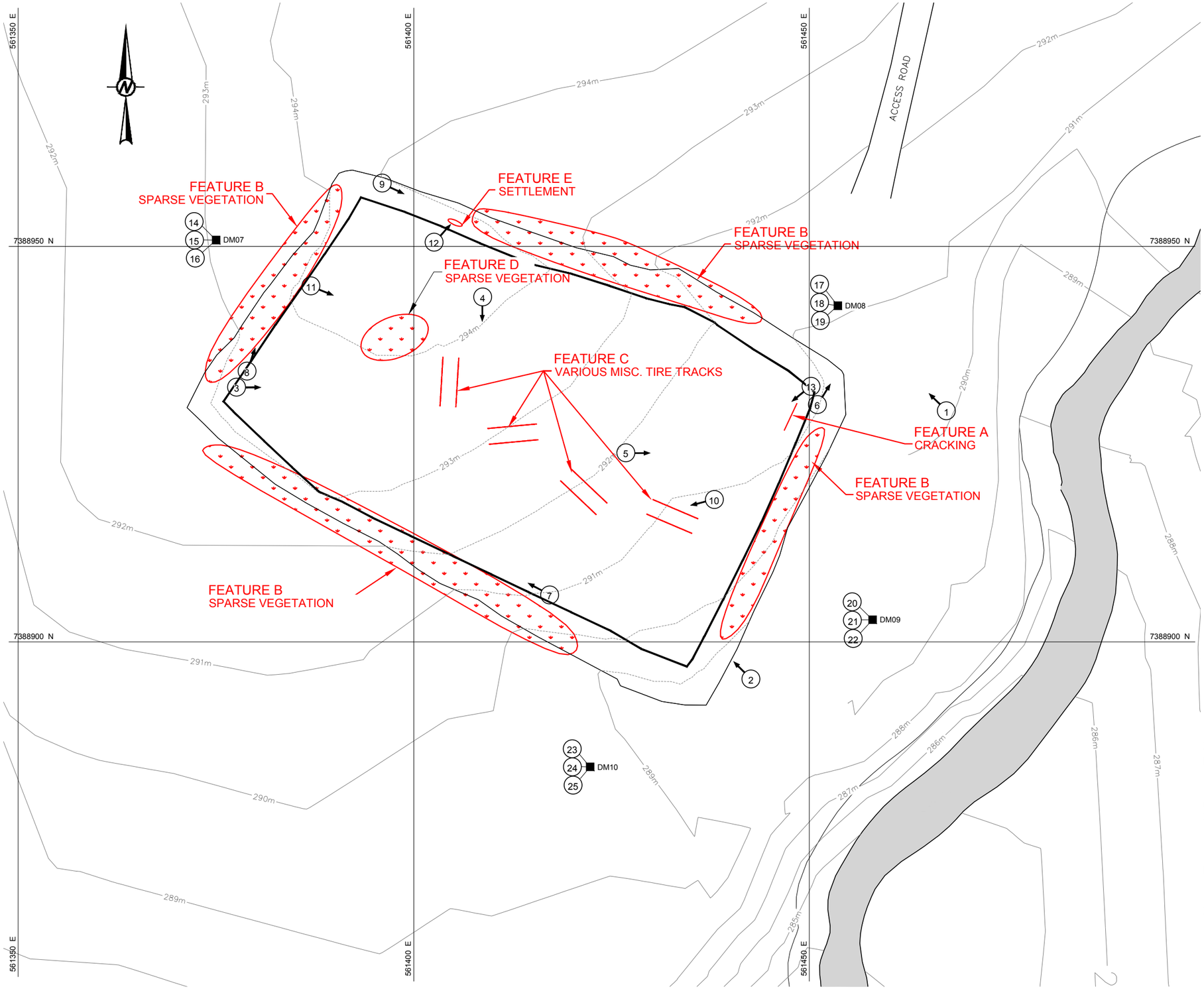
Historical soil and groundwater results and charts are included in Appendix C. It should be noted there are discrepancies in the highlighting of baseline and background arithmetic mean exceedances between the 2016 soil and groundwater data summary tables within the body of the report and the historical chemistry tables in Appendix C; exceedances noted in the data tables within the body of the report are considered the correct interpretation of the 2016 results. It is recommended that seven data points be used as a minimum to identify a soil or groundwater quality trend for these landfills. As of the end of 2016, the maximum of three sample results is less than the seven year standard and there is therefore insufficient information available to establish a reliable trend. Discussion of the 2016 data in this report focused on identifying data results for locations where concentrations significantly different (typically greater) than previous years are observed, or locations where concentrations exceeded the baseline mean concentration plus 3σ.

Duplicate soil samples were collected at a total of seven locations at DYE-M. This included the shallow DM-02 (0-15 cm), shallow DM-07 (0-15 cm), shallow DM-23 (0-15 cm), shallow DM-27 (0-15 cm), shallow DM-33 (0-15 cm), shallow DM-49 (0-15 cm) and shallow MW-53 (0-15 cm) sample locations. Two duplicate groundwater samples were also collected at monitoring wells MW06-19 and MW12-01. For these duplicate sample locations, the average of the two concentrations are presented in the tables and used to discuss in the results in Section 4. The reproducibility of the duplicate sample results is discussed in Section 5.

4.1 Lower Site North Warning System Landfill

4.1.1 Landfill Description

The Lower Site North Warning System (NWS) Landfill was created during DEW Line operations. The landfill is located approximately 1.5 km northwest of the lower camp facilities, 100 m west of the lower camp road. The landfill area is approximately 3,300 m^2. The overall gradient of the surrounding area slopes towards the southwest, in the direction of the river and Exeter Bay. The landfill and the disturbed area immediately around the landfill are covered in sparse vegetation (less than 20% of the surface). The landfill is underlain by sand and gravel, to boulders and bedrock at varying depths. The remediation of this landfill was completed in 2008 and consisted of regrading the surface with clean fill. Approximate sampling locations are provided in Figure DYE-M.2.



LEGEND:

- SETTLEMENT (NTS)
- VEGETATION (NTS)
- TIRE TRACKS (NTS)
- CRACKING (NTS)
- SOIL SAMPLING LOCATION
- 48 PHOTOGRAPH LOCATION
- BODY OF WATER
- 290m GROUND SURFACE CONTOUR

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

LOCATION OF SOIL SAMPLES DM07 WERE LOCATED IN PLAN FROM LOCATION OF 2015 SAMPLING LOCATION AND ARE APPROXIMATE ONLY.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 10 20
1:500 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
LOWER SITE
NWS LANDFILL

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO. 1530908 | PHASE 2000 | REV. A | FIGURE DYE-M.2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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4.1.2 Visual Inspection

The Lower Site NWS Landfill exhibits a few locations with observed minor settlement and sparse vegetation features. Table 4-1 presents a summary of observed visual inspection features and Table 4-2 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance as all observed features were assessed as “Acceptable.” Table 4-3 is a log of photographs taken during the 2016 visual inspection.

One tension crack (Feature A) was noted previously and again in 2016. Tire tracks were noted on the surface of the landfill (Feature C), similar to previous observations. There were occasional areas of vegetation (Feature B) on the side slopes of the landfill and top surface (Feature D). The small area of minor settlement (Feature E) previously observed in 2015 remained unchanged.

Table 4-1: Visual Inspection Checklist – Lower Site NWS Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site NWS Landfill
DATE OF INSPECTION: August, 13, 2016
DATE OF PREVIOUS INSPECTION: August 12, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-1: Visual Inspection Checklist – Lower Site NWS Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	Y	E	Northeast slope	561406	7388954	1	0.5	0.01-0.02	0.02%	Minor settlement (Acceptable)	Unchanged since previous observation	12
Erosion	N											
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	A	Cover surface	561450	738893	2	0.1	-	<0.01%	Tension cracking 1 m above crest of southeast slope. (Acceptable)	Unchanged since previous observation	13
Animal Burrows	N											
Vegetation	Y	B	Southeast slope	561451	7388930	28	3	-	2.5%	Sparse vegetation	Unchanged since previous observation	2
		B	Southwest slope	561385	7388922	50	5	-	7.6%	Sparse vegetation	Unchanged since previous observation	7
		B	Northwest slope	561378	7388932	29	5	-	4.4%	Sparse vegetation	Unchanged since previous observation	8
		B	Northeast slope	561396	7388958	37	5	-	5.6%	Sparse vegetation	Unchanged since previous observation	9
		D	Cover surface	561387	7388945	10	5	-	1.5%	Sparse vegetation	Unchanged since previous observation	11

Table 4-1: Visual Inspection Checklist – Lower Site NWS Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	Y	C	Cover surface	561438	7388918	50	2	-	3.0%	Tire tracks (Acceptable)	Unchanged since previous observation	4 and 10

Landfill Area = 3,300 m^2.

Table 4-2: Preliminary Stability Assessment – Lower Site NWS Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not Observed	-
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Isolated
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Numerous
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Occasional
Overall Landfill Performance	**Acceptable**	

Table 4-3: Summary Table of Photographic Log – Lower Site NWS Landfill

Photo	Description (file name)	Easting	Northing	Date
1	DYE-M - Lower Site NWS Landfill, facing northwest (ATT188_Photo188.jpg)	561467.3	7388929.2	13-Aug-2016
2	DYE-M - Lower Site NWS Landfill, facing northwest (ATT189_Photo189.jpg)	561442.6	7388895.3	13-Aug-2016
3	DYE-M - Lower Site NWS Landfill, facing east (ATT190_Photo190.jpg)	561377.6	7388932.2	13-Aug-2016
4	DYE-M - Lower Site NWS Landfill, facing south (ATT191_Photo191.jpg)	561408.7	7388943.6	13-Aug-2016
5	DYE-M - Lower Site NWS Landfill, facing east (ATT192_Photo192.jpg)	561426.8	7388923.9	13-Aug-2016
6	DYE-M - Lower Site NWS Landfill - southeast slope - Feature B - Sparse vegetation, facing northeast (ATT408_Photo408.jpg)	561451.0	7388930.0	13-Aug-2016
7	DYE-M - Lower Site NWS Landfill - southwest slope - Feature B - Sparse vegetation, facing northwest (ATT410_Photo410.jpg)	561385.0	7388922.0	13-Aug-2016
8	DYE-M - Lower Site NWS Landfill - northwest slope - Feature B - Sparse vegetation, facing northeast (ATT411_Photo411.jpg)	561378.0	7388932.0	13-Aug-2016
9	DYE-M - Lower Site NWS Landfill - northeast slope - Feature B - Sparse vegetation, facing southeast (ATT413_Photo413.jpg)	561396.0	7388958.0	13-Aug-2016
10	DYE-M - Lower Site NWS Landfill - Cover surface - Feature C - Tire tracks, facing west (ATT409_Photo409.jpg)	561438.0	7388918.0	13-Aug-2016

Table 4-3: Summary Table of Photographic Log – Lower Site NWS Landfill

Photo	Description (file name)	Easting	Northing	Date
11	DYE-M - Lower Site NWS Landfill - Cover surface - Feature D - Sparse vegetation, facing east (ATT412_Photo412.jpg)	561387.0	7388945.0	13-Aug-2016
12	DYE-M - Lower Site NWS Landfill - northeast slope - Feature E - Minor settlement, facing northeast (ATT414_Photo414.jpg)	561406.0	7388954.0	13-Aug-2016
13	DYE-M - Lower Site NWS Landfill – Feature A - Tension crack 1 m above crest, facing southwest (ATT420_Photo420.jpg)	561450.2	7388932.3	13-Aug-2016
14	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-07 before excavation (ATT425_Photo425.jpg)	561267.0	7388898.6	13-Aug-2016
15	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-07 after excavation (ATT426_Photo426.jpg)	561267.0	7388898.6	13-Aug-2016
16	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-07 after backfilling (ATT427_Photo427.jpg)	561267.0	7388898.6	13-Aug-2016
17	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-08 before excavation (ATT415_Photo415.jpg)	561453.6	7388942.5	13-Aug-2016
18	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-08 after excavation (ATT416_Photo416.jpg)	561453.6	7388942.5	13-Aug-2016
19	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-08 after backfilling (ATT417_Photo417.jpg)	561453.6	7388942.5	13-Aug-2016
20	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-09 before excavation (ATT418_Photo418.jpg)	561458.0	7388902.8	13-Aug-2016
21	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-09 after excavation (ATT419_Photo419.jpg)	561458.0	7388902.8	13-Aug-2016
22	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-09 after backfilling (ATT421_Photo421.jpg)	561458.0	7388902.8	13-Aug-2016
23	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-10 before excavation (ATT422_Photo422.jpg)	561422.3	7388884.2	13-Aug-2016
24	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-10 after excavation (ATT423_Photo423.jpg)	561422.3	7388884.2	13-Aug-2016
25	DYE-M - Lower Site NWS Landfill - Soil sampling - DM-10 after backfilling (ATT424_Photo424.jpg)	561422.3	7388884.2	13-Aug-2016

4.1.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-08, DM-09 and DM-10 could not be collected due to refusal on rock.

4.1.4 Soil Sampling

Table 4-4 presents a summary of analytical results for soil samples collected at the Lower Site NWS Landfill. DM-07 represents an upgradient sampling location, whereas DM-08, DM-09 and DM-10 represent downgradient

sampling locations. These latter locations are within approximately 30 m of a streambed leading southwest to Exeter Bay.

Table 4-4 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus three-sigma (baseline plus 3σ) limits. At the Lower Site NWS Landfill, the background arithmetic means for copper, nickel, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

DM-07

Sampling location DM-07 is located upgradient of the landfill, approximately 8 m northwest of the toe. The estimated elevation of this sampling point is 293 masl. As shown in Photos 14 and 15, the area consists of sand and gravel with some boulders and established vegetation. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-07 (0-15 cm, duplicate location), the calculated relative percent difference (RPD) values indicated the original and duplicate sample results differ by more than 30% for zinc, and this result should therefore be interpreted with caution. The concentrations of copper and zinc were slightly greater than those observed in previous years, whereas all other metal concentrations were similar to or less than those observed in previous years. No cadmium, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at DM-07 (40-50 cm), metals concentrations were similar to those observed in the shallow sample. Similarly to the shallow sample results, the concentrations of copper and zinc were slightly greater than those observed in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-08

Sampling location DM-08 is located downgradient of the landfill, approximately 7 m northeast of the toe. The estimated elevation of this sampling point is 291 masl. As shown in Photos 17 and 18, the area is largely covered with sand and gravel and is sparsely vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-08 (0-15 cm), the concentrations of copper and chromium were slightly greater than those observed in previous years, whereas the concentrations of all other metals were similar to or less than in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-09

Sampling location DM-09 is located downgradient of the landfill, approximately 17 m southeast of the toe. The estimated elevation of this sampling point is 289 masl. As shown in Photos 20 and 21, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with some gravel.

For the shallow sample at DM-09 (0-15 cm), the concentrations of all metals were less than those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-10

Sampling location DM-10 is located downgradient of the landfill, approximately 7 m southwest of the toe. The estimated elevation of this sampling point is 289 masl. As shown in Photos 23 and 24, the area consists of sand, gravel and rocks and is not vegetated. The soils consisted of brown sand, gravel and stone.

For the shallow sample at DM-10 (0-15 cm), the concentrations of all metals were less than or similar to those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-4: Soil Chemical Analysis Results – Lower Site NWS Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**26.0**	**34.4**	**12.4**	**1.0**	**10.0**	**50.7**	**64.5**	**1.0**	**0.10**	**0.10**	**10.0**	**4.0**	**9.0**	**NA**
Baseline + 3σ		47.7	64.4	23.3	1.0	22.0	97.1	126.5	3.0	0.10	0.15	10.0	15.0	43.2	NA
Upgradient															
DM-07b	0-15	25.6	33.1	9.5	<0.5	5.1	34.9	61.3	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-07b dup	0-15	**29**	**41**	11.2	<0.5	5	49	**65**	1	<0.10	<0.05	<5	<10	<50	<50
DM-07b (Dup Avg)	0-15	**27**	**37**	10	<0.5	5	42	63	1	<0.1	<0.05	<6	<7	<29	<28
DM-07a	40-50	26	33.9	10.1	<0.5	5.6	36.6	**69.5**	<1.0	<0.1	<0.05	<7	<4	<8	<6
Downgradient															
DM-08a	0-15	25.6	28.5	8.9	<0.5	**10.8**	43.3	56.3	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-08 (deep) [1]															
DM-09a	0-15	**27.2**	31.9	9.6	<0.5	5.2	36.1	63.9	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-09 (deep) [1]															
DM-10a	0-15	**28.7**	31.5	10	<0.5	6.3	41.1	**64.7**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-10 (deep) [1]															

Notes:

NA: Not available

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at DM-08, DM-09 and DM-10 could not be collected due to refusal on rock.

4.1.5 Conclusions and Overall Performance of the Lower Site NWS Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site NWS Landfill. The overall stability performance of this landfill was assessed as Acceptable.

Two soil samples were collected at one of the four designated locations in 2016; deep samples could not be collected at DM-08, DM-09 and DM-10 as a result of refusal (on boulders). The concentrations of metals were highest overall at the shallow sample location DM-07, located upgradient of the northwest side of the landfill. Concentrations of copper and zinc at this location were slightly greater than those observed in previous years, whereas all other metal concentrations were similar to or less than those observed in previous years; this was similarly the case for DM-08 for copper and chromium. At DM-09 and DM-10, all metals concentrations were less than or similar to previous monitoring results. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016. No detectable concentrations of cadmium, mercury, PHC or PCB were noted in any of the samples in 2016.

Given that a number of the environmental sampling results are the same or less than in the two previous sampling sessions, there is no evident ongoing impact of the landfill on soil quality.

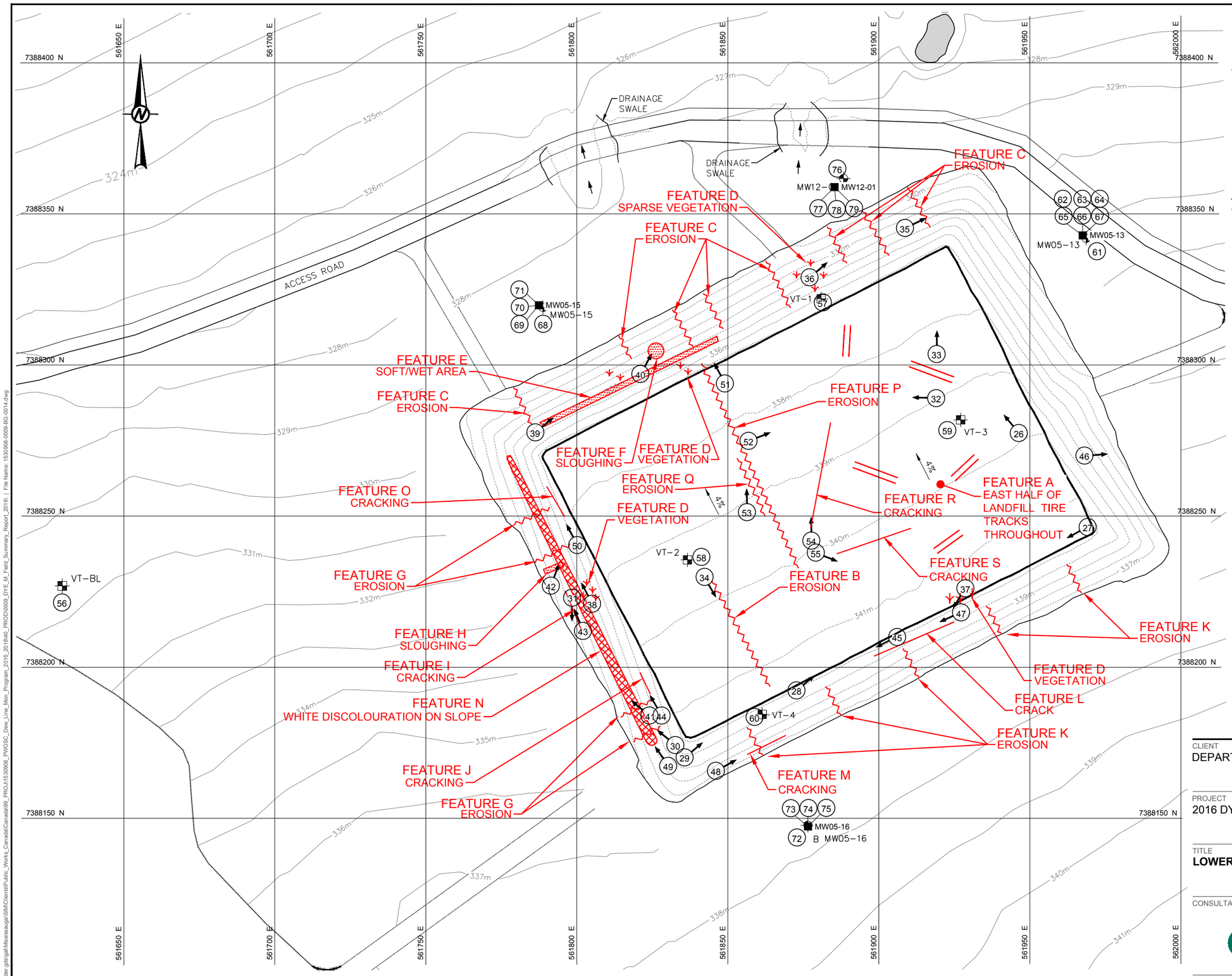
4.1.6 Recommendations for Lower Site NWS Landfill

No modifications to the ongoing monitoring program at this landfill are recommended.

4.2 Lower Site Tier II Disposal Facility

4.2.1 Landfill Description

The Lower Site Tier II Disposal Facility is located northwest of the crossroad area, beside the road to the Lower Site NWS Landfill. The facility was designed to contain contaminated soil exceeding Tier II criteria excavated from the Lower Site and has an area of approximately 29,100 m^2. The design of this facility was based on the characteristics of the contaminants in the soil, the geothermal properties of the area and the local permafrost regime. Permafrost provides the primary containment barrier: both the Tier II-contaminated soil in the facility and the wet, silty gravel perimeter berms were designed to be continuously frozen. The monitoring program at the Tier II Disposal Facility consists of visual inspection of physical features, soil and groundwater sampling, as well as collection of thermal data. Approximate locations of the four monitoring wells and four thermistors that were installed at this landfill are provided in Figure DYE-M.3.



LEGEND:

- CRACKING (NTS)
- EROSION (NTS)
- STAINING (NTS)
- WET/SOFT/SLOUGHING (NTS)
- VEGETATION (NTS)
- TIRE TRACKS (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- BODY OF WATER
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION BACKGROUND
- VERTICAL GROUND TEMPERATURE CABLE LOCATION
- GROUND SURFACE CONTOUR

NOTE

GRID PROJECTION IS NAD83 ZONE 20N. ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,250 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
LOWER SITE TIER II DISPOSAL FACILITY

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

25 mm

0

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0014.dwg

4.2.2 Visual Inspection

The Lower Site Tier II Disposal Facility exhibits multiple locations with observed erosion, cracking, sloughing and wet areas on all but the northeast sideslope, as well as sparse vegetation features. Table 4-5 presents a summary of observed visual inspection features and Table 4-6 presents the Preliminary Stability Assessment results. This landfill was assessed to have a “Marginal” overall performance because some observed features were assessed as “Marginal.” Table 4-7 is a log of photographs taken during the 2016 visual inspection.

In 2015 it was noted that the physical performance of this landfill appears to be deteriorating slightly with time as there was an increase in the amount of self-armouring erosion (previously observed Features B, C, G and K plus new Features P and Q), and minor cracking (previously observed Features I, J and L plus new tension cracks identified as Features M, O, R and S) on the slopes and cover surface. Based on the 2016 observations, the previously observed features appear to be unchanged since 2015. The previously observed wet/soft area (Feature E) on the northwest slope was observed again in 2016, as well as minor sloughing (Features F and H). The observed erosion, tension cracks, sloughing and wet areas indicate deteriorating physical landfill performance. Based on our observations, this has not resulted in significant slope instability to date, nor the exposure of waste.

In 2016 a white discolouration feature was observed along the southwest slope (Feature N), which may be related to landfill construction materials and moisture but does not appear to be related to landfill performance. Areas of sparse vegetation were observed on the slopes (Feature D) and tire tracks were observed (Feature A, previously noted as a soft area) on the cover surface of landfill. All monitoring wells and thermistors were intact and functional.

Table 4-5: Visual Inspection Checklist – Lower Site Tier II Disposal Facility

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site Tier II Disposal Facility
DATE OF INSPECTION: August 12, 2016
DATE OF PREVIOUS INSPECTION: August 13, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-5: Visual Inspection Checklist – Lower Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	B	Cover surface	561842	7388231	45	0.15	0.05	0.02%	Minor self-armouring erosion (Acceptable)	Unchanged since previous observation	34
		C	Along the north slope	561920	7388343	150	20	0.1	10.3%	Self-armouring erosion (each 20 m x 0.3-0.4 m) (Marginal)	Unchanged since previous observation	35
		G	West slope	561824	7388184	25	15	0.1	1.3%	Self-armouring erosion (each 15 m x 0.3-0.4 m) (Marginal)	Unchanged since previous observation	41
		K	South slope	561906	7388210	150	15	0.1	7.7%	Self-armouring erosion (each 15 m x 0.3-0.4 m) (Marginal)	Unchanged since previous observation	45
		P	Cover surface/north slope	56184	7388293	75	0.3	0.1	0.07%	Self-armouring erosion channel (Marginal)	New	51
		Q	Cover surface	561856	7388251	20	1	0.1	0.07%	Self-armouring erosion channel. (Marginal)	New	53
Lateral Movement	N											
Frost Action	N											

Table 4-5: Visual Inspection Checklist – Lower Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Sloughing	Y	F	North slope	561821	7388297	2	1	0.2	0.01%	Sloughing, wet (Marginal)	Unchanged since previous observation	40
		H	West slope	561797	7388235	2	2	0.3	0.01%	Minor sloughing (Marginal)	Previously observed as wet. Observed as dry in 2016.	42
Cracking	Y	I	Along west slope near toe	561802	7388212	14	0.02	-	<0.01%	Minor crack (Acceptable)	Unchanged since previous observation	31 and 43
		J	Near crest on west slope	561828	7388184	8	0.1	-	0.005%	Minor crack (Acceptable)	Unchanged since previous observation	44
		L	South slope near crest	561900	7388206	28	0.05	-	<0.01%	Minor crack (Acceptable)	Unchanged since previous observation	47
		M	South slope	561846	7388165	15	0.02	-	-	Minor tension crack on slope (Acceptable)	New	48
		O	West slope	561800	7388240	5	0.1	-	<0.01%	Minor tension crack on slope (Acceptable)	New	50
		R	Cover surface	561877	7388241	30	0.1	-	0.01%	Cracking on cover surface (Acceptable)	New	54
		S	Cover surface	561879	7388237	30	0.1	-	0.01%	Cracking on cover surface (Acceptable)	New	55

Table 4-5: Visual Inspection Checklist – Lower Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Animal Burrows	N											
Vegetation	Y	D	North slope	561877	7388,29	10	10	-	0.3%	Sparse vegetation	Additional vegetation present	36
		D	West slope	561805	7388221	15	5	-	0.225%	Sparse vegetation	Additional vegetation present	38
		D	South slope	561928	7388220	10	10	-	0.3%	Sparse vegetation	Additional vegetation present	37
Staining	Y	N	West slope	561830.9	7388168.3	100	1	-	0.34%	Band of white discolouration along entire west slope (Acceptable)	New	49
Vegetation Stress	N											
Seepage or Ponded Water	N	E	West side of north slope	561786.2	7388277.7	70	2	-	0.48%	Wet and soft area (Acceptable)	Unchanged since previous observation	39
Debris and/or Liner Exposed	N											

Table 4-5: Visual Inspection Checklist – Lower Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Presence / Condition of Monitoring Instruments	Y	MW12-01, MW05-13, MW05-15, MW05-16 VT-1, -2, -3, -4, -BL								Monitoring wells intact and functional Thermistors intact and functional		61, 68, 72 and 76 56, 57, 58, 59, and 60
Features of Note / Other Observations	Y	A	Cover surface			100	60	-	20.6%	Tire tracks over east half of landfill crest surface (Acceptable)	Unchanged since previous observation	52

Landfill Area = 29,100 m^2.

Table 4-6: Preliminary Stability Assessment – Lower Site Tier II Disposal Facility

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Marginal	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Marginal	Occasional
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Occasional
Staining	Acceptable	Isolated
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Acceptable	Isolated
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Isolated
Overall Landfill Performance	**Marginal**	

Table 4-7: Summary Table of Photographic Log – Lower Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
26	DYE-M - Lower Site Tier II Disposal Facility, facing northwest (ATT180_Photo180.jpg)	561946.3	7388277.5	12-Aug-2016
27	DYE-M - Lower Site Tier II Disposal Facility, facing southwest (ATT181_Photo181.jpg)	561969.1	7388246.4	12-Aug-2016
28	DYE-M - Lower Site Tier II Disposal Facility, facing northeast (ATT182_Photo182.jpg)	561872.7	7388192.3	12-Aug-2016
29	DYE-M - Lower Site Tier II Disposal Facility, facing northeast (ATT183_Photo183.jpg)	561834.2	7388169.8	12-Aug-2016
30	DYE-M - Lower Site Tier II Disposal Facility, facing northwest - Feature N (white discolouration) visible in distance (ATT184_Photo184.jpg)	561831.8	7388169.8	12-Aug-2016
31	DYE-M - Lower Site Tier II Disposal Facility, facing south - North end of Feature I (minor crack) on slope not visible in this photo (see Photo 43) (ATT185_Photo185.jpg)	561798.4	7388223.0	12-Aug-2016
32	DYE-M - Lower Site Tier II Disposal Facility, facing west (ATT186_Photo186.jpg)	561918.9	7388289.0	12-Aug-2016
33	DYE-M - Lower Site Tier II Disposal Facility, facing north (ATT187_Photo187.jpg)	561919.1	7388303.6	12-Aug-2016
34	DYE-M - Lower Site Tier II Disposal Facility - Cover surface - Feature B - Minor self-armouring erosion, facing southeast (ATT383_Photo383.jpg)	561842.0	7388231.0	12-Aug-2016

Table 4-7: Summary Table of Photographic Log – Lower Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
35	DYE-M - Lower Site Tier II Disposal Facility - Along the north slope - Feature C - Self armouring erosion (each 20 m x 0.3-0.4 m) (Marginal) facing northeast. (ATT382_Photo382.jpg)	561920.0	7388343.0	12-Aug-2016
36	DYE-M - Lower Site Tier II Disposal Facility - north slope - Feature D - Sparse vegetation, facing northeast. (ATT381_Photo381.jpg)	561877.0	7388329.0	12-Aug-2016
37	DYE-M - Lower Site Tier II Disposal Facility - south slope - Feature D - Sparse vegetation, facing southwest. (ATT387_Photo387.jpg)	561928.0	7388220.0	12-Aug-2016
38	DYE-M - Lower Site Tier II Disposal Facility - west slope - Feature D - Sparse vegetation, facing northwest. (ATT394_Photo394.jpg)	561805.0	7388221.0	12-Aug-2016
39	DYE-M - Lower Site Tier II Disposal Facility - West side of north slope - Feature E - Wet and soft area - no signs of seepage, facing northeast. (ATT398_Photo398.jpg)	561786.2	7388277.7	12-Aug-2016
40	DYE-M - Lower Site Tier II Disposal Facility - north slope - Feature F - Sloughing, wet no sign of seepage, facing northeast. (Marginal) (ATT399_Photo399.jpg)	561821.0	7388297.0	12-Aug-2016
41	DYE-M - Lower Site Tier II Disposal Facility - west slope - Feature G - Self armouring erosion, facing northwest (each 15 m x 0.3-0.4 m) (Marginal) (ATT392_Photo392.jpg)	561824.0	7388184.0	12-Aug-2016
42	DYE-M - Lower Site Tier II Disposal Facility - west slope - Feature H - Minor sloughing - dry, facing north. (ATT396_Photo396.jpg)	561797.0	7388235.0	12-Aug-2016
43	DYE-M - Lower Site Tier II Disposal Facility - Along west slope near toe - Feature I - Minor crack, facing northwest. (ATT395_Photo395.jpg)	561802.0	7388212.0	12-Aug-2016
44	DYE-M - Lower Site Tier II Disposal Facility - Near crest on west slope - Feature J - Minor crack, facing northwest. (ATT390_Photo390.jpg)	561828.0	7388184.0	12-Aug-2016
45	DYE-M - Lower Site Tier II Disposal Facility - south slope - Feature K - Self armouring erosion, facing southwest. (each 15 m x 0.3-0.4 m) (Marginal) (ATT389_Photo389.jpg)	561906.0	7388210.0	12-Aug-2016
46	DYE-M - Lower Site Tier II Disposal Facility - east toe - Previous ponded water at toe (Feature M) not observed in 2016, facing east. (ATT379_Photo379.jpg)	561968.0	7388270.0	12-Aug-2016
47	DYE-M - Lower Site Tier II Disposal Facility - Feature L - Weathered tension cracking on slope, 4 m below crest, facing southwest. (ATT388_Photo388.jpg)	561927.2	7388218.1	12-Aug-2016
48	DYE-M - Lower Site Tier II Disposal Facility - Feature M - Minor thaw creep cracking near toe of slope, facing northeast. (ATT391_Photo391.jpg)	561846.0	7388165.7	12-Aug-2016

Table 4-7: Summary Table of Photographic Log – Lower Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
49	DYE-M - Lower Site Tier II Disposal Facility - Feature N - White discolouration on slope, full length of west slope, ~1 m wide band, facing northwest. (ATT393_Photo393.jpg)	561830.9	7388168.3	12-Aug-2016
50	DYE-M - Lower Site Tier II Disposal Facility - Feature O - Weathered tension crack, 3 m from crest, facing northwest. (ATT397_Photo397.jpg)	561800.1	7388240.4	12-Aug-2016
51	DYE-M - Lower Site Tier II Disposal Facility - Feature P - Narrow erosion channel (possibly weathered crack) from crest surface to north slope, facing northwest. (ATT400_Photo400.jpg)	561849.0	7388293.9	12-Aug-2016
52	DYE-M - Lower Site Tier II Disposal Facility - Feature A - Light vehicle tracks on crest of landfill, facing northeast. (ATT401_Photo401.jpg)	561856.8	7388274.9	12-Aug-2016
53	DYE-M - Lower Site Tier II Disposal Facility - Feature Q - self-armouring erosion with accumulation of fines, facing north. (ATT402_Photo402.jpg)	561856.3	7388251.3	12-Aug-2016
54	DYE-M - Lower Site Tier II Disposal Facility - Feature R - Weathered cracking on surface of landfill cover, facing north. (ATT403_Photo403.jpg)	561877.6	7388241.9	12-Aug-2016
55	DYE-M - Lower Site Tier II Disposal Facility - Feature S - Weathered cracking on surface of landfill cover, facing west. (ATT404_Photo404.jpg)	561879.1	7388237.9	12-Aug-2016
56	DYE-M - Lower Site Tier II Disposal Facility - Background Thermistor (ATT385_Photo385.jpg)	561629.5	7388221.4	12-Aug-2016
57	DYE-M - Lower Site Tier II Disposal Facility - Thermistor VT-1 (ATT380_Photo380.jpg)	561881.4	7388320.7	12-Aug-2016
58	DYE-M - Lower Site Tier II Disposal Facility - Thermistor VT-2 (ATT384_Photo384.jpg)	561841.2	7388232.7	12-Aug-2016
59	DYE-M - Lower Site Tier II Disposal Facility - Thermistor VT-3 (ATT378_Photo378.jpg)	561926.8	7388279.7	12-Aug-2016
60	DYE-M - Lower Site Tier II Disposal Facility - Thermistor VT-4 (ATT386_Photo386.jpg)	561858.8	7388183.5	12-Aug-2016
61	DYE-M - Lower Site Tier II Disposal Facility - Monitoring well MW05-13 (ATT192_Photo192.jpg)	561970.0	7388339.9	13-Aug-2016
62	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 before excavation (ATT193_Photo193.jpg)	561946.8	7388247.2	13-Aug-2016
63	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 after excavation (ATT194_Photo194.jpg)	561946.8	7388247.2	13-Aug-2016
64	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 after backfilling (ATT195_Photo195.jpg)	561946.8	7388247.2	13-Aug-2016

Table 4-7: Summary Table of Photographic Log – Lower Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
65	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 before excavation (ATT200_Photo200.jpg)	561967.5	7388342.9	13-Aug-2016
66	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 after excavation (ATT201_Photo201.jpg)	561967.5	7388342.9	13-Aug-2016
67	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-13 after backfilling (ATT202_Photo202.jpg)	561967.5	7388342.9	13-Aug-2016
68	DYE-M - Lower Site Tier II Disposal Facility - Monitoring well - MW05-15 (ATT203_Photo203.jpg)	561787.9	7388317.8	13-Aug-2016
69	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-15 before excavation (ATT204_Photo204.jpg)	561787.4	7388319.8	13-Aug-2016
70	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-15 after excavation (ATT205_Photo205.jpg)	561787.4	7388319.8	13-Aug-2016
71	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-15 after backfilling (ATT206_Photo206.jpg)	561787.4	7388319.8	13-Aug-2016
72	DYE-M - Lower Site Tier II Disposal Facility - Monitoring well - MW05-16 (ATT207_Photo207.jpg)	561875.1	7388146.4	13-Aug-2016
73	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-16 before excavation (ATT208_Photo208.jpg)	561876.5	7388147.3	13-Aug-2016
74	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-16 after excavation (ATT209_Photo209.jpg)	561876.5	7388147.3	13-Aug-2016
75	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW05-16 after backfilling (ATT210_Photo210.jpg)	561876.5	7388147.3	13-Aug-2016
76	DYE-M - Lower Site Tier II Disposal Facility - Monitoring well - MW12-01 (ATT196_Photo196.jpg)	561886.2	7388365.0	13-Aug-2016
77	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW12-01 before excavation (ATT197_Photo197.jpg)	561885.3	7388358.9	13-Aug-2016
78	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW12-01 after excavation (ATT198_Photo198.jpg)	561885.3	7388358.9	13-Aug-2016
79	DYE-M - Lower Site Tier II Disposal Facility - Soil sampling - MW12-01 after backfilling (ATT199_Photo199.jpg)	561885.3	7388358.9	13-Aug-2016

4.2.3 Thermal Monitoring

Thermistor dataloggers VT-1, VT-2, VT-3, VT-4 and VT-BL located at the Lower Site Tier II Disposal Facility were downloaded using Lakewood Systems Ltd. Prolog software and a laptop computer. Thermistor inspection and data downloading details were recorded on field record sheets included in Appendix B.

4.2.4 Summary of Sampling Deviations

The field work was conducted as per the TOR, with the following exceptions:

- The deep soil samples at MW05-13 and MW12-01 could not be collected due to refusal on rock;
- No groundwater sample could be collected at MW05-16 as the well was dry; and,
- Mercury, PHC F2-F4 and PCB could not be analyzed from the groundwater sample at MW05-13 due to insufficient recovery of water.

4.2.5 Soil Sampling

Table 4-8 presents a summary of analytical results for soil samples collected at the Lower Site Tier II Disposal Facility. MW05-16 represents an upgradient sampling location, whereas MW05-13, MW05-15 and MW12-01 represent downgradient sampling locations.

Table 4-8 also lists the arithmetic mean background and baseline values for the soil samples at this landfill, in addition to the baseline plus 3σ limits. At the Lower Site Tier II Disposal Facility, the background arithmetic means for copper, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic means for zinc and mercury are also greater than the baseline means plus 3σ.

MW05-16

Sampling location MW05-16 is located upgradient of the landfill, approximately 20 m south of the toe. The estimated elevation of this sampling point is 337.5 masl. As shown in Photos 73 and 74, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with some gravel.

Analytical results for the shallow sample collected at MW05-16 (0-15 cm), indicated that the concentrations of metals were less than or similar to those reported in previous years, with the exception of copper. PHC were detected at this location for the first time; the modified TPH concentration remained below the baseline mean concentration plus 3σ. No cadmium, arsenic, mercury or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at MW05-16 (30-40 cm), metals concentrations were lower than those in the shallow sample. The concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW05-13

Sampling location MW05-13 is located downgradient of the landfill, approximately 17 m east of the toe. The estimated elevation of this sampling point is 331 masl. As shown in Photos 62 and 63, the area consists of sand and gravel with some rocks and boulders and is sparsely vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at MW05-13 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. PHC were detected at this location for the first time; the modified TPH concentration remained below the baseline mean concentration plus 3σ. No cadmium, arsenic, mercury or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW05-15

Sampling location MW05-15 is located downgradient of the landfill, approximately 17 m north of the toe. The estimated elevation of this sampling point is 328.5 masl. MW05-15 is located downgradient of where a soft/wet area and sloughing are observed on the northern slope of the landfill (Photos 39 and 40). As shown in Photos 69 and 70, the area consists of sand and gravel with some rocks with some established vegetation. The soils consisted of brown sand with some gravel.

The shallow sample at MW05-15 (0-15 cm) exhibited elevated concentrations of metals compared to the other sampling locations at this landfill. The concentration of copper was slightly greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. PHC were detected at this location for the first time; the modified TPH concentration (64.5 mg/kg) remained marginally below the baseline mean concentration plus 3σ (64.9 mg/kg). The PHC F3 fraction (59 mg/kg) slightly exceeded the baseline mean concentration plus 3σ (54.9 mg/kg); none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

For the deep sample at MW05-15 (40-50 cm), metals concentrations were less than those in the shallow sample. Similarl to the shallow sample, the concentration of copper was slightly greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW12-01

Sampling location MW12-01 is located downgradient of the landfill, approximately 7 m north of the toe. The estimated elevation of this sampling point is 328.5 masl. As shown in Photos 77 and 78, the area is largely covered with sand and gravel, with some boulders and sparse vegetation. The soils consisted of brown sand with stone.

For the shallow sample at MW12-01 (0-15 cm), the concentrations of all metals were similar to those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-8: Soil Chemical Analysis Results – Lower Site Tier II Disposal Facility

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**27.7**	**38.4**	**11.7**	**1.0**	**10.0**	**47.4**	**71.9**	**1.0**	**0.10**	**0.050**	**10.0**	**4.0**	**15.2**	**NA**
Baseline + 3σ		52.2	64.0	20.2	1.0	10.0	78.6	120.2	2.7	0.10	0.086	10.0	18.3	54.9	NA
Upgradient															
MW05-16b	0-15	**40.4**	**41.7**	11.5	<0.5	6.4	**47.9**	**88.1**	<1.0	<0.1	<0.05	<7	<4	**34**	26
MW05-16a	30-40	**29.7**	33.7	9.3	<0.5	6.2	40.2	68.8	<1.0	<0.1	<0.05	<7	<4	<8	<6
Downgradient															
MW05-13a	0-15	18.9	24.8	6.9	<0.5	3.7	26.9	47.1	<1.0	<0.1	<0.05	<7	<4	**41**	33
MW05-13 (deep) [1]															
MW05-15b	0-15	**45.9**	**44.1**	**13**	<0.5	7.4	**50.6**	**91.3**	<1.0	<0.1	<0.05	<7	<4	**59**	34
MW05-15a	40-50	**36.6**	**38.5**	11.3	<0.5	6.8	45.4	71	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW12-01a	0-15	27.1	29.6	8.4	<0.5	5.1	36.4	64	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW12-01 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

Shaded Values: Results exceed the Baseline arithmetic mean plus 3σ.

1: The deep soil samples at MW05-13 and MW12-01 could not be collected due to refusal on rock.

4.2.6 Groundwater Sampling

Groundwater sampling and monitoring well inspection field records are included in Appendix B. Table 4-9 presents a summary of groundwater levels and analytical results for groundwater samples collected at the Lower Site Tier II Disposal Facility. No groundwater sample could be collected at MW05-16 as the well was dry.

MW05-13

The depth to groundwater measured at MW05-13 in 2016 was 1.45 m below grade. The concentration of nickel was greater than the concentration observed in 2015, whereas the concentrations of all other metals were less than or similar to those observed in 2015. No cadmium, lead, chromium, arsenic or PHC F1 were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ. PHC F2-F4 and PCB could not be analyzed from the groundwater sample at MW05-13 due to insufficient recovery of water.

MW05-15

The depth to groundwater measured at MW05-15 in 2016 was 1.26 m below grade. Nickel and zinc were the only metals detected at this location in 2016. The concentrations of all metals were less than or similar to those observed in 2015; no sample was collected at this location in 2014. No PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW12-01

The depth to groundwater measured at MW12-01 (duplicate location) in 2016 was 1.13 m below grade. It is noted that the calculated RPD values indicated the original and duplicate sample results differ by more than 30% for zinc and this result should therefore be interpreted with caution. The average concentrations of nickeland chromium were greater than those observed in previous years, whereas the concentrations of all other metals were less than or similar to those observed in previous years. No copper, cadmium, zinc, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-9: Monitoring Well Groundwater Levels and Groundwater Chemical Analysis Results – Lower Site Tier II Disposal Facility

ID	GW Depth BGS (m)	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 (mg/L)	F2 (mg/L)	F3 (mg/L)	F4 (mg/L)
Baseline Mean		**0.07**	**0.19**	**0.017**	**0.001**	**0.010**	**3.1**	**0.30**	**0.003**	**0.0004**	**0.003**	**0.050**	**0.50**	**1.0**	**NA**
Baseline + 3σ		0.23	0.52	0.057	0.0019	0.027	15	0.94	0.0058	0.0004	0.0049	0.050	0.50	1.0	NA
Upgradient															
MW05-16 [1]	-														
Downgradient															
MW05-13	1.45	0.001	0.015	0.0006	<0.0001	<0.0001	2.38	<0.001	<0.001	NA [2]	NA [2]	<0.025	NA [2]	NA [2]	NA [2]
MW05-15	1.26	<0.0005	0.007	<0.0005	<0.0001	<0.0001	2.52	<0.001	<0.001	<0.0001	<0.00030	<0.025	<0.100	<0.100	<0.100
MW12-01	1.13	<0.0005	0.04	0.0006	<0.0001	<0.0001	<0.005	<0.001	<0.001	<0.0001	<0.00010	<0.025	<0.100	<0.100	<0.100
MW12-01 dup	1.13	<0.005	0.057	<0.0005	<0.0001	0.0002	<0.005	0.003	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	<0.1
MW12-01 (Dup Avg)	1.13	<0.003	0.05	0.0006	<0.0001	0.0002	<0.005	0.002	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	<0.1

Notes:
ID: Monitoring well location ID.
GW: Groundwater.
BGS: Below ground surface.
NA: Not Available.
Bold Values: Results exceed Baseline arithmetic mean.
1: No groundwater sample could be collected at MW05-16 as the well was dry.
2: Mercury, PHC F2-F4 and PCB could not be analyzed from the groundwater sample at MW05-13 due to insufficient recovery of water.

4.2.7 Conclusions and Overall Performance of the Lower Site Tier II Disposal Facility

No settlement, exposed waste or indications of slope instability were observed at the Lower Site Tier II Disposal Facility during the 2016 visual inspection. A significant amount of self-armouring erosion, cracking and minor sloughing on the landfill slopes and cover surface was observed in 2016, indicating deteriorating physical landfill performance. The overall stability performance of this landfill was assessed as Marginal.

A total of six soil samples were collected at two of the four designated locations in 2016; deep samples could not be collected at MW05-13 and MW12-01 as a result of refusal (on boulders). The concentrations of metals were highest overall at the shallow sample location MW05-15, located downgradient of the northwest side of the landfill, however, similar elevated metal concentrations were also observed upgradient at MW05-16. At MW05-15, the concentration of copper was slightly greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At MW05-13, MW05-16 and MW12-01, the metal concentrations observed were less than or similar to those reported in previous years, with the exception of copper at MW05-16.

PHC were detected at the shallow MW05-13, MW05-15 and MW05-16 locations for the first time. It is noted the modified TPH concentration at MW05-15 remained marginally below the baseline mean concentration plus 3σ, however the PHC F2 concentration at this location slightly exceeded the baseline mean concentration plus 3σ; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No detectable concentrations of cadmium, arsenic, mercury or PCB were noted in any of the soil samples in 2016.

In 2016, groundwater samples were collected from three of four monitoring wells adjacent to the landfill. No groundwater sample could be collected at MW05-16, as the well was dry. The concentration of some metals (i.e., nickel at MW05-13 and nickel and chromium at MW12-01) increased in 2016; no exceedances of the baseline mean concentrations were noted in the groundwater samples collected in 2016. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the groundwater samples in 2016. None of the reported groundwater values exceeded their respective baseline mean concentrations plus 3σ.

Comparison of groundwater elevations based on estimated grade elevation and the measured water depth in the wells indicates that groundwater was higher at MW05-13, and lower towards the west at MW05-15 and MW12-01, which follows the topography in the area.

Overall, it was noted that a number of the soil sampling results (e.g. PHC at MW05-13, MW05-15 and MW05-16) were greater than in previous monitoring sessions, which may be indicative of influence from the landfill. It is further noted that the location where concentrations of TPH were observed at the baseline mean concentrations plus 3σ is located in the shallow soils, near to where a soft/wet area and sloughing are observed. Whereas there is no evident direct correlation between the soil quality and visual observations of landfill performance, close scrutiny of this area and consideration of the potential cause of the landfill structural performance is required in 2017. Based on the groundwater monitoring results, there does not appear to be significant impact to groundwater quality from the landfill at the monitoring well locations.

4.2.8 Recommendations for Lower Site Tier II Disposal Facility

No modifications to the ongoing monitoring program at this landfill are recommended.

4.3 Lower Site Crossroads Landfill

4.3.1 Landfill Description

The Lower Site Crossroads Landfill was created during DEW Line operations. The landfill is located northwest of the lower camp hangar, southeast of the former landfarm and east of the Lower Site access road. The Crossroads Landfill is located approximately 85 metres northwest and downslope of the Foundation Landfill.

The area has moderate (<50%) vegetation cover. The area is underlain by sand and gravel to frozen ground (ESG 2002a). The landfill was regraded in 2007 as part of the DEW Line remediation program and covers an area of about 2,140 m^2. Approximate soil sampling locations for the Lower Site Crossroads Landfill are provided in Figure DYE-M.4.

562550 E
562600 E
562650 E
562700 E
562750 E
562800 E
7387700 N
7387650 N
7387600 N
7387550 N
7387500 N
357m
358m
359m
360m
361m
362m
363m
365m
366m
368m
FEATURE K
SETTLEMENT
FEATURE L
TENSION CRACK
FEATURE B
SPARSE
VEGETATION
FEATURE D
SPARSE VEGETATION
FEATURE N
CRACK
FEATURE D
SPARSE VEGETATION
FEATURE M
MINOR SETTLEMENT
FEATURE D
SPARSE VEGETATION
FEATURE O
EROSION
FEATURE L
MINOR CRACK
FEATURE P
CRACKING
FEATURE K
CRACK
FEATURE D
SPARSE VEGETATION
CROSSROADS LANDFILL
(REGRADED)
FOUNDATION LANDFILL
(REGRADED)
ACCESS ROAD
DM01
DM02
DM03
DM04
DM5
DM6
MW05-04 B
MW-41
MW05-06
MW05-05
MW-24
RM-6
81
92
94
80
LEGEND:
CRACKING (NTS)
SETTLEMENT (NTS)
VEGETATION (NTS)
EROSION
SOIL SAMPLING LOCATION
PHOTOGRAPH LOCATION
BODY OF WATER
MONITORING WELL LOCATION BACKGROUND
MONITORING WELL LOCATION
TYPE 1 GRANULAR A
GROUND SURFACE CONTOUR
NOTE
GRID PROJECTION IS NAD83 ZONE 20N. ELEVATIONS ARE GEODETIC.
REFERENCE
PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.
0 25 50
1:1,000 METRES
CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA
PROJECT
2016 DYE-M MONITORING REPORT
TITLE
CROSSROADS AND FOUNDATION LANDFILLS
CONSULTANT
Golder Associates
YYYY-MM-DD 2016-11-07
DESIGNED RM
PREPARED TDR
REVIEWED DCJ
APPROVED DP
PROJECT NO. 1530908
PHASE 2000
REV. A
FIGURE DYE-M.4
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm
0
Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PRO\1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\00008_DYE_M_Field_Summary_Report_2016\

4.3.2 Visual Inspection

The Lower Site Crossroads Landfill exhibits a few locations with observed cracking, minor erosion/settlement and sparse vegetation. Table 4-10 presents a summary of observed visual inspection features and Table 4-11 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-12 is a log of photographs taken during the 2016 visual inspection.

A new minor tension crack was observed 2016 on the west slope (Feature L). A new area of differential settlement (Feature K) was also noted in 2016. Previously observed sparse vegetation (Feature B) was observed on the landfill again in 2016. Previously observed ponded water (Feature F), tension cracks (Features G, H and I) and tire tracks (Feature J) were not observed in 2016. The observed features do not appear to be having an impact on landfill stability. Note feature letters C, D and E were not assigned to the Lower Site Crossroads Landfill.

Table 4-10: Visual Inspection Checklist – Lower Site Crossroads Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site Crossroads Landfill
DATE OF INSPECTION: August 12, 2016
DATE OF PREVIOUS INSPECTION: August 9, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-10: Visual Inspection Checklist – Lower Site Crossroads Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	Y	K	Cover surface	562582.9	7387662.3	0.5	0.5	0.3	0.01%	Area of differential settlement. (Acceptable)	New	99
Erosion	N											
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	L	West slope	562574.0	7387660.1	5.0	0.02	-	<0.01%	Tension crack (Acceptable)	New	100
Animal Burrows	N											
Vegetation	Y	B	Slopes and crest surface	562623	7387630	40	20	-	37.4%	Sparse grass	Unchanged since previous observation	82, 84, 85, 95, 96, 98
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											

Table 4-10: Visual Inspection Checklist – Lower Site Crossroads Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Features of Note / Other Observations	N											

Landfill Area = 2,140 m^2.

Table 4-11: Preliminary Stability Assessment – Lower Site Crossroads Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not Observed	-
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Isolated
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-12: Summary Table of Photographic Log – Lower Site Crossroads Landfill

Photo	Description (file name)	Easting	Northing	Date
80	DYE-M - Lower Site Crossroads Landfill, facing north (ATT167_Photo167.jpg)	562616.4	7387554.2	12-Aug-2016
81	DYE-M - Lower Site Crossroads Landfill, facing northwest (ATT168_Photo168.jpg)	562631.6	7387584.7	12-Aug-2016
82	DYE-M - Lower Site Crossroads Landfill, facing northwest (ATT169_Photo169.jpg)	562633.5	7387646.0	12-Aug-2016
83	DYE-M - Lower Site Crossroads Landfill, facing southeast (ATT170_Photo170.jpg)	562578.6	7387643.9	12-Aug-2016
84	DYE-M - Lower Site Crossroads Landfill, facing east - Feature B - sparse vegetation (ATT171_Photo171.jpg)	562595.5	7387639.1	12-Aug-2016
85	DYE-M - Lower Site Crossroads Landfill, facing west (ATT172_Photo172.jpg)	562653.0	7387631.8	12-Aug-2016
93	DYE-M - Lower Site Crossroads Landfill - Slopes and crest surface - Feature B - Sparse grass. Entire surface (crest and slopes) is now vegetated, facing northest. (ATT363_Photo363.jpg)	562623.0	7387630.0	12-Aug-2016
94	DYE-M - Lower Site Crossroads Landfill - southwest toe - Previously observed ponded water (Feature F) was not observed in 2016, facing northwest. (ATT362_Photo362.jpg)	562605.0	7387624.0	12-Aug-2016
95	DYE-M - Lower Site Crossroads Landfill - southeast slope - Previously observed (Feature G) minor thaw creep tension cracks not observed in 2016, facing north. (ATT365_Photo365.jpg)	562640.0	7387635.0	12-Aug-2016

Table 4-12: Summary Table of Photographic Log – Lower Site Crossroads Landfill

Photo	Description (file name)	Easting	Northing	Date
96	DYE- M - Lower Site Crossroads Landfill - northeast slope - Previously observed (Feature H) minor thaw crack not observed in 2016, facing west. (ATT364_Photo364.jpg)	562644.0	7387646.0	12-Aug-2016
97	DYE- M - Lower Site Crossroads Landfill - north slope - previously observed (Feature I) crack not observed in 2016, facing east. (ATT367_Photo367.jpg)	562590.0	7387667.0	12-Aug-2016
98	DYE-M - Lower Site Crossroads Landfill - Crest surface - Previously observed (Feature J) tire/dozer tracks are weathered and not observed in 2016, facing southwest. (ATT366_Photo366.jpg)	562625.0	7387639.0	12-Aug-2016
99	DYE- M - Lower Site Crossroads Landfill - Feature K - Settlement, facing southwest. (ATT368_Photo368.jpg)	562582.9	7387662.3	12-Aug-2016
100	DYE- M - Lower Site Crossroads Landfill - Feature L - Tension cracking 1 m from toe of slope, facing southeast. (ATT369_Photo369.jpg)	562574.0	7387660.1	12-Aug-2016
101	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 01 before excavation (ATT189_Photo189.jpg)	562635.4	7387618.8	13-Aug-2016
102	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 01 after excavation (ATT190_Photo190.jpg)	562635.4	7387618.8	13-Aug-2016
103	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 01 after backfilling (ATT191_Photo191.jpg)	562635.4	7387618.8	13-Aug-2016
104	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 02 before excavation (ATT183_Photo183.jpg)	562575.4	7387639.0	13-Aug-2016
105	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 02 after excavation (ATT184_Photo184.jpg)	562575.4	7387639.0	13-Aug-2016
106	DYE- M - Lower Site Crossroads Landfill - Soil sampling - DM- 02 after backfilling (ATT185_Photo185.jpg)	562575.4	7387639.0	13-Aug-2016
107	DYE-M - Lower Site Crossroads Landfill - Soil sampling - DM-03 before excavation (ATT186_Photo186.jpg)	562600.9	7387678.6	13-Aug-2016
108	DYE-M - Lower Site Crossroads Landfill - Soil sampling - DM-03 after excavation (ATT187_Photo187.jpg)	562600.9	7387678.6	13-Aug-2016
109	DYE-M - Lower Site Crossroads Landfill - Soil sampling - DM-03 after backfilling (ATT188_Photo188.jpg)	562600.9	7387678.6	13-Aug-2016

4.3.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-01, DM-02 and DM-03 could not be collected due to refusal on rock.

4.3.4 Soil Sampling

Table 4-13 presents a summary of analytical results for soil samples collected at the Lower Site Crossroads Landfill. DM-01 represents an upgradient sampling location, whereas DM-02 and DM-03 represent downgradient sampling locations.

Table 4-13 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Lower Site Crossroads Landfill, the background arithmetic means for copper, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic means for zinc and mercury are also greater than the baseline means plus 3σ.

DM-01

Sampling location DM-01 is located upgradient of the landfill, immediately south of the toe. The estimated elevation of this sampling point is 361 masl. As shown in Photos 101 and 102, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-01 (0-15 cm), the concentrations of copper, cobalt and chromium were greater than those observed in previous years, whereas the concentrations of most other metals were similar to previous years. The modified TPH concentration reported in 2016 (84 mg/kg) remained well below the baseline mean concentration plus 3σ (641 mg/kg) and was slightly higher than that observed in 2015. The concentration of the PHC F4 fraction in 2016 was 17 mg/kg. No cadmium, arsenic, mercury or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-02

Sampling location DM-02 is located downgradient of the landfill, approximately 8 m southwest of the toe. The estimated elevation of this sampling point is 359.5 masl. As shown in Photos 104 and 105, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of grey sand with some gravel.

For the shallow sample at DM-02 (0-15 cm, duplicate location), the concentration of arsenic was greater than those observed in previous years, whereas the concentrations of all other metals were less than or similar to those observed in previous years. The average concentration of modified TPH (67 mg/kg) was greater than the concentration of 41 mg/kg observed in 2015, but remained well below the baseline mean concentration (70 mg/kg). The average concentration of the PHC F4 fraction in 2016 was 41 mg/kg. No cadmium, mercury or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-03

Sampling location DM-03 is located downgradient of the landfill, approximately 7 m north of the toe. The estimated elevation of this sampling point is 359 masl. As shown in Photos 107 and 108, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of grey sand, gravel and stone.

For the shallow sample at DM-03 (0-15 cm), the concentrations of all metals were less than or similar to those observed in previous years, with the exception of copper and nickel, which reported concentrations slightly higher than those previously observed. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-13: Soil Chemical Analysis Results – Lower Site Crossroads Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**29.9**	**37.6**	**11.1**	**1.0**	**10.0**	**47.0**	**69.0**	**1.0**	**0.10**	**0.10**	**5.0**	**10.0**	**22.5**	**NA**
Baseline + 3σ		52.1	61.1	18.5	1.0	18.6	71.1	106.5	3.4	0.10	0.16	5.0	59.7	85.4	NA
Upgradient															
DM-01a	0-15	**30.7**	32	8.6	<0.5	9.2	37.9	**70.3**	<1.0	<0.1	<0.05	<7	<4	**78**	17
DM-01 (deep) [1]															
Downgradient															
DM-02a	0-15	**31.8**	32.8	8.2	<0.5	6.7	35.4	56.4	<1.0	<0.1	<0.05	<7	**23**	**44**	31
DM-02a dup	0-15	**32**	**38**	8.2	<0.5	5	42	59	**2**	<0.10	<0.05	<5	<10	<50	<50
DM-02a (Dup Avg)	0-15	**32**	35	8.2	<0.5	6	39	58	**2**	<0.1	<0.05	<6	**17**	**47**	41
DM-02 (deep) [1]															
DM-03a	0-15	28.1	28.8	7.7	<0.5	5.6	29.5	52.3	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-03 (deep) [1]															

Notes:

NA: Not available

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at DM-01, DM-02 and DM-03 could not be collected due to refusal on rock.

4.3.5 Conclusions and Overall Performance of the Lower Site Crossroads Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site Crossroads Landfill. A minor tension crack on the western slope and minor settlement on the cover surface were first observed in 2016, however these features do not appear to be impacting the stability of the landfill. The overall stability performance of this landfill was assessed as Acceptable.

Deep samples could not be collected at any of the three designated locations in 2016 as a result of refusal (on boulders). The concentrations of metals were generally highest at sample location DM-01, located immediately upgradient of the south of the landfill. The concentrations of some metals observed increased in 2016 (i.e., copper, cobalt and chromium at DM-01 and arsenic at DM-02), however the majority of metals concentrations were less than in previous years. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

PHC were detected at DM-01 and DM-02, with modified TPH concentrations of 84 mg/kg and 67 mg/kg, respectively. These concentrations were slightly greater than those observed in 2015. No detectable concentrations of cadmium, mercury or PCB were noted in any of the samples in 2016.

Overall, based on the results of the 2016 sampling program, there is no evident ongoing impact of the landfill on soil quality.

4.3.6 Recommendations for Lower Site Crossroads Landfill

No modifications to the ongoing monitoring program at this landfill are recommended.

4.4 Lower Site Foundation Landfill

4.4.1 Landfill Description

The Lower Site Foundation Landfill was created during DEW Line operations and covers an area of approximately 3,340 m^2. The Foundation Landfill is located approximately 85 metres southeast and upslope of the Crossroads Landfill and approximately 45 metres north and downslope of the Powerhouse Landfill.

The ground surface surrounding the landfill has a moderate amount of vegetation (50 to 60%) with poorly defined drainage. The area is underlain by sand and gravel to frozen ground (ESG 2002a). The remediation of this landfill was completed in 2008 and consisted of regrading the surface of the landfill and placement of clean cover material. Approximate soil sampling locations are provided in Figure DYE-M.4.

4.4.2 Visual Inspection

The Lower Site Foundation Landfill has locations with observed settlement, erosion, cracking and sparse vegetation. Table 4-14 presents a summary of observed visual inspection features and Table 4-15 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-16 is a log of photographs taken during the 2016 visual inspection.

In general, observed features remained consistent with the 2015 visual inspection. New self-armouring erosion was noted on the eastern slope (Feature O). A new minor tension crack was observed on the southwest slope (Feature P). An isolated area of differential settlement (Feature M) was observed on the cover surface in 2015 and remains unchanged in 2016. Previously observed sparse vegetation (Feature D) was observed on the landfill surface and slopes in 2015 and remains unchanged in 2016. The observed features do not appear to be having an impact on landfill stability. Previously observed exposed debris (Feature E) and a minor crack on the northwest crest (Feature C) were not observed in 2016. Note feature letters A, B, F, G, H, I and J were not assigned to the Lower Site Foundation Landfill.

Table 4-14: Visual Inspection Checklist – Lower Site Foundation Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site Foundation Landfill
DATE OF INSPECTION: August 12, 2016
DATE OF PREVIOUS INSPECTION: August 13, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-14: Visual Inspection Checklist – Lower Site Foundation Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	Y	M	Cover surface	562770	7387586	3	2	0.1	0.18%	Minor settlement depression (Acceptable)	Unchanged since previous observation	114
Erosion	Y	O	East Slope	562784.7	7387572.8	5.0	1.0	0.1	0.15%	Area of self armouring erosion, accumulation of fines at toe of slope. (Acceptable)	New	116
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	K	South crest	562770	7387550	4	0.02	-	<0.01%	Minor thaw crack (Acceptable)	Unchanged since previous observation	112
		L	Southeast slope	562775	7387555	10	0.02	-	<0.01%	Minor thaw crack (Acceptable)	Unchanged since previous observation	100,113
		N	North crest corner	562740	7387624	4	0.02	-	<0.01%	Minor thaw crack (Acceptable)	Unchanged since previous observation	115
		P	Southwest slope	562743	7387550	3	0.02	-	<0.01%	Minor thaw crack (Acceptable)	New	117
Animal Burrows	N											
Vegetation	Y	D	Crest at south end and east slope	562743	7387554	30	15	-	13.5%	Moderately vegetated	Unchanged since previous observation	88,89, 110, 112,113, and 117
		D	Northwest, northeast and west slopes	562720	7387584	50	5	-	7.5%	Moderate grass vegetation	Unchanged since previous observation	86, 91 and 111

Table 4-14: Visual Inspection Checklist – Lower Site Foundation Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	N											

Landfill Area = 3,340 m^2.

Table 4-15: Preliminary Stability Assessment – Lower Site Foundation Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-16: Summary Table of Photographic Log – Lower Site Foundation Landfill

Photo	Description (file name)	Easting	Northing	Date
86	DYE-M - Lower Site Foundation Landfill, facing southeast (ATT173_Photo173.jpg)	562740.9	7387623.0	12-Aug-2016
87	DYE-M - Lower Site Foundation Landfill, facing south (ATT174_Photo174.jpg)	562753.3	7387608.6	12-Aug-2016
88	DYE-M - Lower Site Foundation Landfill, facing south (ATT175_Photo175.jpg)	562776.8	7387582.6	12-Aug-2016
89	DYE-M - Lower Site Foundation Landfill, facing west (ATT176_Photo176.jpg)	562764.6	7387547.8	12-Aug-2016
90	DYE-M - Lower Site Foundation Landfill, facing northwest (ATT177_Photo177.jpg)	562741.4	7387552.8	12-Aug-2016
91	DYE-M - Lower Site Foundation Landfill, facing southeast (ATT178_Photo178.jpg)	562723.7	7387581.8	12-Aug-2016
92	DYE-M - Lower Site Foundation Landfill, facing east (ATT179_Photo179.jpg)	562732.7	7387581.8	12-Aug-2016
110	DYE-M - Lower Site Foundation Landfill - Crest at south end and east slope - Feature D - Moderately vegetated, facing east. (ATT375_Photo375.jpg)	562743.0	7387554.0	12-Aug-2016
111	DYE-M - Lower Site Foundation Landfill - northwest and west slopes - Feature D - Moderate grass vegetation, facing northeast. (ATT377_Photo377.jpg)	562720.0	7387584.0	12-Aug-2016
112	DYE-M - Lower Site Foundation Landfill - south crest - Feature K - Minor thaw crack, facing south (ATT373_Photo373.jpg)	562770.0	7387550.0	12-Aug-2016

Table 4-16: Summary Table of Photographic Log – Lower Site Foundation Landfill

Photo	Description (file name)	Easting	Northing	Date
113	DYE-M - Lower Site Foundation Landfill - southeast slope - Feature L - Minor thaw crack, facing northeast. (ATT374_Photo374.jpg)	562775.0	7387555.0	12-Aug-2016
114	DYE-M - Lower Site Foundation Landfill - Cover surface - Feature M - Minor settlement depression, facing southeast. (ATT371_Photo371.jpg)	562770.0	7387586.0	12-Aug-2016
115	DYE-M - Lower Site Foundation Landfill - north crest corner - Feature N - Minor thaw cracks, facing south. (ATT370_Photo370.jpg)	562740.0	7387624.0	12-Aug-2016
116	DYE-M - Lower Site Foundation Landfill - Feature O - Area of self-armouring erosion, accumulation of fines at toe of slope, facing south. (ATT372_Photo372.jpg)	562784.7	7387572.8	12-Aug-2016
117	DYE‑M - Lower Site Foundation Landfill - Feature P - Tension cracking, facing south. (ATT376_Photo376.jpg)	562743.8	7387550.8	12-Aug-2016
118	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-04 before excavation (ATT174_Photo174.jpg)	562766.7	7387534.2	13-Aug-2016
119	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-04 after excavation (ATT175_Photo175.jpg)	562766.7	7387534.2	13-Aug-2016
120	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-04 after backfilling (ATT176_Photo176.jpg)	562766.7	7387534.2	13-Aug-2016
121	DYE-M - Lower Site Foundation Landfill - DM-05 before excavation (ATT180_Photo180.jpg)	562716.4	7387597.5	13-Aug-2016
122	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-05 after excavation (ATT181_Photo181.jpg)	562716.4	7387597.5	13-Aug-2016
123	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-05 after backfilling (ATT182_Photo182.jpg)	562716.4	7387597.5	13-Aug-2016
124	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-06 before excavation (ATT177_Photo177.jpg)	562765.1	7387622.2	13-Aug-2016
125	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-06 after excavation (ATT178_Photo178.jpg)	562765.1	7387622.2	13-Aug-2016
126	DYE-M - Lower Site Foundation Landfill - Soil sampling - DM-06 after backfilling (ATT179_Photo179.jpg)	562765.1	7387622.2	13-Aug-2016

4.4.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-05 and DM-06 could not be collected due to refusal on rock.

4.4.4 Soil Sampling

Table 4-17 presents a summary of analytical results for soil samples collected at the Lower Site Foundation Landfill. DM-04 represents an upgradient sampling location, whereas DM-05 and DM-06 represent downgradient sampling locations.

Table 4-17 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Lower Site Foundation Landfill, the background arithmetic mean for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

DM-04

Sampling location DM-04 is located upgradient of the landfill, approximately 9 m south of the toe. The estimated elevation of this sampling point is 363 masl. As shown in Photos 118 and 119, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of yellow-brown sand with gravel and stone.

For the shallow sample at DM-04 (0-15 cm), the concentrations of copper and nickel were slightly greater than previous years but remained below the background and baseline mean concentrations. The concentrations of all other metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at DM-04 (30-40 cm), metals concentrations were slightly greater than those in the shallow sample. The concentrations of most metals were greater than those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-05

Sampling location DM-05 is located downgradient of the landfill, approximately 9 m west of the toe. The estimated elevation of this sampling point is 362 masl. As shown in Photos 121 and 122, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-05 (0-15 cm), the concentration of lead (131 mg/kg) was considerably greater than that reported in previous years and exceeded the baseline mean concentration plus 3σ (66 mg/kg). While the concentration of lead observed in 2016 may be anomalous, this should be confirmed following review of the 2017 data. The concentrations of nickel and copper were also greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. The concentrations of PHC F2 and F3 fractions (15 mg/kg and 431 mg/kg, respectively) exceeded their baseline mean concentrations plus 3σ (14 mg/kg and 121 mg/kg, respectively), however, the modified TPH concentration (450 mg/kg) remained below the baseline mean concentration plus 3σ (859 mg/kg). PHC F4 fraction was reported at a concentration of 201 mg/kg in 2016; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. It is noted that at this location, a modified TPH concentration of 180 mg/kg was reported

in 2014, whereas no PHC were detected in 2015. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

DM-06

Sampling location DM-06 is located downgradient of the landfill, approximately 8 m northeast of the toe. The estimated elevation of this sampling point is 361 masl. As shown in Photos 124 and 125, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-06 (0-15 cm), the concentrations of most metals were less than those reported in previous years. PHC were detected at this location for the first time (PHC F3 and F4 fractions of 25 mg/kg and 36 mg/kg, respectively), however the modified TPH concentration (31 mg/kg) remained below the baseline mean concentration (133 mg/kg). No cadmium, arsenic, mercury or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-17: Soil Chemical Analysis Results – Lower Site Foundation Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**28.4**	**34.9**	**10.7**	**1.0**	**10.0**	**60.8**	**66.8**	**1.0**	**0.10**	**0.10**	**10.0**	**4.8**	**25.5**	**NA**
Baseline + 3σ		67.1	52.8	18.0	1.0	66.0	179.1	98.0	2.6	0.10	0.42	10.0	14.3	121	NA
Upgradient															
DM-04b	0-15	26.7	33.1	9.1	<0.5	5.6	36.3	57	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-04a	30-40	**30.7**	**37.3**	10.2	<0.5	6.5	40.5	66.8	<1.0	<0.1	<0.05	<7	<4	<8	<6
Downgradient															
DM-05a	0-15	**35.2**	**44.5**	9.1	<0.5	**131**	44.6	63.1	<1.0	<0.1	<0.05	<7	**15**	**431**	201
DM-05 (deep) [1]															
DM-06a	0-15	24.1	27.5	7.1	<0.5	5.4	33.1	51.6	<1.0	<0.1	<0.05	<7	<4	25	36
DM-06 (deep) [1]															

Notes:
NA: Not available; ID: Soil sample location ID
Underlined values: Results exceed Background arithmetic mean.
Bold Values: Results exceed Baseline arithmetic mean.
Shaded Values: Results exceed the Baseline arithmetic mean plus 3σ.
1: The deep soil samples at DM-05 and DM-06 could not be collected due to refusal on rock.

4.4.5 Conclusions and Overall Performance of the Lower Site Foundation Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site Foundation Landfill. Some minor tension cracks, self-armouring erosion and a minor differential settlement area were observed. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at DM-05 and DM-06 as a result of refusal (on boulders). Concentrations of metals were highest overall at the shallow sample location DM-05, located downgradient of the west side of the landfill. The concentration of lead at DM-05 was considerably greater than that reported in previous years and exceeded the baseline mean concentration plus 3σ. The concentration of lead observed at DM-05 in 2016 should be confirmed following collection and review of the 2017 data. The concentrations of nickel and copper at DM-05 were also greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At DM-04, the concentrations of many metals were greater than in previous years, whereas the concentrations of most metals at DM-06 were less than those reported in previous years.

PHC concentrations were noted at DM-05 (modified TPH concentration of 450 mg/kg) and DM-06 (modified TPH concentration of 31 mg/kg); however, concentrations remained below the baseline mean concentration plus 3σ; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. The modified TPH concentration at DM-05 was greater than those in previous years, whereas PHC were detected at DM-06 for the first time. It is noted the concentrations of PHC F2 and F3 fractions at DM-05 exceeded their baseline mean concentrations plus 3σ. No PHC were detected at DM-04 in 2016. No detectable concentrations of cadmium, arsenic, mercury or PCB were noted in any of the samples in 2016.

4.4.6 Recommendations for Lower Site Foundation Landfill

The elevated concentrations of lead and PHC observed at the shallow DM-05 sampling location in 2016 should be confirmed following comparison with the 2017 data from this location, prior to consideration of any further actions. It is noted that only three samples have been collected at this location, fewer than seven samples have been collected for trend confirmation.

No modifications to the ongoing monitoring program at this landfill are recommended.

4.5 Lower Site Powerhouse Landfill

4.5.1 Landfill Description

The Lower Site Powerhouse Landfill was created during DEW Line operations. It is located northwest of the lower camp hangar and approximately 45 metres south and upslope of the Foundation Landfill.

Soils in the landfill area consist of sand and gravel over frozen ground (ESG 2002a). The remediation of the Powerhouse Landfill consisted of the installation of a leachate containment system and capping of the surface with clean granular material. The landfill has an area of approximately 7,000 m^2, including side slopes. Approximate soil and groundwater sampling locations are provided on Figure DYE-M.5.

562650 E
562700 E
562750 E
562800 E
562850 E
7387500 N
7387450 N
7387400 N
7387350 N
363m
364m
365m
366m
367m
368m
369m
MW05-06
MW05-05
MW05-07
VT-5
VT-6
VT-7
MW05-08
B
FEATURE C
EROSION
POWERHOUSE LANDFILL
(WITH LINER SYSTEM)
ACCESS ROAD
ACCESS ROAD
129
130
131
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
127
128

LEGEND:

- EROSION (NTS)
- SOIL SAMPLING LOCATION
- 129 PHOTOGRAPH LOCATION
- MONITORING WELL LOCATION BACKGROUND
- MONITORING WELL LOCATION
- VERTICAL GROUND TEMPERATURE CABLE LOCATION
- TYPE 1 GRANULAR A
- 364m GROUND SURFACE CONTOUR

NOTE
GRID PROJECTION IS NAD83 ZONE 20N. ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 12.5 25
1:750 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
POWERHOUSE LANDFILL

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO. 1530908 | PHASE 2000 | REV. A | FIGURE DYE-M.5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada99_PROJ\1530908_PWSSC_Dew_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0016.dwg

4.5.2 Visual Inspection

The Lower Site Powerhouse Landfill had only one observed feature in 2016 (Feature C, self-armouring erosion). The minor erosion was observed at the crest edge adjacent to boulder erosion protection on the landfill slope and is not considered a concern. Previously observed steel debris (Feature A) and ponded water (Feature B) were not observed in 2016. Table 4-18 presents a summary of observed visual inspection features and Table 4-19 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because the observed feature was assessed as “Acceptable.” Table 4-20 is a log of photographs taken during the 2016 visual inspection. All thermistors were intact and functional.

Table 4-18: Visual Inspection Checklist – Lower Site Powerhouse Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site Powerhouse Landfill
DATE OF INSPECTION: August 12, 2016
DATE OF PREVIOUS INSPECTION: August 9, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-18: Visual Inspection Checklist – Lower Site Powerhouse Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	C	West slope	562722	7387461	1	1	0.3	0.01%	Self-armouring erosion at crest edge	New	135
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	Y	VT-5, -6 and -7								Thermistors intact and functional		136, 137 and 138
Features of Note / Other Observations	N											

Landfill Area = 7,000 m^2.

Table 4-19: Preliminary Stability Assessment – Lower Site Powerhouse Landfill

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Isolated
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Not Observed	-
Animal Burrows	Not Observed	-
Vegetation Establishment	Not Observed	-
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-20: Summary Table of Photographic Log – Lower Site Powerhouse Landfill

Photo	Description (file name)	Easting	Northing	Date
127	DYE-M - Lower Site Powerhouse Landfill, facing south (ATT160_Photo160.jpg)	562780.6	7387472.8	12-Aug-2016
128	DYE-M - Lower Site Powerhouse Landfill, facing northwest (ATT161_Photo161.jpg)	562777.4	7387471.5	12-Aug-2016
129	DYE-M - Lower Site Powerhouse Landfill, facing northwest (ATT162_Photo162.jpg)	562750.4	7387480.2	12-Aug-2016
130	DYE-M - Lower Site Powerhouse Landfill, facing southeast (ATT163_Photo163.jpg)	562721.8	7387463.1	12-Aug-2016
131	DYE-M - Lower Site Powerhouse Landfill, facing northeast (ATT164_Photo164.jpg)	562742.4	7387434.0	12-Aug-2016
132	DYE-M - Lower Site Powerhouse Landfill, facing northwest (ATT165_Photo165.jpg)	562777.4	7387434.9	12-Aug-2016
133	DYE-M - Lower Site Powerhouse Landfill, facing north (ATT166_Photo166.jpg)	562794.7	7387414.5	12-Aug-2016
134	DYE-M - Lower Site Powerhouse Landfill - east toe - Feature B - Ponded water at toe. Not observed in 2016, facing north (ATT359_Photo359.jpg)	562805.0	7387498.0	12-Aug-2016
135	DYE-M - Lower Site Powerhouse Landfill - Feature C - Erosion at crest edge, facing south. (ATT360_Photo360.jpg)	562722.0	7387461.6	12-Aug-2016
136	DYE-M - Lower Site Powerhouse Landfill - Thermistor VT-5 (ATT358_Photo358.jpg)	562758.5	7387477.0	12-Aug-2016

Table 4-20: Summary Table of Photographic Log – Lower Site Powerhouse Landfill

Photo	Description (file name)	Easting	Northing	Date
137	DYE-M - Lower Site Powerhouse Landfill - Thermistor VT-6 (ATT357_Photo357.jpg)	562760.0	7387453.7	12-Aug-2016
138	DYE-M - Lower Site Powerhouse Landfill - Thermistor VT-7 (ATT361_Photo361.jpg)	562788.2	7387448.8	12-Aug-2016
139	DYE-M - Lower Site Powerhouse Landfill - Water sampling - MW05-05 (ATT170_Photo170.jpg)	562717.5	7387497.1	13-Aug-2016
140	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-05 before excavation (ATT171_Photo171.jpg)	562719.6	7387494.5	13-Aug-2016
141	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-05 after excavation (ATT172_Photo172.jpg)	562719.6	7387494.5	13-Aug-2016
142	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-05 after backfilling (ATT173_Photo173.jpg)	562719.6	7387494.5	13-Aug-2016
143	DYE-M - Lower Site Powerhouse Landfill - Water sampling - MW05-06 (ATT166_Photo166.jpg)	562780.1	7387504.7	13-Aug-2016
144	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-06 before excavation (ATT167_Photo167.jpg)	562780.8	7387507.1	13-Aug-2016
145	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-06 after excavation (ATT168_Photo168.jpg)	562780.8	7387507.1	13-Aug-2016
146	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-06 after backfilling (ATT169_Photo169.jpg)	562780.8	7387507.1	13-Aug-2016
147	DYE-M - Lower Site Powerhouse Landfill - Water sampling - MW05-07 (ATT162_Photo162.jpg)	562808.1	7387468.7	13-Aug-2016
148	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-07 before excavation (ATT163_Photo163.jpg)	562807.1	7387469.3	13-Aug-2016
149	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-07 after excavation (ATT164_Photo164.jpg)	562807.1	7387469.3	13-Aug-2016
150	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-07 after backfilling (ATT165_Photo165.jpg)	562807.1	7387469.3	13-Aug-2016
151	DYE-M - Lower Site Powerhouse Landfill - Water sampling - MW05-08 (ATT158_Photo158.jpg)	562749.3	7387393.5	13-Aug-2016
152	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-08 before excavation (ATT159_Photo159.jpg)	562749.2	7387399.8	13-Aug-2016
153	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-08 after excavation (ATT160_Photo160.jpg)	562749.2	7387399.8	13-Aug-2016
154	DYE-M - Lower Site Powerhouse Landfill - Soil sampling - MW05-08 after backfilling (ATT161_Photo161.jpg)	562749.2	7387399.8	13-Aug-2016

4.5.3 Thermal Monitoring

Thermistor dataloggers VT-5, VT-6 and VT-7 located at the Lower Site Powerhouse Landfill were downloaded using Lakewood Systems Ltd. Prolog software and a laptop computer. Thermistor inspection and data downloading details were recorded on field record sheets included in Appendix B.

4.5.4 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at MW05-05, MW05-06, MW05-07 and MW05-08 could not be collected due to refusal on rock;
- The groundwater samples at MW05-05 and MW05-06 could not be collected because the groundwater in the well was frozen; and
- The groundwater samples at MW05-07 and MW05-08 could not be collected because the wells were dry.

4.5.5 Soil Sampling

Table 4-21 presents a summary of analytical results for soil samples collected at the Lower Site Powerhouse Landfill. MW05-08 represents an upgradient sampling location, whereas MW05-05, MW05-06 and MW05-07 represent downgradient sampling locations.

Table 4-21 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Lower Site Powerhouse Landfill, the background arithmetic means for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

MW05-08

Sampling location MW05-08 is located upgradient of the landfill, approximately 9 m south of the toe. The estimated elevation of this sampling point is 365.5 masl. As shown in Photos 152 and 153, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of wet grey sand with stone.

For shallow sample at MW05-08 (0-15 cm), the concentrations of metals were less than or similar to those reported in previous years. The modified TPH concentration (106 mg/kg) was less than concentration reported in 2015 (115 mg/kg). The PCB concentration (0.06 mg/kg) was less than those reported in 2014 (0.46 mg/kg) and 2015 (0.24 mg/kg). No cadmium, arsenic or mercury were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW05-05

Sampling location MW05-05 is located downgradient of the landfill, approximately 6 m northwest of the toe. The estimated elevation of this sampling point is 364 masl. As shown in Photos 140 and 141, the area consists of sand and gravel with some rocks and boulders and is sparsely vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at MW05-05 (0-15 cm), the concentrations of all metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW05-06

Sampling location MW05-06 is located downgradient of the landfill, approximately 12 m north of the toe. The estimated elevation of this sampling point is 363.5 masl. As shown in Photos 144 and 145, the area consists of sand and gravel with some rocks and boulders and is sparsely vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at MW05-06 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. The concentrations of PHC F2 and F3 fractions (458 mg/kg and 243 mg/kg, respectively) exceeded their baseline mean concentrations plus 3σ (302 mg/kg and 156 mg/kg, respectively); none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. The modified TPH concentration (705 mg/kg) remained below the baseline mean concentration plus 3σ (1,311 mg/kg). A modified TPH concentration of 24 mg/kg was reported in 2014, whereas no PHC were detected in 2015. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

MW05-07

Sampling location MW05-07 is located downgradient of the landfill, approximately 8 m east of the toe. The estimated elevation of this sampling point is 364.5 masl. As shown in Photos 148 and 149, the area largely consists of sand and is sparsely vegetated. The soils consisted of wet brown sand with some gravel and stone.

For the shallow sample at MW05-07 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. A modified TPH concentration of 107 mg/kg was reported at this location in 2015. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-21: Soil Chemical Analysis Results – Lower Site Powerhouse Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**26.7**	**34.4**	**10.4**	**1.0**	**10.0**	**54.6**	**64.2**	**1.2**	**0.10**	**0.17**	**10.0**	**31.8**	**44.5**	**NA**
Baseline + 3σ		54.7	61.6	18.9	1.0	20.5	131.9	103.7	3.6	0.10	0.78	17.7	301.6	156.3	NA
Upgradient															
MW05-08a	0-15	24.7	27.9	7.9	<0.5	9.2	34.8	49.3	<1.0	<0.1	0.06	<7	<4	**100**	54
MW05-08 (deep) [1]															
Downgradient															
MW05-05a	0-15	21.4	24.7	6.7	<0.5	4.4	27.5	48.1	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW05-05 (deep) [1]															
MW05-06a	0-15	22.1	25.6	7	<0.5	8.8	31	49.6	<1.0	<0.1	<0.05	<7	**458**	**243**	42
MW05-06 (deep) [1]															
MW05-07a	0-15	26.1	29.3	8.1	<0.5	5.9	33.5	56.6	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW05-07 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

Shaded Values: Results exceed the Baseline arithmetic mean plus 3σ.

1: The deep soil samples at MW05-05, MW05-06, MW05-07 and MW05-08 could not be collected due to refusal on rock.

4.5.6 Groundwater Sampling

Groundwater sampling and monitoring well inspection field records are included in Appendix B. The groundwater samples at MW05-05 and MW05-06 could not be collected because the groundwater in the well was frozen. The groundwater samples at MW05-07 and MW05-08 could not be collected because the wells were dry.

4.5.7 Conclusions and Overall Performance of the Lower Site Powerhouse Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Lower Site Powerhouse Landfill. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at any of the four designated locations in 2016 as a result of refusal (on boulders). Similar concentrations of metals were observed at all four sampling locations. At all four locations, the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic or mercury were noted in any of the samples in 2016. No exceedances of the baseline or background metal concentrations were reported in 2016.

PHC were detected at MW05-06 and MW05-08 in 2016. The concentrations of PHC F2 and F3 fractions at MW05-06 exceeded their baseline mean concentrations plus 3σ, whereas previous results had indicated non-detectable PHC F2 and low concentrations (14 mg/kg) of PHC F3; the modified TPH concentration remained below the baseline mean concentration plus 3σ. None of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. The modified TPH concentration at MW05-06 was greater than those observed in previous years, whereas the modified TPH concentration at MW05-08 was less than concentration reported in 2015. No PHC were detected at MW05-05 and MW05-07 in 2016. The PCB concentration reported at MW05-08 was less than those reported in 2014 and 2015; no detectable concentrations of PCB were noted in any of the remaining samples in 2016.

In 2016, no groundwater samples were collected at this landfill. The groundwater samples at MW05-05 and MW05-06 could not be collected because the groundwater in the well was frozen. The groundwater samples at MW05-07 and MW05-08 could not be collected because the wells were dry.

Overall, there is no evident ongoing impact of the landfill on soil quality, however the increase of PHC at some locations warrants closer scrutiny of the results from this landfill following review of the data from the 2017 monitoring program.

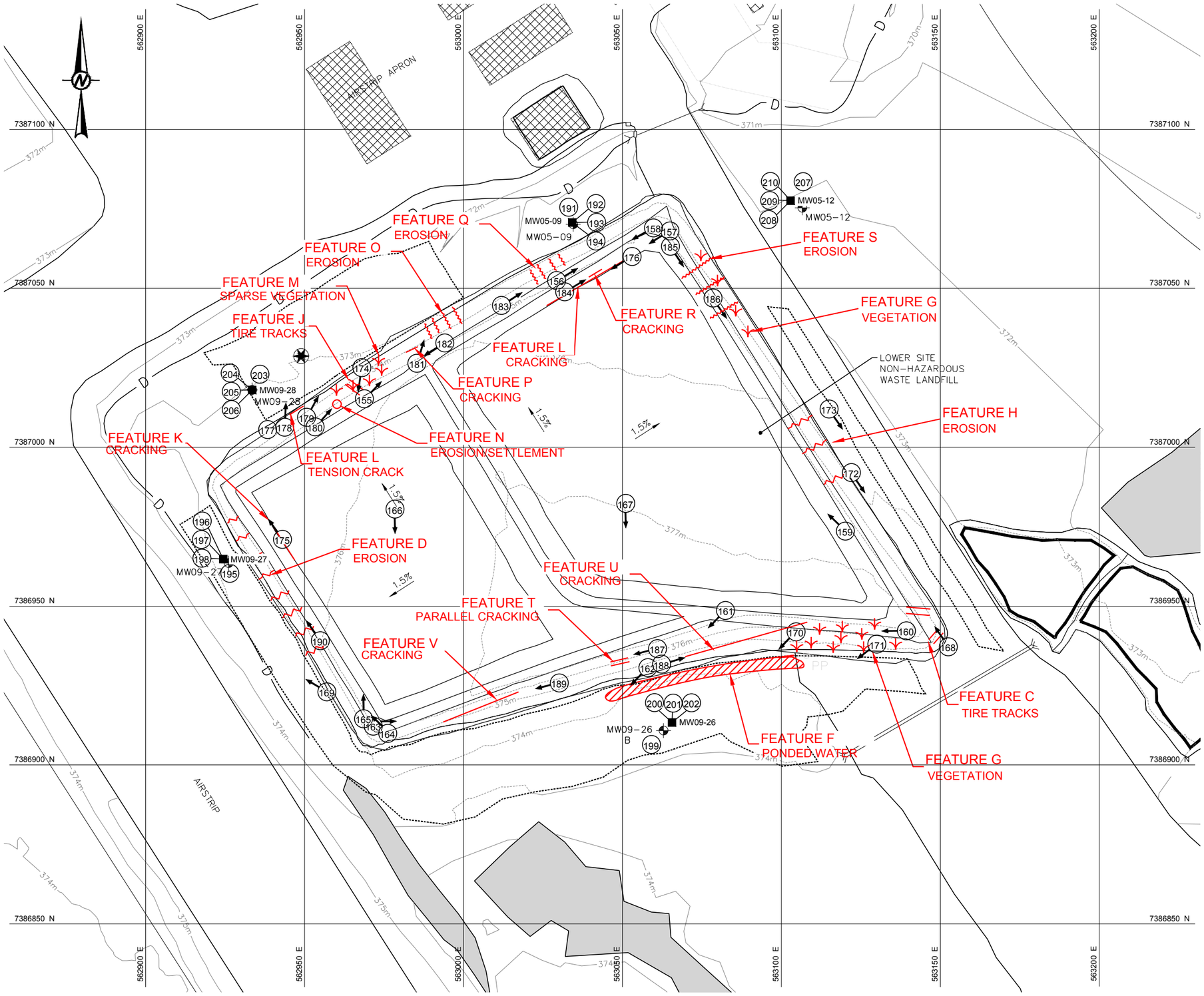
4.5.8 Recommendations for Lower Site Powerhouse Landfill

No modifications to the ongoing monitoring program at this landfill are recommended.

4.6 Lower Site Non-Hazardous Waste Landfill

4.6.1 Landfill Description

The Lower Site Non-Hazardous Waste Landfill (NHWL) was constructed as part of the DEW Line remediation program. The facility was constructed to contain non-hazardous waste generated during decommissioning of the DEW Line installations. The landfill has an area of approximately 23,200 m^2. The Lower Site NHWL is located in the southern portion of the Lower Site area, immediately east of the airstrip and approximately 500 metres south of the Powerhouse Landfill. Approximate soil and groundwater sampling locations are provided in Figure DYE-M.6.



LEGEND:

- CRACKING (NTS)
- EROSION (NTS)
- SETTLEMENT (NTS)
- VEGETATION (NTS)
- TIRE TRACKS (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- BODY OF WATER
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION BACKGROUND
- APPROXIMATE LOCATION OF COMMEMORATIVE PLAQUE
- DEMOLISHED BUILDING
- GROUND SURFACE CONTOUR

NOTE

GRID PROJECTION IS NAD83 ZONE 20N. ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,250 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
LOWER SITE
NON-HAZARDOUS WASTE LANDFILL

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2016\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0017.dwg

4.6.2 Visual Inspection

The Lower Site NHWL has locations with observed minor erosion, cracking, sparse vegetation and ponded water features. Table 4-22 presents a summary of observed visual inspection features and Table 4-23 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-24 is a log of photographs taken during the 2016 visual inspection.

Based on the 2016 inspection, previously observed features were generally unchanged. Some new minor tension cracks (Features P, R, T, U and V) and erosion channels (Features N, O, Q and S) were observed in 2016. Less ponded water was observed in 2016 than in 2015 immediately south of the landfill (Feature F); no ponded water was observed on the west (Feature E) or east (Feature I) sides of the landfill in 2016. The observed features do not appear to be impacting landfill stability. There was no evidence of significant settlement or slope instability of the landfill. Features A and B have not been assigned to this landfill.

Table 4-22: Visual Inspection Checklist – Lower Site Non-Hazardous Waste Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Lower Site Non-Hazardous Waste Landfill
DATE OF INSPECTION: August 12, 2016
DATE OF PREVIOUS INSPECTION: August 9, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-22: Visual Inspection Checklist – Lower Site Non-Hazardous Waste Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	D	West slope	562957	7386924	45	5	-	1.0%	Minor self-armouring erosion with fines washing down slope (Acceptable)	Unchanged since previous observation	190
		H	East slope	563122	7386992	20	10	-	0.9%	Self-armouring erosion (Acceptable)	Unchanged since previous observation	172
		N	North slope	562952	7387008	1	1	0.3	<0.01%	Erosion/Settlement on slope (Acceptable)	New	180
		O	North slope	562985	7387026	10	0.3	0.1	0.01%	Minor self-armouring erosion with fines washing down slope (Acceptable)	New	181
		Q	North slope	563011	7387044	10	0.3	0.1	0.01%	Minor self-armouring erosion with fines washing down slope (Acceptable)	New	183
		S	East slope	563064	7387064	10	5	-	0.2%	Minor self-armouring erosion with fines washing down slope (Acceptable)	New	185
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	K	Along west crest 7 m from edge	562943	7386971	15	0.005	-	<0.01%	Minor crack (Acceptable)	Unchanged since previous observation	175

Table 4-22: Visual Inspection Checklist – Lower Site Non-Hazardous Waste Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
		L	Along crest edge	563053	7387060	35	0.005	-	<0.01%	Minor thaw crack (Acceptable)	Unchanged since previous observation	176
		P	North slope	562994	7387032	7	0.0	-	-	Minor tension crack (Acceptable)	New	182
		R	Along crest	56303	7387048	1	0.1	-	<0.01%	Weathered crack (Acceptable)	New	184
		T	South slope	563061	7386934	5	0.0	-	-	Parallel tension cracks on slope (Acceptable)	New	187
		U	South slope	563062	7386931	10.0	0.0	-	-	Tension cracking near toe of slope (Acceptable)	New	188
		V	South slope	563030	7386925	40.0	0.0	-	-	Tension cracking (Acceptable)	New	189
Animal Burrows	N											
Vegetation	Y	G	South slope	563130	7386938	4	20	-	0.35	Sparse grass	Vegetation appears over a larger area than previous	160 and 171
		G	East slope	563115	7387012	25	0.5	-	0.05%	Sparse grass	Unchanged since previous observation	186
		M	North slope	562950	7387009	2	2	-	0.02%	Sparse vegetation	New	179
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	Y	F	South toe	563008	7386917	50	5	-	1.25%	Ponded water (Acceptable)	Less water observed in 2016	160, 161, 162 and 170

Table 4-22: Visual Inspection Checklist – Lower Site Non-Hazardous Waste Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	Y	MW-09, 12, 26, 27, 28								Monitoring wells intact		195, 199, 207, 191 and 203
Features of Note / Other Observations	Y	C	East slope	563148	7386953	10	4	-	0.2%	Previously noted tire tracks (Acceptable)	Unchanged since previous observation	168
		J	North slope	562968	7387025	10	4	-	0.2%	Previously noted tire tracks (Acceptable)	Unchanged since previous observation	174

Landfill Area = 23,200 m^2

Table 4-23: Preliminary Stability Assessment – Lower Site Non-Hazardous Waste Landfill

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Acceptable	Isolated
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Table 4-24: Summary Table of Photographic Log – Lower Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
155	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing northeast. (ATT147_Photo147.jpg)	562968.8	7387015.2	12-Aug-2016
156	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing northeast. (ATT148_Photo148.jpg)	563030.3	7387049.3	12-Aug-2016
157	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT149_Photo149.jpg)	563063.5	7387067.7	12-Aug-2016
158	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT150_Photo150.jpg)	563062.5	7387067.3	12-Aug-2016
159	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing northwest (ATT151_Photo151.jpg)	563120.1	7386973.6	12-Aug-2016
160	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing west (ATT152_Photo152.jpg)	563139.3	7386942.2	12-Aug-2016
161	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT153_Photo153.jpg)	563082.4	7386948.6	12-Aug-2016
162	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT154_Photo154.jpg)	563058.0	7386930.6	12-Aug-2016
163	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing east (ATT155_Photo155.jpg)	562971.6	7386912.2	12-Aug-2016
164	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing northwest (ATT156_Photo156.jpg)	562971.6	7386912.2	12-Aug-2016
165	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing north (ATT157_Photo157.jpg)	562971.7	7386912.6	12-Aug-2016
166	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing south (ATT158_Photo158.jpg)	562978.4	7386980.5	12-Aug-2016

Table 4-24: Summary Table of Photographic Log – Lower Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
167	DYE-M - Lower Site Non-Hazardous Waste Landfill, facing south (ATT159_Photo159.jpg)	563051.0	7386982.3	12-Aug-2016
168	DYE-M - Lower Site Non-Hazardous Waste Landfill - east slope - Feature C - Previously noted tire tracks, facing northwest. (ATT349_Photo349.jpg)	563148.0	7386953.0	12-Aug-2016
169	DYE-M - Lower Site Non-Hazardous Waste Landfill - West slope and toe - Previously observed ponded water at toe (Feature E) not observed in 2016, facing northwest. (ATT354_Photo354.jpg)	562957.0	7386923.0	12-Aug-2016
170	DYE-M - Lower Site Non-Hazardous Waste Landfill - south toe - Feature F - Ponded water, facing southwest. (ATT350_Photo350.jpg)	563008.0	7386917.0	12-Aug-2016
171	DYE-M - Lower Site Non-Hazardous Waste Landfill - south slope - Feature G - Sparse grass, facing southwest. (ATT348_Photo348.jpg)	563130.0	7386938.0	12-Aug-2016
172	DYE-M - Lower Site Non-Hazardous Waste Landfill - east slope - Feature H - Self armouring erosion, facing southeast. (ATT347_Photo347.jpg)	563122.0	7386992.0	12-Aug-2016
173	DYE-M - Lower Site Non-Hazardous Waste Landfill - east toe - Previously observed ponded water at toe (Feature I) not observed in 2016, facing southeast. (ATT346_Photo346.jpg)	563115.0	7387012.0	12-Aug-2016
174	DYE-M - Lower Site Non-Hazardous Waste Landfill - north slope - Feature J - Previously observed tire tracks, facing south. (ATT338_Photo338.jpg)	562968.0	7387025.0	12-Aug-2016
175	DYE-M - Lower Site Non-Hazardous Waste Landfill - Along west crest 7 m from edge - Feature K - Minor crack, facing northwest. (ATT356_Photo356.jpg)	562943.0	7386971.0	12-Aug-2016
176	DYE-M - Lower Site Non-Hazardous Waste Landfill - Along crest edge - Feature L - Minor thaw crack, facing northwest. (ATT343_Photo343.jpg)	563053.0	7387060.0	12-Aug-2016
177	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature L - Tension crack near toe of slope, facing northeast. (ATT334_Photo334.jpg)	562943.7	7387006.3	12-Aug-2016
178	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature L - Tension crack near toe of slope, facing north. (ATT335_Photo335.jpg)	562943.7	7387006.3	12-Aug-2016
179	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature M - Sparse vegetation on slope, facing northeast. (ATT336_Photo336.jpg)	562950.6	7387009.4	12-Aug-2016
180	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature N - Erosion/settlement on slope, facing northeast. (ATT337_Photo337.jpg)	562952.2	7387008.5	12-Aug-2016

Table 4-24: Summary Table of Photographic Log – Lower Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
181	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature O - Series of self-armouring erosion channels, with accumulation of fines towards the toe of the slope, facing northeast. (ATT339_Photo339.jpg)	562985.3	7387026.4	12-Aug-2016
182	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature P - Tension crack halfway down slope, facing southwest. (ATT340_Photo340.jpg)	562994.1	7387032.8	12-Aug-2016
183	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature Q - Series of self-armouring erosion channels, accumulation of fines at toe of slope, facing northeast. (ATT341_Photo341.jpg)	563011.9	7387044.6	12-Aug-2016
184	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature R - Weathered tension crack at crest, facing northeast. (ATT342_Photo342.jpg)	563031.8	7387048.9	12-Aug-2016
185	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature S - Series of self-armouring erosion, accumulation of fines at toe of slope, facing southeast. (ATT344_Photo344.jpg)	563064.1	7387064.6	12-Aug-2016
186	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature G - Sparse vegetation, facing southeast. (ATT345_Photo345.jpg)	563078.5	7387046.9	12-Aug-2016
187	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature T - Parallel tension cracking halfway up slope, facing southwest. (ATT351_Photo351.jpg)	563061.4	7386934.6	12-Aug-2016
188	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature U - Tension cracking near toe of slope, facing northeast. (ATT352_Photo352.jpg)	563062.3	7386931.7	12-Aug-2016
189	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature V - Tension cracking, facing southwest. (ATT353_Photo353.jpg)	563030.1	7386925.8	12-Aug-2016
190	DYE-M - Lower Site Non-Hazardous Waste Landfill - Feature D - Area of self-armouring erosion, accumulation of fines at toe. Area comprises most of west slope, facing northwest. (ATT355_Photo355.jpg)	562954.9	7386939.1	12-Aug-2016
191	DYE-M - Lower Site Non-Hazardous Waste Landfill - Water sampling - MW05-09 (ATT441_Photo441.jpg)	563034.2	7387070.7	13-Aug-2016
192	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-09 before excavation (ATT440_Photo440.jpg)	563034.5	7387070.4	13-Aug-2016
193	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-09 after excavation (ATT442_Photo442.jpg)	563035.2	7387071.2	13-Aug-2016
194	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-09 after backfilling (ATT443_Photo443.jpg)	563035.2	7387071.2	13-Aug-2016

Table 4-24: Summary Table of Photographic Log – Lower Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
195	DYE-M - Lower Site Non-Hazardous Waste Landfill - Water sampling - MW09-27 (ATT432_Photo432.jpg)	562924.3	7386964.4	13-Aug-2016
196	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-27 before excavation (ATT433_Photo433.jpg)	562924.4	7386964.8	13-Aug-2016
197	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-27 after excavation (ATT434_Photo434.jpg)	562924.4	7386964.8	13-Aug-2016
198	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW0-927 after backfilling (ATT435_Photo435.jpg)	562924.4	7386964.8	13-Aug-2016
199	DYE-M - Lower Site Non-Hazardous Waste Landfill - Water sampling - MW09-26 (ATT428_Photo428.jpg)	563065.8	7386913.3	13-Aug-2016
200	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-26 before excavation (ATT429_Photo429.jpg)	563065.6	7386913.4	13-Aug-2016
201	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-26 after excavation (ATT430_Photo430.jpg)	563065.6	7386913.4	13-Aug-2016
202	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-26 after backfilling (ATT431_Photo431.jpg)	563065.6	7386913.4	13-Aug-2016
203	DYE-M - Lower Site Non-Hazardous Waste Landfill - Water sampling - MW09-28 (ATT444_Photo444.jpg)	562934.3	7387019.7	13-Aug-2016
204	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-28 before excavation (ATT445_Photo445.jpg)	562933.5	7387018.0	13-Aug-2016
205	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-28 after excavation (ATT446_Photo446.jpg)	562933.5	7387018.0	13-Aug-2016
206	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW09-28 after backfilling (ATT447_Photo447.jpg)	562933.5	7387018.0	13-Aug-2016
207	DYE-M - Lower Site Non-Hazardous Waste Landfill - Water sampling - MW05-12 (ATT436_Photo436.jpg)	563103.3	7387078.3	13-Aug-2016
208	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-12 before excavation (ATT437_Photo437.jpg)	563102.9	7387077.6	13-Aug-2016
209	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-12 after excavation (ATT438_Photo438.jpg)	563102.9	7387077.6	13-Aug-2016
210	DYE-M - Lower Site Non-Hazardous Waste Landfill - Soil sampling - MW05-12 after backfilling (ATT439_Photo439.jpg)	563102.9	7387077.6	13-Aug-2016

4.6.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at MW05-09, MW05-12 and MW09-28 could not be collected due to refusal on rock;
- The groundwater samples at MW05-09, MW05-12 and MW09-28 could not be collected because the wells were dry; and,
- PCB could not be analyzed from the groundwater sample at MW09-26 due to insufficient recovery of water from the well.

4.6.4 Soil Sampling

Table 4-25 presents a summary of analytical results for soil samples collected at the Lower Site NHWL. MW09-26 represents an upgradient sampling location, whereas MW05-09, MW05-12, MW09-27 and MW09-28 represent downgradient sampling locations.

Table 4-25 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Lower Site NHWL, the background arithmetic means for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic mean. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

MW09-26

Sampling location MW09-26 is located upgradient of the landfill, approximately 20 m south of the toe. The estimated elevation of this sampling point is 374 masl. As shown in Photos 200 and 201, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of wet yellow-brown sand with some gravel. Ponding of water is observed along the toe of the landfill in the area of the sampling location.

For the shallow sample at MW09-26 (0-15 cm), the concentrations of most metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at MW09-26 (40-50 cm), the concentrations of all metals were less than or similar to those reported in 2014; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW05-09

Sampling location MW05-09 is located downgradient of the landfill, approximately 5 m north of the toe. The estimated elevation of this sampling point is 372.5 masl. As shown in Photos 192 and 193, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of brown sand with some gravel.

For the shallow sample at MW05-09 (0-15 cm), the concentration of lead was greater than those reported in previous years, whereas the concentrations of all other metals were less than in previous years. No cadmium, arsenic or mercury were detected at this location in 2016. The modified TPH concentration (65 mg/kg) remained well below the baseline mean concentration plus 3σ (406 mg/kg). In 2015, a modified TPH concentration of 58 mg/kg was reported, whereas no PHC were detected in 2014. The PCB concentration (0.07 mg/kg) was greater than the concentration reported in 2014 (0.018 mg/kg); no PCB were detected at this location in 2015.

MW05-12

Sampling location MW05-12 is located downgradient of the landfill, approximately 25 m northeast of the toe. The estimated elevation of this sampling point is 372 masl. As shown in Photos 208 and 209, the area is largely covered with sand and gravel and is sparsely vegetated. The soil in the area of the sample location consisted of brown sand, gravel and stone.

For the shallow sample at MW05-12 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW09-27

Sampling location MW09-27 is located downgradient of the landfill, approximately 5 m west of the toe. The estimated elevation of this sampling point is 373.5 masl. As shown in Photos 196 and 197, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand and gravel.

For the shallow sample at MW09-27 (0-15 cm), the concentrations of copper and lead were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. PHC were detected at this location for the first time in 2016, however, the modified TPH concentration (31 mg/kg) remained below the baseline mean concentration (59 mg/kg). A PHC F4 fraction of 13 mg/kg was reported in 2016. No PCB were detected at this location in 2016.

For the deep sample at MW09-27 (40-50 cm), metals concentrations were lower than those in the shallow sample. The concentrations of all detected metals were greater than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW09-28

Sampling location MW09-28 is located downgradient of the landfill, approximately 12 m northwest of the toe. The estimated elevation of this sampling point is 373 masl. As shown in Photos 204 and 205, the area consists of sand and gravel with some rocks and is not vegetated. The soil in the area of the sample location consisted of brown sand with some gravel and stone.

For the shallow sample at MW09-28 (0-15 cm), the concentrations of copper, lead and chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-25: Soil Chemical Analysis Results – Lower Site Non-Hazardous Waste Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		42.6	37.8	12.1	1.0	10.0	83.6	93.8	1.0	0.50	0.0002	NA	NA	NA	NA
Baseline Mean		**26.7**	**35.0**	**10.4**	**1.0**	**10.0**	**54.5**	**68.8**	**1.1**	**0.10**	**0.05**	**10.0**	**15.8**	**36.1**	**NA**
Baseline + 3σ		49.2	49.9	16.6	1.0	27.2	134.9	105.0	3.6	0.10	0.37	42.9	234.4	250.9	NA
Upgradient															
MW09-26b	0-20	23.5	30	8.4	<0.5	5.5	34.5	59.4	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW09-26a	40-50	21.1	27.7	7.8	<0.5	5.3	33	60.2	<1.0	<0.1	<0.05	<7	<4	<8	<6
Downgradient															
MW05-09a	0-15	**39.7**	33.8	8.9	<0.5	**17.2**	54.1	**72.9**	<1.0	<0.1	**0.07**	<7	<4	**59**	37
MW05-09 (deep) [1]															
MW05-12a	0-15	**33.4**	**39.3**	**10.7**	<0.5	7.2	46.8	**82**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW05-12 (deep) [1]															
MW09-27b	0-15	**45.3**	**39.2**	9.7	<0.5	**11.4**	51.3	**81.9**	<1.0	<0.1	<0.05	<7	<4	25	13
MW09-27a	40-50	**32.4**	34.9	9.7	<0.5	9.8	44.6	**75.6**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW09-28a	0-15	**44.1**	**37.8**	**11**	<0.5	**16.9**	**56.6**	**89.9**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW09-28 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at MW05-09, MW05-12 and MW09-28 could not be collected due to refusal on rock.

4.6.5 Groundwater Sampling

Groundwater sampling and monitoring well inspection field records are included in Appendix B. Table 4-26 presents a summary of groundwater levels and analytical results for groundwater samples collected at the Lower Site NHWL. The groundwater sample at MW05-09, MW05-12 and MW09-28 could not be collected because the wells were dry.

MW09-26

The depth to groundwater measured at MW09-26 in 2016 was 0.90 m below grade. The concentrations of nickel, cobalt and zinc were greater than those observed in 2014, whereas the concentrations of most other metals were similar to those observed in 2014; no sample was collected at this location in 2015. No lead, arsenic, mercury or PHC were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ. PCB could not be analyzed from the groundwater sample at MW09-26 due to insufficient recovery of water from the well.

MW09-27

The depth to groundwater measured at MW09-27 in 2016 was 1.05 m below grade. The concentration of zinc was greater than those observed in 2014 and the concentrations of all other metals were less than or similar to those observed in 2014; no sample was collected at this location in 2015. No cobalt, cadmium, lead, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-26: Monitoring Well Groundwater Levels and Groundwater Chemical Analysis Results – Lower Site Non-Hazardous Waste Landfill

ID	GW Depth BGS (m)	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 (mg/L)	F2 (mg/L)	F3 (mg/L)	F4 (mg/L)
Baseline Mean		**0.021**	**0.11**	**0.003**	**0.001**	**0.010**	**4.2**	**0.20**	**0.003**	**0.0004**	**0.003**	**0.050**	**0.5**	**1.0**	**NA**
Baseline + 3σ		0.052	0.27	0.012	0.001	0.057	21	0.57	0.008	0.0004	0.005	0.050	0.50	1.00	NA
Upgradient															
MW09-26	0.90	0.0027	**0.184**	0.0029	0.0002	<0.0001	**4.69**	0.01	<0.001	<0.0001	NA [1]	<0.025	<0.100	<0.100	<0.100
Downgradient															
MW05-09 [2]															
MW05-12 [2]															
MW09-27	1.05	0.0044	0.021	<0.0005	<0.0001	<0.0001	0.528	0.005	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100
MW09-28 [2]															

Notes:
ID: Monitoring well location ID.
GW: Groundwater.
BGS: Below ground surface.
NA: Not available
Bold Values: Results exceed Baseline arithmetic mean.
1: PCB could not be analyzed from the groundwater sample at MW09-26 due to insufficient recovery of water from the well.
2: The groundwater sample at MW05-09, MW05-12 and MW09-28 could not be collected because wells were dry.

4.6.6 Conclusions and Overall Performance of the Lower Site NHWL

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Lower Site NHWL. Some self-armouring erosion, tension cracking and ponding of water along the toe of the landfill was observed. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at MW05-09, MW05-12 and MW09-28 as a result of refusal (on boulders). The concentrations of metals in soil were highest overall at the sample location MW09-28, located downgradient of the north side of the landfill. At MW09-28, the concentrations of copper, lead and chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. At the deep MW09-27 sampling location, the concentrations of all detected metals were greater than those reported in previous years. At the remaining sampling locations, most metals concentrations were less than or similar to those observed in previous years.

PHC were detected at MW05-09 and MW09-27 at modified TPH concentrations of 65 mg/kg and 31 mg/kg, respectively. PHC were detected at MW09-27 for the first time, whereas the modified TPH concentration at MW05-09 was slightly greater than those observed previously. The PCB concentration at MW05-09 was greater than the concentration reported in 2014; no PCB were detected at this location in 2015. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the other samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the soil samples in 2016.

In 2016, groundwater samples were collected from two of five monitoring wells adjacent to the landfill. The groundwater samples at MW05-09, MW05-12 and MW09-28 could not be collected because the wells were dry. At MW09-26, the concentrations of nickel, cobalt and zinc were greater than those observed in 2014, whereas the concentrations of most other metals were similar to those observed in 2014; no sample was collected at this location in 2015. At MW09-27, the concentration of zinc was greater than those observed in 2014 and the concentrations of all other metals were less than or similar to those observed in 2014; no sample was collected at this location in 2015. No detectable concentrations of lead, arsenic, mercury, PHC or PCB were noted in either of the groundwater samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the groundwater samples in 2016.

Based on the monitoring results, there does not appear to be significant impact to groundwater quality or soil quality from the landfill. Increased concentrations of nickel, cobalt and zinc were observed in the groundwater at MW09-26 in 2016, as well as increased concentrations of zinc in the groundwater at MW09-27, and should be confirmed in 2017.

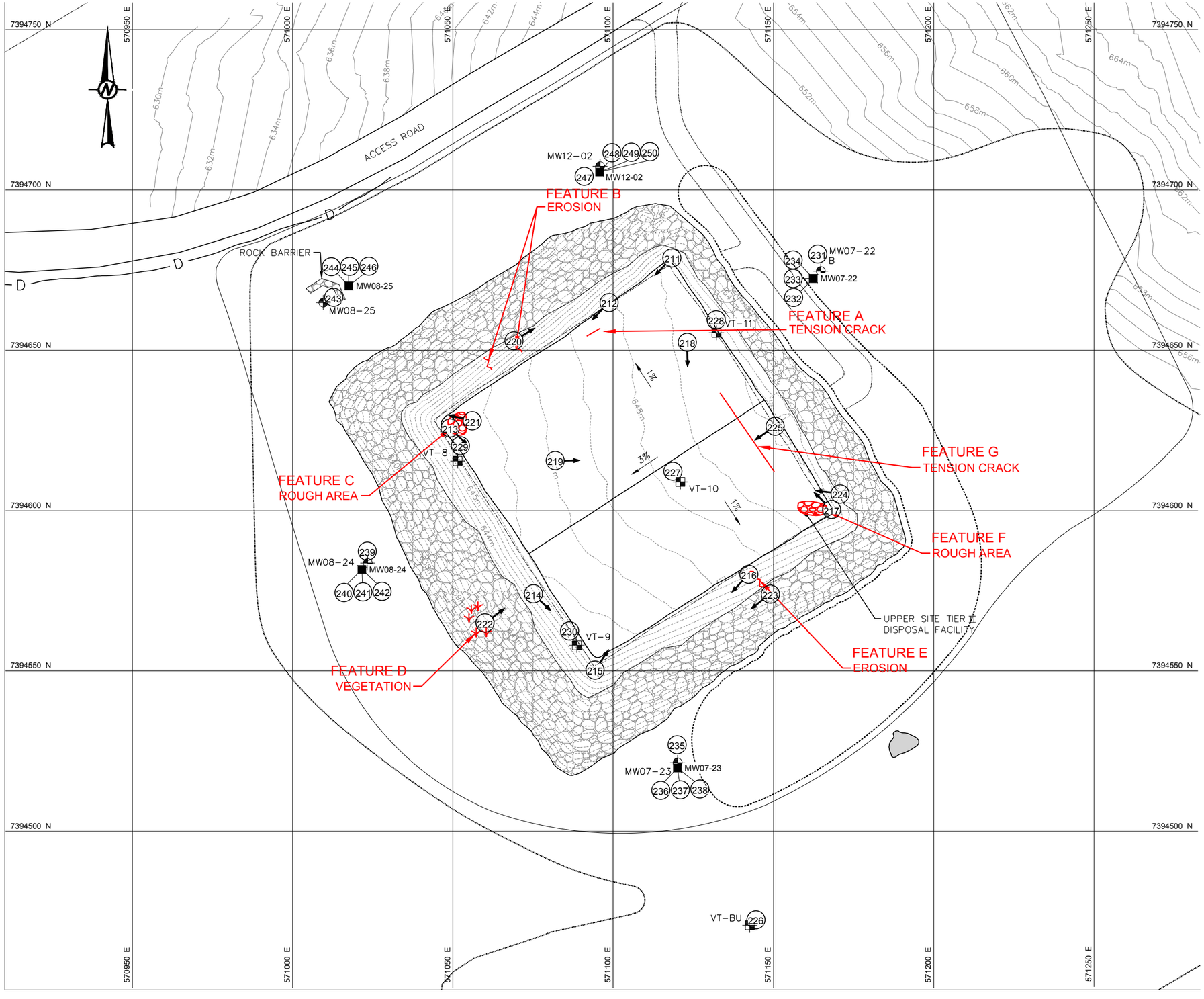
4.6.7 Recommendations for Lower Site NHWL

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

4.7 Upper Site Tier II Disposal Facility

4.7.1 Landfill Description

The Upper Site (US) Tier II Disposal Facility is located on the south side of the road to the Upper Site, approximately 600 m west of the Pallet Line Landfill (ESG 2002b). The facility was designed to contain contaminated soil exceeding Tier II criteria excavated from the Upper Site. The design of this facility was based on the characteristics of the contaminants in the soil, the geothermal properties of the area, and the local permafrost regime. Permafrost provides the primary containment barrier: both the Tier II-contaminated soil in the facility and the silty gravel perimeter berms were designed to be continuously frozen. The landfill has an area of approximately 18,600 m^2. Approximate soil and groundwater sampling locations are provided in Figure DYE-M.7.



LEGEND:

- EROSION (NTS)
- ROUGH AREA (NTS)
- VEGETATION (NTS)
- CRACKING (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- BODY OF WATER
- MONITORING WELL LOCATION BACKGROUND
- MONITORING WELL LOCATION
- VERTICAL GROUND TEMPERATURE CABLE LOCATION
- TYPE 1 GRANULAR A
- GROUND SURFACE CONTOUR

NOTE
GRID PROJECTION IS NAD83 ZONE 20N. ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,250 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
UPPER SITE
TIER II DISPOSAL FACILITY

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0018.dwg

4.7.2 Visual Inspection

The Upper Site Tier II Disposal Facility exhibits some locations with observed erosion, cracking and sparse vegetation features. Table 4-27 presents a summary of observed visual inspection features and Table 4-28 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-29 is a log of photographs taken during the 2016 visual inspection.

No significant changes were noted in 2016. A single new tension crack was noted (Feature G) along the northwest crest. Existing features noted in 2015 remained unchanged in 2016. The observed features have no significant impact on landfill stability.

Table 4-27: Visual Inspection Checklist – Upper Site Tier II Disposal Facility

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site Tier II Disposal Facility
DATE OF INSPECTION: August 11, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-27: Visual Inspection Checklist – Upper Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	Feature B	Northwest slope	571069	7394653	15	5	0.03	0.4%	Self-armouring erosion channels every 2-3 m (Acceptable)	Previously observed, unchanged	220
		Feature C	West crest corner	571056	7394628	5	5	-	0.1%	Rough area (Acceptable)	Previously observed, unchanged	221
		Feature E	Southeast slope	571149	7394574	5	0.1	-	<0.01%	Self-armouring erosion and accumulation of fines (Acceptable)	Previously observed, unchanged	223
		Feature F	East crest corner	571156	7394604	10	5	-	0.3%	Rough area (Acceptable)	Previously observed, unchanged	224
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	Feature A	Northwest crest	571093	7394658	1.5	0.1	0.02	<0.01%	Tension crack (Acceptable)	Previously observed, unchanged	
		Feature G	Northeast crest	571150	7394626	30.0	0.1	-	0.02%	Tension crack (Acceptable)	New	225
Animal Burrows	N											

Table 4-27: Visual Inspection Checklist – Upper Site Tier II Disposal Facility

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Vegetation	Y	Feature D	Southwest slope	571060	7394565	0.3	0.3	-	<0.01%	Sparse vegetation	Previously observed, unchanged	222
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	Y	VT-8, -9, -10, -11 and VT-BU								Thermistors intact and functional		226, 227, 228, 229 and 230
Features of Note / Other Observations	N											

Landfill Area = 18,600 m^2.

Table 4-28: Preliminary Stability Assessment – Upper Site Tier II Disposal Facility

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Isolated
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-29: Summary Table of Photographic Log – Upper Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
211	DYE-M - Upper Site Tier II Disposal Facility, facing southwest (ATT125_Photo125.jpg)	571118.3	7394678.8	11-Aug-2016
212	DYE-M - Upper Site Tier II Disposal Facility, facing southwest (ATT126_Photo126.jpg)	571098.7	7394664.9	11-Aug-2016
213	DYE-M - Upper Site Tier II Disposal Facility, facing southeast (ATT127_Photo127.jpg)	571049.1	7394625.8	11-Aug-2016
214	DYE-M - Upper Site Tier II Disposal Facility, facing southeast (ATT128_Photo128.jpg)	571075.1	7394574.1	11-Aug-2016
215	DYE-M - Upper Site Tier II Disposal Facility, facing northeast (ATT129_Photo129.jpg)	571094.3	7394550.3	11-Aug-2016
216	DYE-M - Upper Site Tier II Disposal Facility, facing southwest (ATT130_Photo130.jpg)	571142.3	7394580.1	11-Aug-2016
217	DYE-M - Upper Site Tier II Disposal Facility, facing northwest (ATT131_Photo131.jpg)	571168.1	7394600.4	11-Aug-2016
218	DYE-M - Upper Site Tier II Disposal Facility, facing south (ATT132_Photo132.jpg)	571123.1	7394652.5	11-Aug-2016
219	DYE-M - Upper Site Tier II Disposal Facility, facing east (ATT133_Photo133.jpg)	571081.9	7394615.6	11-Aug-2016
220	DYE-M - Upper Site Tier II Disposal Facility - northwest slope - Feature B - Self armouring erosion series with every 2-3 m, facing northeast (ATT320_Photo320.jpg)	571069.0	7394653.0	11-Aug-2016
221	DYE-M - Upper Site Tier II Disposal Facility - west crest corner - Feature C - Rough area, facing west (ATT321_Photo321.jpg)	571056.0	7394628.0	11-Aug-2016

Table 4-29: Summary Table of Photographic Log – Upper Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
222	DYE-M - Upper Site Tier II Disposal Facility - southwest slope - Feature D - Sparse vegetation, facing east (ATT323_Photo323.jpg)	571060.0	7394565.0	11-Aug-2016
223	DYE-M - Upper Site Tier II Disposal Facility - southeast slope - Feature E - Self armouring erosion and accumulation of fines, facing northeast (ATT328_Photo328.jpg)	571149.0	7394574.0	11-Aug-2016
224	DYE-M - Upper Site Tier II Disposal Facility - east crest corner - Feature F - Rough area, facing west (ATT325_Photo325.jpg)	571156.0	7394604.0	11-Aug-2016
225	DYE- M - Upper Site Tier II Disposal Facility - Feature G - Tension cracking 3 m above slope, facing southwest (ATT326_Photo326.jpg)	571150.5	7394626.3	11-Aug-2016
226	DYE-M - Upper Site Tier II Disposal Facility - Thermistor sampling - Background thermistor (ATT329_Photo329.jpg)	571144.5	7394472.4	11-Aug-2016
227	DYE-M - Upper Site Tier II Disposal Facility - Thermistor sampling - VT-10 (ATT327_Photo327.jpg)	571118.6	7394612.3	11-Aug-2016
228	DYE-M - Upper Site Tier II Disposal Facility - Thermistor sampling - VT-11 (ATT319_Photo319.jpg)	571132.1	7394659.5	11-Aug-2016
229	DYE-M - Upper Site Tier II Disposal Facility - Thermistor sampling - VT-8 (ATT322_Photo322.jpg)	571052.3	7394620.2	11-Aug-2016
230	DYE-M - Upper Site Tier II Disposal Facility - Thermistor sampling - VT-9 (ATT324_Photo324.jpg)	571086.4	7394562.5	11-Aug-2016
231	DYE-M - Upper Site Tier II Disposal Facility - Water sampling - MW07-22 (ATT138_Photo138.jpg)	571163.8	7394674.9	12-Aug-2016
232	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-22 before excavation (ATT139_Photo139.jpg)	571162.4	7394672.4	12-Aug-2016
233	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-22 after excavation (ATT140_Photo140.jpg)	571162.4	7394672.4	12-Aug-2016
234	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-22 after backfilling (ATT141_Photo141.jpg)	571162.4	7394672.4	12-Aug-2016
235	DYE-M - Upper Site Tier II Disposal Facility - MW07-23 (ATT142_Photo142.jpg)	571119.9	7394527.0	12-Aug-2016
236	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-23 before excavation (ATT143_Photo143.jpg)	571120.0	7394519.8	12-Aug-2016
237	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-23 after excavation (ATT144_Photo144.jpg)	571120.0	7394519.8	12-Aug-2016
238	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW07-23 after backfilling (ATT145_Photo145.jpg)	571120.0	7394519.8	12-Aug-2016
239	DYE-M - Upper Site Tier II Disposal Facility - Water sampling - MW08-24 (ATT146_Photo146.jpg)	571023.3	7394585.5	12-Aug-2016

Table 4-29: Summary Table of Photographic Log – Upper Site Tier II Disposal Facility

Photo	Description (file name)	Easting	Northing	Date
240	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW08-24 before excavation (ATT147_Photo147.jpg)	571021.6	7394581.7	12-Aug-2016
241	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW08-24 after excavation (ATT148_Photo148.jpg)	571021.6	7394581.7	12-Aug-2016
242	DYE-M - Upper Site Tier II Disposal Facility - MW08-24 after backfilling (ATT149_Photo149.jpg)	571021.6	7394581.7	12-Aug-2016
243	DYE-M - Upper Site Tier II Disposal Facility - Water sampling - MW08-25 (ATT150_Photo150.jpg)	571012.8	7394666.5	12-Aug-2016
244	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW08-25 before excavation (ATT151_Photo151.jpg)	571017.5	7394670.1	12-Aug-2016
245	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW08-25 after excavation (ATT152_Photo152.jpg)	571017.5	7394670.1	12-Aug-2016
246	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW08-25 after backfilling (ATT153_Photo153.jpg)	571017.5	7394670.1	12-Aug-2016
247	DYE-M - Upper Site Tier II Disposal Facility - Water sampling - MW12-02 (ATT154_Photo154.jpg)	571094.1	7394704.7	12-Aug-2016
248	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW12-02 before excavation (ATT155_Photo155.jpg)	571095.8	7394705.6	12-Aug-2016
249	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW12-02 after excavation (ATT156_Photo156.jpg)	571095.8	7394705.6	12-Aug-2016
250	DYE-M - Upper Site Tier II Disposal Facility - Soil sampling - MW12-02 after backfilling (ATT157_Photo157.jpg)	571095.8	7394705.6	12-Aug-2016

4.7.3 Thermal Monitoring

Thermistor dataloggers VT-8, VT-9, VT-10, VT-11 and VT-BU located at the Upper Site Tier II Disposal Facility were downloaded using Lakewood Systems Ltd. Prolog software and a laptop computer. Thermistor inspection and data downloading details were recorded on field record sheets included in Appendix B.

4.7.4 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at MW07-22, MW07-23, MW08-24, MW08-25 and MW12-02 could not be collected due to refusal on rock;
- The groundwater sample at MW07-22 could not be collected because the well was dry;
- Groundwater samples at MW08-25 and MW12-02 could not be collected because the groundwater in the wells was frozen; and,
- PHC (F2-F4 fractions) and PCB could not be analyzed from the groundwater sample at MW08-24 due to insufficient recovery of water.

4.7.5 Soil Sampling

Table 4-30 presents a summary of analytical results for soil samples collected at the Upper Site Tier II Disposal Facility. MW07-22 and MW12-02 represent upgradient sampling locations, whereas MW07-23, MW08-24 and MW08-25 represent downgradient sampling locations.

Table 4-30 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site Tier II Disposal Facility, the background arithmetic means for copper, nickel, cobalt and mercury are greater than the baseline arithmetic mean. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

MW07-22

Sampling location MW07-22 is located upgradient of the landfill, approximately 20 m northeast of the toe. The estimated elevation of this sampling point is 648.5 masl. As shown in Photos 232 and 233, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of brown sand, gravel and stone.

For the shallow sample at MW07-22 (0-15 cm), the concentrations of most metals were greater than those observed in previous years; however, no exceedances of the baseline mean concentrations plus 3σ were reported in 2016. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

MW12-02

Sampling location MW12-02 is located upgradient of the landfill, approximately 15 m north of the toe. The estimated elevation of this sampling point is 642.5 masl. As shown in Photos 248 and 249, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at MW12-02 (0-15 cm), the concentration of lead was greater than the concentration reported in 2014; no sample was collected at this location in 2015. The concentrations of all other metals were less than those observed in 2014. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW07-23

Sampling location MW07-23 is located downgradient of the landfill, approximately 12 m south of the toe. The estimated elevation of this sampling point is 638 masl. As shown in Photos 236 and 237, the area consists of sand, gravel and rock and is not vegetated. The soils consisted of grey sand with stone.

For the shallow sample at MW07-23 (0-15 cm), the concentrations of all metals, with the exception of arsenic, were less than or similar to those observed in previous years. The concentration of arsenic (17.3 mg/kg) exceeded the baseline concentration plus 3σ (12.6 mg/kg); arsenic concentrations of 3.3 mg/kg and 17 mg/kg were reported in 2015 and 2014, respectively. None of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No cadmium, mercury, PHC or PCB were detected at this location in 2016.

MW08-24

Sampling location MW08-24 is located downgradient of the landfill, approximately 10 m west of the toe. The estimated elevation of this sampling point is 636 masl. As shown in Photos 240 and 241, the area consists of sand, gravel and rock and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at MW08-24 (0-15 cm), the concentrations of all metals were less than or similar to those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW08-25

Sampling location MW08-25 is located downgradient of the landfill, approximately 22 m north of the toe. The estimated elevation of this sampling point is 635 masl. As shown in Photos 244 and 245, the area consists of sand and gravel with rocks and boulders and is not vegetated. The soils consisted of grey sand with gravel and stone.

The shallow sample at MW08-25 (0-15 cm) exhibited elevated concentrations of some metals. The concentrations of nickel, cobalt, lead and chromium were greater than those observed in previous years; however, no exceedances of the baseline mean concentrations plus 3σ were reported in 2016. The concentration of all other metals were less than or similar to those observed in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-30: Soil Chemical Analysis Results – Upper Site Tier II Disposal Facility

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**43.2**	**83.2**	**18.7**	**1.0**	**18.1**	**76.9**	**114.8**	**3.7**	**0.05**	**0.05**	**10.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		130.1	303.8	40.0	1.0	79.7	214.1	398.4	12.6	0.05	0.085	20.9	15.3	28.0	NA
Upgradient															
MW07-22a	0-15	**99.4**	**97.6**	18.5	<0.5	13.2	**102**	**147**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW07-22 (deep) [1]															
MW12-02a	0-15	20.5	33.3	12.2	<0.5	**29.3**	63.4	70.4	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW12-02 (deep) [1]															
Downgradient															
MW07-23a	0-15	**52.5**	**125**	15.1	<0.5	6.2	27.9	63.2	**17.3**	<0.1	<0.05	<7	<4	<8	<6
MW07-23 (deep) [1]															
MW08-24a	0-15	30.1	38.9	10.9	<0.5	10.1	37.7	57.6	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW08-24 (deep) [1]															
MW08-25a	0-15	**58.6**	**99.5**	**27.9**	<0.5	**42.2**	**111**	**260**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW08-25 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at MW07-22, MW07-23, MW08-24, MW08-25 and MW12-02 could not be collected due to refusal on rock.

4.7.6 Groundwater Sampling

Groundwater sampling and monitoring well inspection field records are included in Appendix B. Table 4-31 presents a summary of groundwater levels and analytical results for groundwater samples collected at the Upper Site Tier II Disposal Facility. The groundwater sample at MW07-22 could not be collected because the well was dry. The groundwater samples at MW08-25 and MW12-02 could not be collected because the groundwater in the wells was frozen.

MW07-23

The depth to groundwater measured at MW07-23 in 2016 was 1.67 m below grade. The concentration of zinc, the only metal detected at MW07-23, was greater than the concentration observed in 2014; no sample was collected at this location in 2015. No PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW08-24

The depth to groundwater measured at MW08-24 in 2016 was 0.84 m below grade. The concentration of nickel was greater than those observed in previous years; the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury or PHC F1 fraction were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ. PHC F2-F4 fractions and PCB could not be analyzed from the groundwater sample at MW08-24 due to insufficient recovery of water.

Table 4-31: Monitoring Well Groundwater Levels and Groundwater Chemical Analysis Results – Upper Site Tier II Disposal Facility

ID	GW Depth BGS (m)	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 (mg/L)	F2 (mg/L)	F3 (mg/L)	F4 (mg/L)
Baseline Mean		**0.005**	**0.005**	**0.003**	**0.001**	**0.010**	**0.78**	**0.34**	**0.003**	**0.0004**	**0.003**	**0.05**	**0.5**	**1.0**	**NA**
Baseline + 3σ		0.13	0.53	0.014	0.001	0.033	6.6	1.1	0.010	0.0004	0.005	0.050	0.5	1.0	NA
Upgradient															
MW07-22 [1]															
MW12-02 [2]															
Downgradient															
MW07-23	1.67	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	0.407	<0.001	<0.001	<0.0001	<0.00010	<0.025	<0.100	<0.100	<0.100
MW08-24	0.84	**0.0166**	**0.04**	0.0023	<0.0001	0.0011	0.143	0.007	<0.001	<0.0001	NA [3]	<0.025	NA [3]	NA [3]	NA [3]
MW08-25 [2]															

Notes:

ID: Monitoring well location ID.

GW: Groundwater.

BGS: Below ground surface.

NA: Not available.

Bold Values: Results exceed Baseline arithmetic mean.

1: The groundwater sample at MW07-22 could not be collected because the well was dry.

2: The groundwater samples at MW08-25 and MW12-02 could not be collected because the groundwater in the wells was frozen.

3: PHC (F2-F4 fractions) and PCB could not be analyzed from the groundwater sample at MW08-24 due to insufficient recovery of water.

4.7.7 Conclusions and Overall Performance of the Upper Site Tier II Disposal Facility

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site Tier II Disposal Facility. Some self-armouring erosion along the slopes of the landfill and minor tension cracks were observed. The overall stability performance of this landfill was assessed as Acceptable.

Deep samples could not be collected at any of the five designated locations in 2016 as a result of refusal (on boulders). The concentrations of the metals were highest overall at the sample location MW07-22, located upgradient of the northeast side of the landfill, and at MW08-25, located downgradient of the northwest side of the landfill. At MW07-22, the concentrations of most metals were greater than those observed in previous years. At the remaining sampling locations, some metal concentrations were greater than those observed in previous years (i.e., lead at MW12-02, arsenic at MW07-23 and nickel, cobalt, lead and chromium at MW08-25); however, the concentrations of most metals were less than those reported in previous years. The concentration of arsenic at MW07-23 (17.3 mg/kg) exceeded the baseline concentration plus 3σ (12.6 mg/kg) but was similar to the concentration of 17 mg/kg reported at this location in 2014. None of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. No detectable concentrations of cadmium, mercury, PHC or PCB were noted in any of the soil samples in 2016.

In 2016, groundwater samples were collected from two of the five monitoring wells adjacent to the landfill. The groundwater sample at MW07-22 could not be collected because the well was dry. The groundwater samples at MW08-25 and MW12-02 could not be collected because the groundwater in the wells was frozen. The concentrations of most metals were highest at downgradient monitoring location MW08-24. The concentration of nickel at MW08-24 was greater than those observed in previous years, whereas the concentration of all other metals were less than or similar to previous years. The concentration of zinc, the only metal detected at MW07-23, was greater than the concentration observed in 2014. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the groundwater samples in 2016.

Overall, it was noted that metals concentrations for a number of the soil sampling results (e.g. MW07-22 and MW08-25) were greater than in previous monitoring sessions; these concentrations remain below the baseline mean concentration plus 3σ and fewer than seven samples have been collected for trend confirmation.

4.7.8 Recommendations for Upper Site Tier II Disposal Facility

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the observed increases in 2016 relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

4.8 Upper Site West Landfill – West Lobe, Centre Lobe and East Lobe

4.8.1 Landfill Description

The Upper Site West Landfill is located 800 m west of the Station Area on the north side of the access road. The Upper Site West Landfill was created during DEW Line operations. The surface of the landfill was covered with additional sand and gravel cover material. Vegetative cover on the surface and in the surrounding area is sparse (ESG 2002b). The remediation of this landfill consisted of the complete excavation of certain areas and the regrading of the remainder of the landfill between 2008 and 2012. Additional work was also completed in 2013. The area of the West lobe is approximately 29,000 m^2 and the area of the Centre and East Lobes are about 32,000 m^2. Approximate soil sampling locations are provided in Figure DYE-M.8 (West Lobe) and Figure DYE-M.9 (Centre and East Lobes).

Monitoring locations DM-50 and DM-51 overlap between the Upper Site West Landfill and the Upper Site Pallet Line Landfill. Results from these monitoring locations were used in the evaluation of both landfills. Given the number of lobes associated with this area, particular focus should be given only to results which exceed the three standard deviations from baseline means and consideration of the need to collect seven samples should be included in the interpretation of results at this stage.

LEGEND:

- EROSION (NTS)
- SEEPAGE / PONDING/RUNNING WATER (NTS)
- CRACKING (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- MONITORING WELL LOCATION
- REGRADED RIP RAP
- GROUND SURFACE CONTOUR

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,250 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
WEST LANDFILL - WEST LOBE

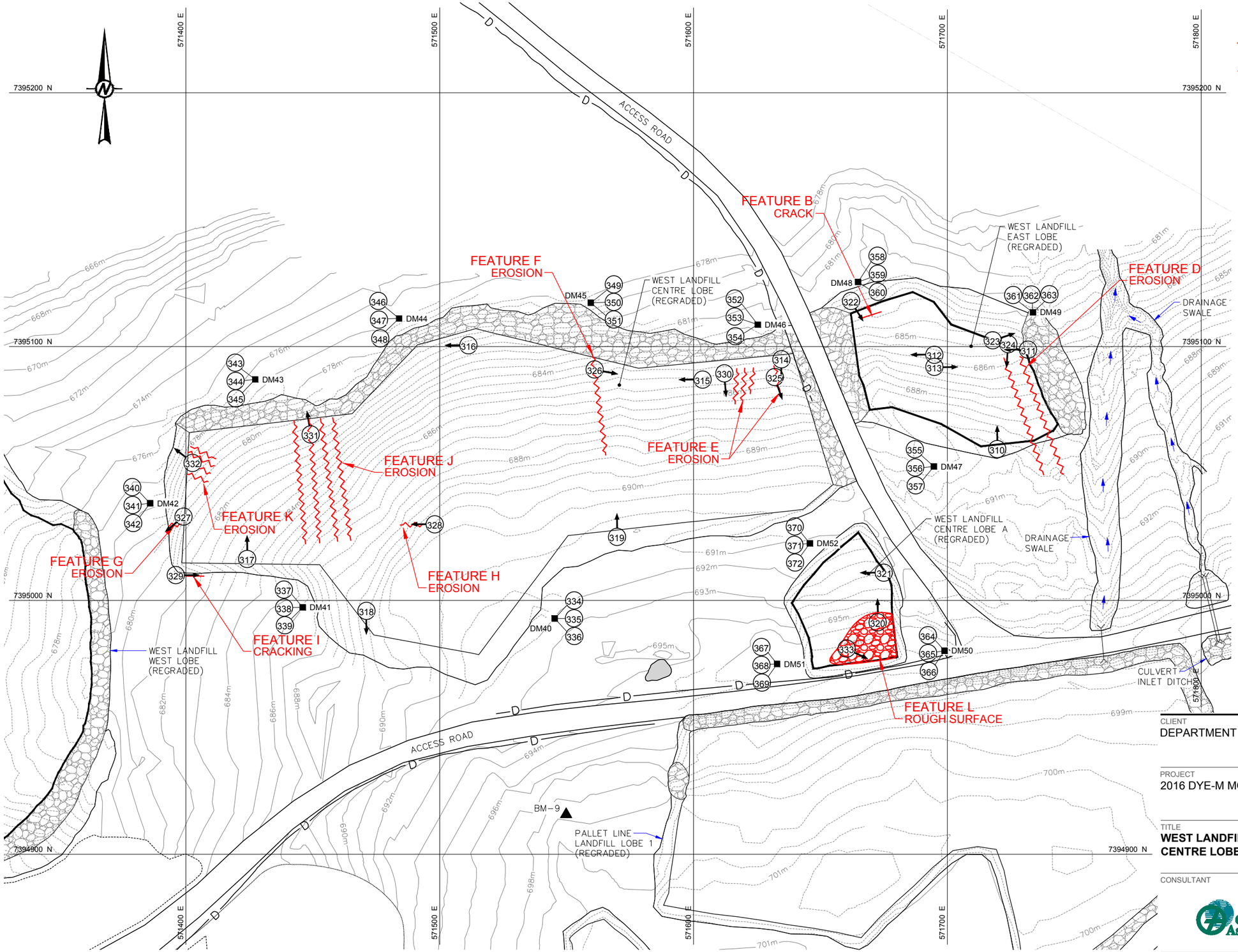
CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.8

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2016\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0019.dwg



LEGEND:

- CRACKING (NTS)
- EROSION (NTS)
- ROUGH SURFACE (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- BODY OF WATER
- MONITORING WELL LOCATION
- PERMANENT BENCHMARK LOCATION
- REGRADED RIP RAP
- GROUND SURFACE CONTOUR
- DRAINAGE

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,500 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
WEST LANDFILL
CENTRE LOBE, CENTRE LOBE A AND EAST LOBE

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.9

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\10009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0020.dwg

4.8.2 Visual Inspection

The Upper Site West Landfill (West, Centre and East Lobes) exhibited a number of locations with erosion, cracking and ponded water features. Table 4-32 (West Lobe) and Table 4-33 (Centre and East Lobes) present a summary of observed visual inspection features and Table 4-34 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-35 is a log of photographs taken during the 2016 visual inspection.

Visual inspection of the West Lobe observed erosion features are similar to previous inspection in 2015; one new area of erosion was noted in 2016 (Feature L on Figure DYE.M-8) on the cover surface. The isolated running water and erosion feature along the southwest toe beyond the West Lobe riprap was observed again in 2016 (Feature C on Figure DYE.M-8). Three minor tension cracks were noted in 2016 (Features I, J and K on Figure DYE.M-8). The observed features do not appear to be impacting the stability of the Upper Site West Landfill (West Lobe). Feature B has not been assigned to this landfill.

Previously observed minor tension cracking was observed along the north edge of the East Lobe (Feature B on Figure DYE.M-9) and southwest end of the Centre Lobe (Feature I on Figure DYE.M-9). No new tension cracks were observed in 2016. Some new self-armouring erosion (Features J and K on Figure DYE.M-9) was also observed on the cover of the Centre Lobe. Previously observed self-armouring erosion (Features E, F, G and H on Figure DYE.M-9) was observed again on the cover surface and slopes of the Centre Lobe and is relatively unchanged since 2015. Previously observed self-armouring erosion (Feature D on Figure DYE.M-9) was observed again on the cover surface of the East Lobe and is relatively unchanged since 2015. The observed features do not appear to be impacting the stability of the Upper Site West Landfill (Centre and East Lobes). Note Features A and C have not been assigned to this landfill.

Table 4-32: Visual Inspection Checklist – Upper Site West Landfill (West Lobe)

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site West Landfill (West Lobe)
DATE OF INSPECTION: August 11, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-32: Visual Inspection Checklist – Upper Site West Landfill (West Lobe)

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	A	Cover surface west end	571115	7394939	20	15	0.1	1.0%	Minor erosion area, some self-armouring erosion (Acceptable)	Unchanged since previous observation	272
		D	Cover surface near southwest slope	571332	7394920	20	5	0.1-0.2	0.35%	Self-armouring erosion (Acceptable)	Unchanged since previous observation	274
		E	Southwest slope	571300	7394928	10	0.3	0.2	0.01%	Small erosion channel (Acceptable)	Unchanged since previous observation	275
		F	North toe	571196	7395016	5	5	0.1-0.2	0.09%	Some erosion at toe (Acceptable)	Unchanged since previous observation	276
		G	Cover surface	571159	7394987	12	0.3	0.1-0.2	0.01%	Some minor self-armouring erosion (Acceptable)	Unchanged since previous observation	277
		H	South slope	571203	7394926	16	2.5	0.1-0.2	0.14%	Self-armouring erosion (Acceptable)	Unchanged since previous observation	278
		L	Cover surface	571217	7395004	15	1	0.1	0.05%	Series of self-armouring erosion channels (Acceptable)	New	282
Lateral Movement	N											
Frost Action	N											
Sloughing	N											

Table 4-32: Visual Inspection Checklist – Upper Site West Landfill (West Lobe)

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Cracking	Y	I	Cover surface	571349	7394978	15.0	0.1	-	<0.01%	Cracking on surface of landfill (Acceptable)	New	279
		J	South slope	571287	7394972	2.0	0.01	-	<0.01%	Tension cracking (Acceptable)	New	280
		K	Crest of south slope	571280	7394977	4.0	0.1	-	<0.01	Weathered tension cracking (Acceptable)	New	281
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	Y	C	Southwest	571356	7394922	15	0.2	-	0.01%	Running water and erosion along toe beyond riprap (Acceptable)	Unchanged since previous observation	273
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	N											

Landfill Area = 29,000 m^2.

Table 4-33: Visual Inspection Checklist – Upper Site West Landfill (Centre and East Lobes)

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site West Landfill (Centre and East Lobes)
DATE OF INSPECTION: August 11, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-33: Visual Inspection Checklist – Upper Site West Landfill (Centre and East Lobes)

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	D	East slope	571724	7395101	50	10	-	1.6%	Self-armouring erosion with fines washing out downslope (Acceptable)	Previously observed, unchanged	324
		E	North slope	571632	7395088	15	5	0.1	0.2%	Self-armouring erosion (Acceptable)	Previously observed, unchanged	325
		F	North slope	571561	7395091	40	0.5	0.05	0.1%	Self-armouring erosion transporting fines down slope (Acceptable)	Previously observed, unchanged	326
		G	West slope	571399	7395033	10	5	-	0.2%	Self-armouring erosion (Acceptable)	Previously observed, unchanged	327
		H	Cover surface	571498	7395030	10	3	-	0.1%	Minor self-armouring erosion (Acceptable)	Previously observed, unchanged	328
		J	Cover surface	571449	7395065	50.0	20.0	-	3.1%	Self-armouring erosion transporting fines down slope (Acceptable)	New	331
		K	Cover surface	571402	7395054	10.0	5.0	-	0.15%	Self-armouring erosion transporting fines down slope (Acceptable)	New	332
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	B	North slope	571662	7395118	10	0.1	0.05	<0.01%	Tension cracks (Acceptable)	Previously observed, unchanged	322
		I	Southwest corner	571396	7395010	2	0.1	0.05	<0.01%	Thaw creep cracks at SW corner (Acceptable)	Previously observed, unchanged	329

Table 4-33: Visual Inspection Checklist – Upper Site West Landfill (Centre and East Lobes)

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	Y	L	West Lobe, cover surface	571660	7394981	50.0	30.0	-	4.6%	Rough, uneven surface. (Acceptable)	New	333

Landfill Area = 32,000 m^2.

Table 4-34: Preliminary Stability Assessment – Upper Site West Landfill (West, Centre and East Lobes)

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Not Observed	-
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Acceptable	Isolated
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
251	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT117_Photo117.jpg)	571358.5	7395025.2	11-Aug-2016
252	DYE-M - Upper Site West Landfill (West Lobe), facing west (ATT118_Photo118.jpg)	571359.1	7394992.5	11-Aug-2016
253	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT119_Photo119.jpg)	571356.3	7394944.7	11-Aug-2016
254	DYE-M - Upper Site West Landfill (West Lobe), facing north (ATT120_Photo120.jpg)	571307.1	7394910.4	11-Aug-2016
255	DYE-M - Upper Site West Landfill (West Lobe), facing east (ATT121_Photo121.jpg)	571294.5	7394946.0	11-Aug-2016
256	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT122_Photo122.jpg)	571248.8	7394954.7	11-Aug-2016
257	DYE-M - Upper Site West Landfill (West Lobe), facing west (ATT123_Photo123.jpg)	571246.5	7394911.8	11-Aug-2016
258	DYE-M - Upper Site West Landfill (West Lobe), facing north (ATT124_Photo124.jpg)	571214.1	7394951.3	11-Aug-2016
259	DYE-M - Upper Site West Landfill (West Lobe), facing north (ATT134_Photo134.jpg)	571116.0	7394935.3	11-Aug-2016
260	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT135_Photo135.jpg)	571090.9	7394959.3	11-Aug-2016
261	DYE-M - Upper Site West Landfill (West Lobe), facing east (ATT136_Photo136.jpg)	571092.3	7394961.0	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
262	DYE-M - Upper Site West Landfill (West Lobe), facing northeast (ATT137_Photo137.jpg)	571117.7	7394971.6	11-Aug-2016
263	DYE-M - Upper Site West Landfill (West Lobe), facing east (ATT138_Photo138.jpg)	571165.5	7395012.3	11-Aug-2016
264	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT139_Photo139.jpg)	571233.5	7394990.0	11-Aug-2016
265	DYE-M - Upper Site West Landfill (West Lobe), facing east (ATT140_Photo140.jpg)	571259.9	7395015.9	11-Aug-2016
266	DYE-M - Upper Site West Landfill (West Lobe), facing southwest (ATT141_Photo141.jpg)	571270.4	7395056.1	11-Aug-2016
267	DYE-M - Upper Site West Landfill (West Lobe), facing northeast (ATT142_Photo142.jpg)	571282.2	7395065.8	11-Aug-2016
268	DYE-M - Upper Site West Landfill (West Lobe), facing southeast (ATT143_Photo143.jpg)	571311.2	7395084.1	11-Aug-2016
269	DYE-M - Upper Site West Landfill (West Lobe), facing southwest (ATT144_Photo144.jpg)	571324.5	7395033.2	11-Aug-2016
270	DYE-M - Upper Site West Landfill (West Lobe), facing south (ATT145_Photo145.jpg)	571306.1	7395008.6	11-Aug-2016
271	DYE-M - Upper Site West Landfill (West Lobe), facing north (ATT146_Photo146.jpg)	571314.2	7394974.9	11-Aug-2016
272	DYE-M - Upper Site West Landfill (West Lobe) - Cover surface west end - Feature A - Minor self-armouring erosion, facing southwest (ATT330_Photo330.jpg)	571115.0	7394939.0	11-Aug-2016
273	DYE-M - Upper Site West Landfill (West Lobe) - southwest - Feature C - Running water and erosion along toe beyond riprap, facing south (ATT313_Photo313.jpg)	571356.0	7394922.0	11-Aug-2016
274	DYE-M - Upper Site West Landfill (West Lobe) - Cover surface near southwest slope - Feature D - Self armouring erosion, facing southwest (ATT314_Photo314.jpg)	571332.0	7394920.0	11-Aug-2016
275	DYE-M - Upper Site West Landfill (West Lobe) - southwest slope - Feature E - Small erosion channel, facing west (ATT315_Photo315.jpg)	571300.0	7394928.0	11-Aug-2016
276	DYE-M - Upper Site West Landfill (West Lobe) - north toe - Feature F - Some erosion at toe, facing west (ATT332_Photo332.jpg)	571196.0	7395016.0	11-Aug-2016
277	DYE-M - Upper Site West Landfill (West Lobe) - Cover surface - Feature G - Some minor self-armouring erosion (Acceptable), facing west (ATT331_Photo331.jpg)	571159.0	7394987.0	11-Aug-2016
278	DYE-M - Upper Site West Landfill (West Lobe) - south slope - Feature H - Self armouring erosion, facing west (ATT318_Photo318.jpg)	571203.0	7394926.0	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
279	DYE-M - Upper Site West Landfill (West Lobe) - Inspection sampling - Feature I - Cracking on surface of landfill, facing south (ATT312_Photo312.jpg)	571349.9	7394978.5	11-Aug-2016
280	DYE-M - Upper Site West Landfill (West Lobe) - Feature J - Minor tension cracking, facing west (ATT316_Photo316.jpg)	571287.4	7394972.1	11-Aug-2016
281	DYE-M - Upper Site West Landfill (West Lobe) - Inspection sampling - Feature K - Weathered tension cracking, facing west (ATT317_Photo317.jpg)	571280.7	7394977.6	11-Aug-2016
282	DYE-M - Upper Site West Landfill (West Lobe) -Feature L - Series of self-armouring erosion channels, facing south (ATT333_Photo333.jpg)	571217.5	7395004.8	11-Aug-2016
283	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-31 before excavation (ATT103_Photo103.jpg)	571165.6	7394956.5	11-Aug-2016
284	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-31 after excavation (ATT104_Photo104.jpg)	571165.6	7394956.5	11-Aug-2016
285	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-31 after backfilling (ATT105_Photo105.jpg)	571165.6	7394956.5	11-Aug-2016
286	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-32 before excavation (ATT106_Photo106.jpg)	571098.2	7394902.5	11-Aug-2016
287	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-32 after excavation (ATT107_Photo107.jpg)	571098.2	7394902.5	11-Aug-2016
288	DYE-M - Upper Site West Landfill (West Lobe) - DM-32 after backfilling (ATT108_Photo108.jpg)	571098.2	7394902.5	11-Aug-2016
289	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-33 before excavation (ATT109_Photo109.jpg)	571073.3	7394966.7	11-Aug-2016
290	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-33 after excavation (ATT110_Photo110.jpg)	571073.3	7394966.7	11-Aug-2016
291	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-33 after backfilling (ATT111_Photo111.jpg)	571073.3	7394966.7	11-Aug-2016
292	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-34 before excavation (ATT112_Photo112.jpg)	571147.5	7395026.2	11-Aug-2016
293	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-34 after excavation (ATT113_Photo113.jpg)	571147.5	7395026.2	11-Aug-2016
294	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-34 after backfilling (ATT114_Photo114.jpg)	571147.5	7395026.2	11-Aug-2016
295	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-35 before excavation (ATT94_Photo94.jpg)	571366.3	7394934.2	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
296	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-35 after excavation (ATT95_Photo95.jpg)	571366.3	7394934.2	11-Aug-2016
297	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-35 after backfilling (ATT96_Photo96.jpg)	571366.3	7394934.2	11-Aug-2016
298	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-36 before excavation (ATT97_Photo97.jpg)	571278.4	7394935.1	11-Aug-2016
299	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-36 after excavation (ATT98_Photo98.jpg)	571278.4	7394935.1	11-Aug-2016
300	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-36 after backfilling (ATT99_Photo99.jpg)	571278.4	7394935.1	11-Aug-2016
301	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-37 before excavation (ATT100_Photo100.jpg)	571203.5	7394920.8	11-Aug-2016
302	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-37 after excavation (ATT101_Photo101.jpg)	571203.5	7394920.8	11-Aug-2016
303	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-37 after backfilling (ATT102_Photo102.jpg)	571203.5	7394920.8	11-Aug-2016
304	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-38 before excavation (ATT115_Photo115.jpg)	571246.4	7395051.4	11-Aug-2016
305	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-38 after excavation (ATT116_Photo116.jpg)	571246.4	7395051.4	11-Aug-2016
306	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-38 after backfilling (ATT117_Photo117.jpg)	571246.4	7395051.4	11-Aug-2016
307	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-39 before excavation (ATT118_Photo118.jpg)	571358.6	7395041.3	11-Aug-2016
308	DYE-M - Upper Site West Landfill (West Lobe) - Soil sampling - DM-39 after excavation (ATT119_Photo119.jpg)	571358.6	7395041.3	11-Aug-2016
309	DYE-M - Upper Site West Landfill (West Lobe) - DM-39 after backfilling (ATT120_Photo120.jpg)	571358.6	7395041.3	11-Aug-2016
310	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing north (ATT105_Photo105.jpg)	571719.6	7395059.6	11-Aug-2016
311	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing west (ATT106_Photo106.jpg)	571731.7	7395098.8	11-Aug-2016
312	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing west (ATT107_Photo107.jpg)	571694.8	7395096.8	11-Aug-2016
313	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing east (ATT108_Photo108.jpg)	571694.8	7395096.8	11-Aug-2016
314	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing south (ATT109_Photo109.jpg)	571634.6	7395095.0	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
315	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing west (ATT110_Photo110.jpg)	571603.5	7395087.0	11-Aug-2016
316	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing west (ATT111_Photo111.jpg)	571511.3	7395100.5	11-Aug-2016
317	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing north (ATT112_Photo112.jpg)	571424.1	7395016.3	11-Aug-2016
318	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing south (ATT113_Photo113.jpg)	571471.1	7394995.9	11-Aug-2016
319	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing north (ATT114_Photo114.jpg)	571569.8	7395025.0	11-Aug-2016
320	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing north (ATT115_Photo115.jpg)	571672.5	7394991.4	11-Aug-2016
321	DYE-M - Upper Site West Landfill (Centre and East Lobes), facing west (ATT116_Photo116.jpg)	571674.9	7395010.9	11-Aug-2016
322	DYE-M - Upper Site West Landfill (Centre and East Lobes) - north slope - Feature B - Weathered tension cracks, facing south (ATT302_Photo302.jpg)	571662.0	7395118.0	11-Aug-2016
323	DYE-M - Upper Site West Landfill (Centre and East Lobes) - east slope - Feature D - Self armouring erosion with fines washing downslope, facing east (Acceptable) (ATT300_Photo300.jpg)	571724.0	7395101.0	11-Aug-2016
324	DYE-M - Upper Site West Landfill (Centre and East Lobes) - east slope - Feature D - Self armouring erosion with fines washing downslope, facing south (Acceptable) (ATT301_Photo301.jpg)	571724.0	7395101.0	11-Aug-2016
325	DYE-M - Upper Site West Landfill (Centre and East Lobes) - north slope - Feature E - Self armouring erosion, facing south (ATT303_Photo303.jpg)	571632.0	7395088.0	11-Aug-2016
326	DYE-M - Upper Site West Landfill (Centre and East Lobes) - north slope - Feature F - Self armouring erosion transporting fines down slope, facing east (Acceptable) (ATT305_Photo305.jpg)	571561.0	7395091.0	11-Aug-2016
327	DYE-M - Upper Site West Landfill (Centre and East Lobes) - west slope - Feature G - Self-armouring erosion (ATT308_Photo308.jpg), facing west	571399.0	7395033.0	11-Aug-2016
328	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Cover surface - Feature H - Minor self-armouring erosion, facing west (Acceptable) (ATT310_Photo310.jpg)	571498.0	7395030.0	11-Aug-2016
329	DYE-M - Upper Site West Landfill (Centre and East Lobes) - southwest corner - Feature I - Thaw creep cracks at SW corner, facing east (Acceptable) (ATT309_Photo309.jpg)	571396.0	7395010.0	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
330	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Feature E - Area of self-armouring erosion with accumulation of fines, facing south (ATT304_Photo304.jpg)	571612.1	7395089.5	11-Aug-2016
331	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Feature J - Area of self-armouring erosion with accumulation of fines, facing north (ATT306_Photo306.jpg)	571449.1	7395065.4	11-Aug-2016
332	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Feature K - Area of self-armouring erosion, accumulation of fines at toe of slope, facing northwest (ATT307_Photo307.jpg)	571402.6	7395054.2	11-Aug-2016
333	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Feature L - Rough/uneven surface, facing east (ATT311_Photo311.jpg)	571660.3	7394981.0	11-Aug-2016
334	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-40 before excavation (ATT91_Photo91.jpg)	571545.3	7394992.9	11-Aug-2016
335	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-40 after excavation (ATT92_Photo92.jpg)	571545.3	7394992.9	11-Aug-2016
336	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-40 after backfilling (ATT93_Photo93.jpg)	571545.3	7394992.9	11-Aug-2016
337	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-41 before excavation (ATT88_Photo88.jpg)	571446.0	7394997.3	11-Aug-2016
338	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-41 after excavation (ATT89_Photo89.jpg)	571446.0	7394997.3	11-Aug-2016
339	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-41 after backfilling (ATT90_Photo90.jpg)	571446.0	7394997.3	11-Aug-2016
340	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-42 before excavation (ATT85_Photo85.jpg)	571385.9	7395038.3	11-Aug-2016
341	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-42 after excavation (ATT86_Photo86.jpg)	571385.9	7395038.3	11-Aug-2016
342	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-42 after backfilling (ATT87_Photo87.jpg)	571385.9	7395038.3	11-Aug-2016
343	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-43 before excavation (ATT82_Photo82.jpg)	571427.3	7395087.1	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
344	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-43 after excavation (ATT83_Photo83.jpg)	571427.3	7395087.1	11-Aug-2016
345	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-43 after backfilling (ATT84_Photo84.jpg)	571427.3	7395087.1	11-Aug-2016
346	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-44 before excavation (ATT79_Photo79.jpg)	571484.0	7395111.1	11-Aug-2016
347	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-44 after excavation (ATT80_Photo80.jpg)	571484.0	7395111.1	11-Aug-2016
348	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-44 after backfilling (ATT81_Photo81.jpg)	571484.0	7395111.1	11-Aug-2016
349	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-45 before excavation (ATT76_Photo76.jpg)	571559.5	7395117.3	11-Aug-2016
350	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-45 after excavation (ATT77_Photo77.jpg)	571559.5	7395117.3	11-Aug-2016
351	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-45 after backfilling (ATT78_Photo78.jpg)	571559.5	7395117.3	11-Aug-2016
352	DYE-M - Upper Site West Landfill (Centre and East Lobes) - DM-46 before excavation (ATT73_Photo73.jpg)	571625.3	7395108.7	11-Aug-2016
353	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-46 after excavation (ATT74_Photo74.jpg)	571625.3	7395108.7	11-Aug-2016
354	DYE-M - Upper Site West Landfill (Centre and East Lobes) - DM-46 after backfilling (ATT75_Photo75.jpg)	571625.3	7395108.7	11-Aug-2016
355	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-47 before excavation (ATT64_Photo64.jpg)	571694.7	7395052.8	11-Aug-2016
356	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-47 after excavation (ATT65_Photo65.jpg)	571694.7	7395052.8	11-Aug-2016
357	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-47 after backfilling (ATT66_Photo66.jpg)	571694.7	7395052.8	11-Aug-2016
358	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-48 before excavation (ATT70_Photo70.jpg)	571664.8	7395125.5	11-Aug-2016

Table 4-35: Summary Table of Photographic Log – Upper Site West Landfill (West, Centre and East Lobes)

Photo	Description (file name)	Easting	Northing	Date
359	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-48 after excavation (ATT71_Photo71.jpg)	571664.8	7395125.5	11-Aug-2016
360	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-48 after backfilling (ATT72_Photo72.jpg)	571664.8	7395125.5	11-Aug-2016
361	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-49 before excavation (ATT67_Photo67.jpg)	571733.7	7395113.5	11-Aug-2016
362	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-49 after excavation (ATT68_Photo68.jpg)	571733.7	7395113.5	11-Aug-2016
363	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-49 after backfilling (ATT69_Photo69.jpg)	571733.7	7395113.5	11-Aug-2016
364	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-50 before excavation (ATT55_Photo55.jpg)	571698.9	7394980.2	11-Aug-2016
365	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-50 after excavation (ATT56_Photo56.jpg)	571698.9	7394980.2	11-Aug-2016
366	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-50 after backfilling (ATT57_Photo57.jpg)	571698.9	7394980.2	11-Aug-2016
367	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-51 before excavation (ATT58_Photo58.jpg)	571632.9	7394975.0	11-Aug-2016
368	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-51 after excavation (ATT59_Photo59.jpg)	571632.9	7394975.0	11-Aug-2016
369	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-51 after backfilling (ATT60_Photo60.jpg)	571632.9	7394975.0	11-Aug-2016
370	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-52 before excavation (ATT61_Photo61.jpg)	571645.8	7395022.5	11-Aug-2016
371	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-52 after excavation (ATT62_Photo62.jpg)	571645.8	7395022.5	11-Aug-2016
372	DYE-M - Upper Site West Landfill (Centre and East Lobes) - Soil sampling - DM-52 after backfilling (ATT63_Photo63.jpg)	571645.8	7395022.5	11-Aug-2016

4.8.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-31, DM-32, DM-33, DM-34, DM-35, DM-36, DM-37, DM-38, DM-39, DM-40, DM-41, DM-42, DM-43, DM-44, DM-45, DM-46, DM-47, DM-48, DM-50, DM-51 and DM-52 could not be collected due to refusal on rock.

4.8.4 Soil Sampling

Table 4-36 presents a summary of analytical results for soil samples collected at the Upper Site West Landfill. DM-35, DM-39, DM-40, DM-47, DM-50, DM-51 and DM-52 represent upgradient sampling locations, whereas DM-31, DM-32, DM-33, DM-34, DM-36, DM-37, DM-38, DM-41, DM-42, DM-43, DM-44, DM-45, DM-46, DM-48, and DM-49 represent downgradient sampling locations. It should be noted that while sampling locations DM-50 and DM-51 are considered to be located upgradient of the Upper Site West Landfill, they are also located downgradient of the nearby Upper Site Pallet Line Landfill.

Table 4-36 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site West Landfill, the background arithmetic means for nickel, cobalt and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

DM-35

Sampling location DM-35 is located upgradient of the West Lobe of the landfill, immediately east of the toe, and downgradient of the Centre Lobe. The estimated elevation of this sampling point is 678 masl. As shown in Photos 295 and 296, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-35 (0-15 cm), the concentrations of most metals were less than the concentrations reported in 2014, with the exception of lead and zinc, which were elevated compared to the 2014 results; no sample was collected at this location in 2015. No cadmium, arsenic, mercury PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-39

Sampling location DM-39 is located upgradient of the West Lobe of the landfill, approximately 6 m northeast of the toe, and downgradient of the Centre Lobe. The estimated elevation of this sampling point is 675.5 masl. As shown in Photos 307 and 308, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand, gravel and stone.

For the shallow sample at DM-39 (0-15 cm), the concentrations of all metals, with the exception of lead and cobalt, were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-40

Sampling location DM-40 is located upgradient of the Centre Lobe of the landfill, immediately south of the toe. It is also downgradient of the West Landfill Centre Lobe A. The estimated elevation of this sampling point is

691 masl. As shown in Photos 334 and 335, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-40 (0-15 cm), the concentrations of nickel, cobalt and lead were greater than those observed in previous years, whereas all other metals were less than in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-47

Sampling location DM-47 is located upgradient of the East Lobe of the landfill, approximately 13 m south of the toe. The estimated elevation of this sampling point is 690.5 masl. As shown in Photos 355 and 356, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-47 (0-15 cm), the concentrations of most metals were less than those observed in previous years, with the exception of lead. The PHC F3 fraction (234 mg/kg) concentration slightly exceeded the baseline mean concentration plus 3σ (217 mg/kg), however, the modified TPH concentration (338 mg/kg) remained well below the baseline mean concentration plus 3σ (1,208 mg/kg); none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. Modified TPH concentrations of 2,144 mg/kg and 3,316 mg/kg were reported in 2014 and 2015, respectively. PHC F4 fraction was reported in 2016 at a concentration of 30 mg/kg. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

DM-50

Sampling location DM-50 is located upgradient of Centre Lobe A of the landfill, approximately 12 m east of the toe. This location is also in the area of the Pallet Line landfill. The estimated elevation of this sampling point is 695 masl. As shown in Photos 364 and 365, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-50 (0-15 cm), the concentration of all metals were less than or similar to those reported in previous years, with the exception of cobalt. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-51

Sampling location DM-51 is located upgradient of Centre Lobe A of the landfill, approximately 20 m west of the toe. This location is also in the area of the Pallet Line landfill. The estimated elevation of this sampling point is 695 masl. As shown in Photos 367 and 368, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-51 (0-15 cm), the concentrations of copper and chromium were slightly greater than those in previous years, whereas the concentrations of all other metals were less than or similar to previous years. PHC were detected for the first time; the modified TPH concentration (215 mg/kg) remained well below the baseline mean concentration plus 3σ (1208 mg/kg). PHC F4 fraction was reported in 2016 at a concentration of 87 mg/kg. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-52

Sampling location DM-52 is located upgradient of Centre Lobe of the landfill, approximately 10 m south of the toe and 10 m north of the toe of Centre Lobe A. This location is downgradient of Centre Lobe A. The estimated elevation of this sampling point is 691 masl. As shown in Photos 370 and 371, the area is largely covered with sand and rocks is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-52 (0-15 cm), the concentration of nickel (209 mg/kg) slightly exceeded the baseline mean concentration plus 3σ (203 mg/kg) but is lower than the concentration observed in 2014 (290 mg/kg). The concentrations of other metals were similar to those reported to in previous years; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. PHC were detected for the first time, however, the modified TPH concentration remained below the baseline mean concentration. PHC F4 fraction was reported in 2016 at a concentration of 21 mg/kg. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

DM-31

Sampling location DM-31 is located downgradient of the West Lobe of the landfill, approximately 10 m south of the toe. The estimated elevation of this sampling point is 660.5 masl. As shown in Photos 283 and 284, the area is largely covered with sand, gravel and some rock and is not vegetated. The soils consisted of grey sand, gravel and stone.

For the shallow sample at DM-31 (0-15 cm), the concentrations of nickel and cobalt were slightly greater than those reported in previous years, whereas the concentrations of all other metals were similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected from at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-32

Sampling location DM-32 is located downgradient of the West Lobe of the landfill, approximately 8 m southwest of the toe. The estimated elevation of this sampling point is 651 masl. As shown in Photos 286 and 287, the area is covered with gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-32 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected from at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-33

Sampling location DM-33 is located downgradient of the West Lobe of the landfill, approximately 10 m west of the toe. The estimated elevation of this sampling point is 652 masl. As shown in Photos 289 and 290, the area is covered with gravel and rock and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-33 (0-15 cm, duplicate location), the average concentration of nickel was greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. The RPD values for the duplicate pair collected at this location indicated the sample results differ by more than 30% for some of the observed metals (i.e., copper and zinc) and were typically higher in the duplicate sample; these results should therefore be interpreted with caution. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-34

Sampling location DM-34 is located downgradient of the West Lobe of the landfill, approximately 6 m north of the toe. The estimated elevation of this sampling point is 660 masl. As shown in Photos 292 and 293, the area is largely covered with sand, rock and boulders is not vegetated. The soils consisted of reddish-brown sand with some gravel and stone.

For the shallow sample at DM-34 (0-15 cm), the concentrations of nickeland chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-36

Sampling location DM-36 is located downgradient of the West Lobe of the landfill, approximately 6 m west of the southerly part of the toe. The estimated elevation of this sampling point is 669 masl. As shown in Photos 298 and 299, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-36 (0-15 cm), the concentrations of all metals were less than or similar to those reported in 2014, with the exception of nickel and cobalt; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-37

Sampling location DM-37 is located downgradient of the West Lobe of the landfill, immediately west of the southerly part of the toe. The estimated elevation of this sampling point is 662 masl. As shown in Photos 301 and 302, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-37 (0-15 cm), the concentrations of copper, nickel and zinc were slightly greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-38

Sampling location DM-38 is located downgradient of the north part of the West Lobe of the landfill, approximately 6 m north of the toe. The estimated elevation of this sampling point is 662 masl. As shown in Photos 304 and 305, the area is largely covered with sand, rock and boulders is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-38 (0-15 cm), the concentration of lead (58.2 mg/kg) marginally exceeded the baseline mean concentration plus 3σ (57 mg/kg) but was less than concentrations observed in previous years; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. Similarly, the concentrations of all metals were less than or similar to those reported in previous years. The modified TPH concentration observed in 2016 (34 mg/kg) was less than the concentration reported in 2015 (89 mg/kg). The concentration of the PHC F4 fraction was 35 mg/kg in 2016. No cadmium, arsenic, mercury, PCB were detected at this location in 2016.

DM-41

Sampling location DM-41 is located downgradient of the Centre Lobe of the landfill, approximately 8 m southwest of the toe. The estimated elevation of this sampling point is 686 masl. As shown in Photos 337 and 338, the area is covered with sand, gravel and rock and is not vegetated. The soils consisted of grey sand with some stone.

For the shallow sample at DM-41 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. The PHC F3 fraction concentration (295 mg/kg) exceeded the baseline mean concentration plus 3σ (217 mg/kg), however, the modified TPH concentration (353 mg/kg) remained well below the baseline mean concentration plus 3σ (1,208 mg/kg); none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. A modified TPH concentration of 49 mg/kg was reported in 2015, whereas no PHC were detected in 2014. No cadmium, arsenic, mercuryor PCB were detected at this location in 2016.

DM-42

Sampling location DM-42 is located downgradient of the Centre Lobe of the landfill, approximately 3 m west of the toe. The estimated elevation of this sampling point is 676.5 masl. As shown in Photos 340 and 341, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-42 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-43

Sampling location DM-43 is located downgradient of the West Lobe of the landfill, approximately 6 m north of the toe. The estimated elevation of this sampling point is 676 masl. As shown in Photos 343 and 344, the area is covered with sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-43 (0-15 cm) the concentrations of all metals were less than or similar to those reported in previous years, with the exception of copper. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-44

Sampling location DM-44 is located downgradient of the Centre Lobe of the landfill, approximately 3 m north of the toe. The estimated elevation of this sampling point is 676.5 masl. As shown in Photos 346 and 347, the area is covered with sand, gravel and rock and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-44 (0-15 cm), the concentrations of nickel and cobalt were elevated compared to previous results. The concentrations of all other metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-45

Sampling location DM-45 is located downgradient of the Centre Lobe of the landfill, immediately north of the toe. The estimated elevation of this sampling point is 678 masl. As shown in Photos 349 and 350, the area consists of sand, gravel and rocks and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-45 (0-15 cm), the concentration of cobalt (37.1 mg/kg) marginally exceeded the baseline mean concentration plus 3σ (36.9 mg/kg); none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. The concentrations of all detected metals were greater than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

DM-46

Sampling location DM-46 is located downgradient of the Centre Lobe of the landfill, approximately 8 m north of the toe. The estimated elevation of this sampling point is 681.5 masl. As shown in Photos 352 and 353, the area is covered with sand, gravel and rock and is not vegetated. The soils consisted of reddish-brown sand with some gravel and stone.

For the shallow sample at DM-46 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic or mercury were detected at this location in 2016. The modified TPH concentration observed in (97 mg/kg) was greater than the concentration reported in 2014 (23 mg/kg) but remained below the baseline mean concentration (138 mg/kg). The concentration of the PHC F4 fraction was 15 mg/kg in 2016. PCB (0.45 mg/kg) were detected at this location for the first time. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-48

Sampling location DM-48 is located downgradient of the East Lobe of the landfill, immediately northeast of the toe at the northwest corner. The estimated elevation of this sampling point is 681.5 masl. As shown in Photos 358 and 359, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of reddish-brown sand with some gravel and stone.

For the shallow sample at DM-48 (0-15 cm), the concentrations of nickel (223 mg/kg) and arsenic (11.9 mg/kg) exceeded their baseline mean concentrations plus 3σ (203 mg/kg and 8.3 mg/kg, respectively) but were less than concentrations observed in previous years; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. Similarly, the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, mercury, PHC or PCB were detected at this location in 2016.

DM-49

Sampling location DM-49 is located downgradient of the East Lobe of the landfill, immediately north of the toe. The estimated elevation of this sampling point is 682 masl. As shown in Photos 361 and 362, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-49 (0-15 cm, duplicate location), the concentrations of all metals were less than or similar to those reported in previous years. The RPD values for the sample pair collected at this location indicated the original and duplicate results differ by greater than 30% for zinc and these results should therefore be interpreted with caution. No cadmium, mercury, PHC or PCB were detected at this location in 2016. None of the

reported values exceeded their respective baseline mean concentrations plus 3σ. Modified TPH concentrations of 249 mg/kg and 143 mg/kg were reported in 2014 and 2015, respectively.

The deep sample at DM-49 (40-50 cm) exhibited lower metals concentrations than those in the shallow sample. The concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ. A modified TPH concentration of 131 mg/kg was reported in 2015.

Table 4-36: Soil Chemical Analysis Results – Upper Site West Landfill (West, Centre and East Lobes)

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**67.5**	**60.9**	**16.3**	**1.0**	**10.0**	**115.3**	**133.2**	**1.3**	**0.1**	**0.1**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		156.7	203.4	36.9	2.2	56.8	254.0	309.6	8.3	0.12	0.46	46.2	263.7	217.1	NA
Upgradient															
DM-35a	0-15	29.4	**75.1**	14.2	<0.5	**14.2**	55.6	48	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-35 (deep) [1]															
DM-39a	0-15	**73.5**	36.2	11.5	<0.5	**23.3**	**136**	133	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-39 (deep) [1]															
DM-40a	0-15	**91.7**	**79.1**	**18.2**	<0.5	**12.3**	113	**153**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-40 (deep) [1]															
DM-47a	0-15	**87.1**	**71.6**	**16.9**	<0.5	**18.3**	**123**	**173**	<1.0	<0.1	<0.05	<7	**100**	**234**	30
DM-47 (deep) [1]															
DM-50a	0-15	**82.6**	**68**	14.4	<0.5	**16.9**	80.9	**186**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-50 (deep) [1]															
DM-51a	0-15	52.2	56	12.3	<0.5	**23.4**	84.8	112	<1.0	<0.1	<0.05	<7	<4	**209**	87
DM-51 (deep) [1]															
DM-52a	0-15	**70**	**209**	**34.3**	<0.5	7.9	44.6	43.6	<1.0	<0.1	<0.05	<7	<4	**75**	21
DM-52 (deep) [1]															
Downgradient															
DM-31a	0-15	64.7	35	11.9	<0.5	**11.2**	**124**	**149**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-31 (deep) [1]															
DM-32a	0-15	**85.3**	39.5	11.8	<0.5	**11.1**	105	**172**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-32 (deep) [1]															
DM-33a	0-15	16.0	57.2	11.6	<0.5	4.0	31.9	46.8	<1.0	<0.1	<0.05	<7	<4	<8	<6

Table 4-36: Soil Chemical Analysis Results – Upper Site West Landfill (West, Centre and East Lobes)

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**67.5**	**60.9**	**16.3**	**1.0**	**10.0**	**115.3**	**133.2**	**1.3**	**0.1**	**0.1**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		156.7	203.4	36.9	2.2	56.8	254.0	309.6	8.3	0.12	0.46	46.2	263.7	217.1	NA
DM-33a dup	0-15	22	**74**	14.9	<0.5	3	53	55	<1	<0.10	<0.05	<5	<10	<50	<50
DM-33a (Dup Avg)	0-15	19	**66**	13	<0.5	4	42	51	<1.0	<0.1	<0.05	<6	<7	<29	<28
DM-33 (deep) [1]															
DM-34a	0-15	21.3	**63.8**	12	<0.5	8.5	44.8	46.5	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-34 (deep) [1]															
DM-36a	0-15	**76.1**	50.7	13.6	<0.5	**13**	91.4	**139**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-36 (deep) [1]															
DM-37a	0-15	63.9	38	12	<0.5	8.4	108	122	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-37 (deep) [1]															
DM-38a	0-15	**89.9**	47.1	13	<0.5	**58.2**	**129**	81.9	<1.0	<0.1	<0.05	<7	<4	**28**	35
DM-38 (deep) [1]															
DM-41a	0-15	64.9	39.4	10.8	<0.5	**17.1**	111	**135**	<1.0	<0.1	<0.05	<7	**54**	**295**	<6
DM-41 (deep) [1]															
DM-42a	0-15	60.1	53.5	**16.9**	<0.5	8.1	110	**150**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-42 (deep) [1]															
DM-43a	0-15	54.7	44.3	14.9	<0.5	7	70.9	122	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-43 (deep) [1]															
DM-44a	0-15	**79.8**	52.7	14.7	<0.5	8.5	**125**	**161**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-44 (deep) [1]															
DM-45a	0-15	**157**	**129**	**37.1**	<0.5	**12.6**	**166**	**187**	<1.0	<0.1	<0.05	<7	<4	<8	<6

Table 4-36: Soil Chemical Analysis Results – Upper Site West Landfill (West, Centre and East Lobes)

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**67.5**	**60.9**	**16.3**	**1.0**	**10.0**	**115.3**	**133.2**	**1.3**	**0.1**	**0.1**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		156.7	203.4	36.9	2.2	56.8	254.0	309.6	8.3	0.12	0.46	46.2	263.7	217.1	NA
DM-45 (deep) [1]															
DM-46a	0-15	**112**	49.4	11.6	<0.5	**16.7**	109	**147**	<1.0	<0.1	**0.45**	<7	<4	**91**	15
DM-46 (deep) [1]															
DM-48a	0-15	**96.6**	**223**	**27.1**	<0.5	**11.3**	**131**	**301**	**11.9**	<0.1	<0.05	<7	<4	<8	<6
DM-48 (deep) [1]															
DM-49b	0-15	**111**	**75.7**	**17.2**	<0.5	**13.9**	**120**	**195**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-49b dup	0-15	**116**	**72**	14.7	<0.5	**12**	**168**	**221**	**3**	<0.10	<0.05	<5	<10	<50	<50
DM-49b (Dup Avg)	0-15	**114**	**74**	16	<0.5	**13**	**144**	**208**	**2**	<0.1	<0.05	<6	<7	<29	<28
DM-49a	30-40	**100**	**70.7**	16	<0.5	**11.8**	108	**172**	<1.0	<0.1	<0.05	<7	<4	<8	<6

Notes:

NA: Not available; ID: Soil sample location ID

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

Shaded Values: Results exceed the Baseline arithmetic mean plus 3σ.

1: The deep soil samples at DM-31, DM-32, DM-33, DM-34, DM-35, DM-36, DM-37, DM-38, DM-39, DM-40, DM-41, DM-42, DM-43, DM-44, DM-45, DM-46, DM-47, DM-48, DM-50, DM-51 and DM-52 could not be collected due to refusal on rock.

4.8.5 Conclusions and Overall Performance of the Upper Site West Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site West Landfill (West, Centre, Centre Lobe A and East Lobes). Self-armouring erosion, minor tension cracks, rough cover surface areas and running water at the toe were observed. The overall stability performance of the Upper Site West Landfill areas was assessed as Acceptable.

Deep soil samples could not be collected at any of the designated locations in 2016, with the exception of DM-49, as a result of refusal (on boulders or bedrock). The concentrations of metals were highest overall at the sample locations DM-45, located downgradient of the Centre Lobe of the landfill, DM-48, located downgradient of the East Lobe of the landfill and DM-49, located downgradient of the East Lobe of the landfill. At DM-45, the concentrations of all detected metals were greater than those reported in previous years and cobalt (37.1 mg/kg) marginally exceeded the baseline mean concentration plus 3σ (36.9 mg/kg). Metals exceedances of the baseline mean concentrations plus 3σ were also observed at DM-38 (lead), DM-48 (nickel and arsenic) and DM-52 (nickel), however concentrations observed in 2016 were less than in previous years. At the majority of the other sampling locations, the concentrations of metals were less than or similar to the concentrations reported in previous years. No cadmium or mercury were detected in any of the samples in 2016.

Detectable concentrations of PHC were noted at DM-38, DM-41, DM-46, DM-47, DM-51 and DM-52, at modified TPH concentrations ranging from 16 mg/kg to 353 mg/kg. The concentrations of modified TPH were highest in the sample at DM-41, however all concentrations remained well below the baseline mean concentration plus 3σ (1,208 mg/kg). PCB (0.45 mg/kg) were detected at DM-46 for the first time. No detectable concentrations of PHC or PCB were noted in any of the other samples in 2016.

Overall, it was noted that concentrations of metals at the landfill lobes making up the West Landfill were highest to the north of the Centre and West Lobes. Similarly, the locations where soil sample results for one or more parameters exceeded baseline mean concentration plus 3σ are located in this general area and to the south, towards the Centre Lobe A. It is further noted that the observed exceedances were not consistent for one parameter or a group of parameters, suggesting that pre-existing conditions may be responsible for the observed variation. Collection of a larger dataset of results is required to assess changes to soil quality in this area resulting from the landfill.

4.8.6 Recommendations for Upper Site West Landfill

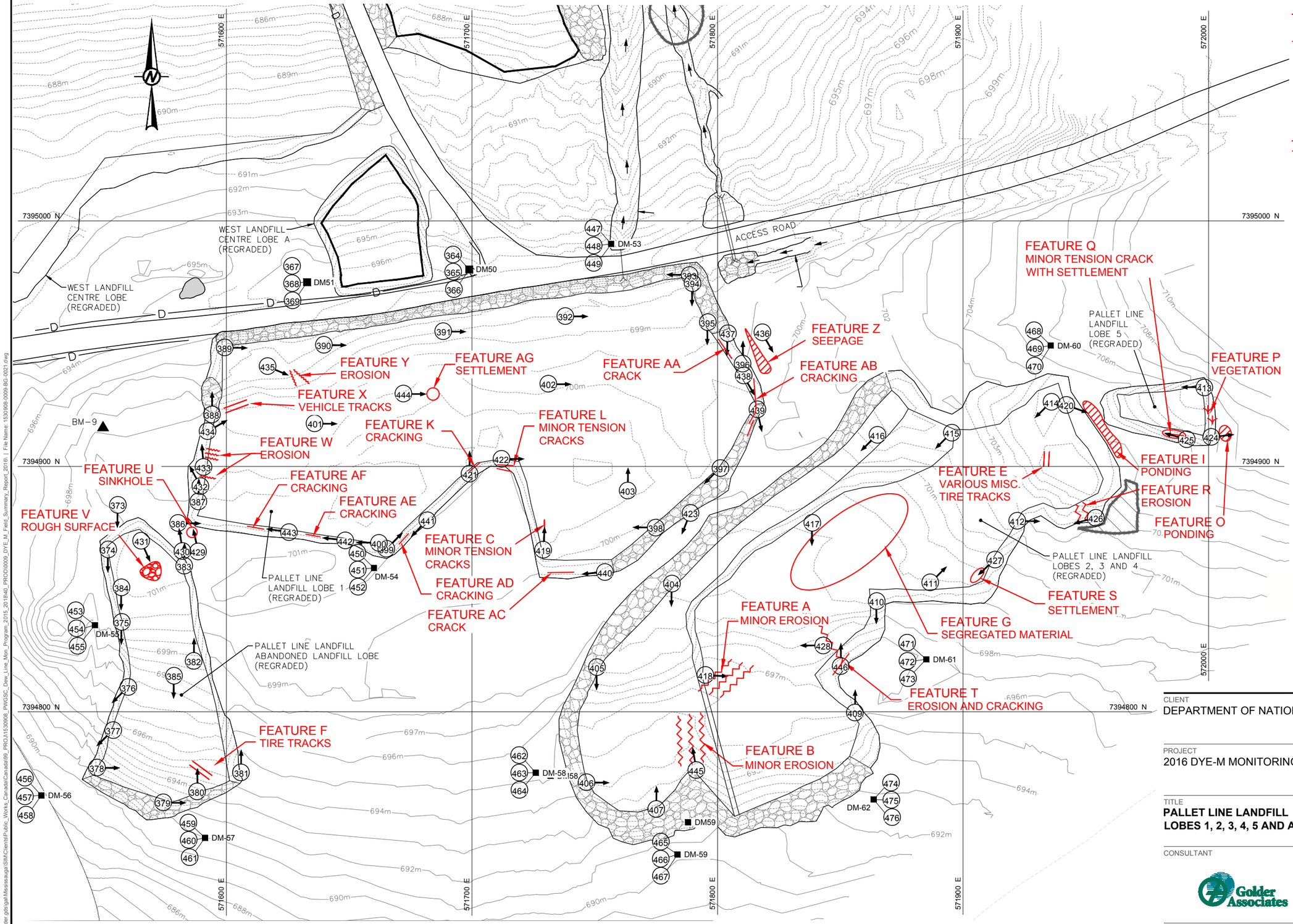
No modifications to the ongoing monitoring program at this landfill are currently recommended. Additional data is required to assess if the elevated concentrations relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

4.9 Upper Site Pallet Line Landfill

4.9.1 Landfill Description

The Upper Site Pallet Line Landfill is located approximately 800 m west of the Station Area and on the southern side of the road from the West Landfill and from west to east is composed of the Abandoned Landfill Lobe, Lobe 1, Lobes, 2, 3 and 4 (agglomerated together) and Lobe 5. The north end of Lobe 1 is located in the immediate vicinity (approximately 75 metres or less) and upgradient (upslope) of the Centre, Centre A and East Lobes of the West Landfill. The Upper Site Pallet Line Landfill was created during DEW Line operations. The area was a flat sand and gravel pad (ESG 2002b). The Upper Site Pallet Line Landfill consists of multiple lobes (Lobes 1–5 and the Abandoned Lobe), which were regraded with clean fill in 2008 and 2009 during the remediation of DYE-M. The monitoring program consists of soil monitoring, with the exception of Lobe 5, which does not require soil monitoring. These regraded landfills cover a total area of approximately 44,000 m^2. Approximate sampling locations are provided in Figure DYE-M.10.

It is noted that monitoring locations DM-50 and DM-51 overlap between the Upper Site Pallet Line Landfill and the West Landfill. Results from these two monitoring locations are considered in the evaluation of both landfills. Given the number of lobes associated with this area, particular focus should be given only to results which exceed the three standard deviations from baseline means and consideration of the need to collect seven samples should be included in the interpretation of results at this stage.



LEGEND:

- CRACKING (NTS)
- EROSION (NTS)
- SEEPAGE / PONDING (NTS)
- SETTLEMENT (NTS)
- VEGETATION (NTS)
- VEHICLE TRACKS (NTS)
- ROUGH AREA
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- BODY OF WATER
- MONITORING WELL LOCATION
- PERMANENT BENCHMARK LOCATION
- REGRADED RIP RAP
- DRAINAGE
- GROUND SURFACE CONTOUR

NOTE

GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,500 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
PALLET LINE LANDFILL
LOBES 1, 2, 3, 4, 5 AND ABANDONED LANDFILL LOBE

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO. 1530908 | PHASE 2000 | REV. A | FIGURE DYE-M.10

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

0

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada99_PROJ\1530908_FWSSC_Dev_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0021.dwg

4.9.2 Visual Inspection

The Upper Site Pallet Line Landfill exhibits multiple locations with observed minor settlement, erosion, cracking, vegetation and seepage/ponded water features. Table 4-37 presents a summary of observed visual inspection features and Table 4-38 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-39 is a log of photographs taken during the 2016 visual inspection.

Some new tension cracks were observed on the southern slopes of Lobe 1 (Features AA, AB, AC, AD, AE and AF). New self-armouring erosion was observed on the cover surface and slopes of Lobe 1 (Features W and Y). Previously observed ponded water between Lobe 1 and Lobe 2 (Features M and N) was not present in 2016. Previously observed ponded water around the toe of Lobe 5 (Features I and O) was observed again in 2016. New seepage and ponded water with a sheen was observed east of Lobe 1 (Feature Z). New settlement, in the form of two small sinkholes (Feature U) was observed at the northeast toe of the Abandoned Landfill Lobe. Although these features (e.g., erosion, settlement, cracking and ponding) can be indicative of deteriorating landfill performance, there were no observations of slope instability or exposed waste at the Upper Site Pallet Line Landfill during the 2016 visual inspection.

The previously noted area of rough and segregated cover material (Feature G) and tire tracks on the top surface of Lobes 2, 3 and 4 are not considered to be significant. Previously observed tire tracks on the top surface of Lobes 2, 3 and 4 and the Abandoned Landfill Lobe (Features E and F) and isolated sparse vegetation (Feature P) on Lobe 5 were observed again in 2016. Features E, F and G were not measured as these features extend over the surface of Lobes 2, 3 and 4. These features are not related to changes in landfill performance. Features D, H and J have not been assigned to the Upper Site Pallet Line Landfill.

Table 4-37: Visual Inspection Checklist – Upper Site Pallet Line Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site Pallet Line Landfill
DATE OF INSPECTION: August 10, 2016
DATE OF PREVIOUS INSPECTION: August 12, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-37: Visual Inspection Checklist – Upper Site Pallet Line Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	Y	S	Lobes 2, 3 and 4 – southeast slope	571913	7394862	5	5	0.1	0.11%	Uneven ground, potential settlement (Acceptable)	Unchanged since previous observation	427
		U	Abandoned Lobe – toe of northeast slope	571582	7394865	0.3	0.3	0.3	-	Two small sinkholes at toe of slope (Acceptable)	New	429 and 430
		V	Abandoned Lobe – cover surface	571565	7394869	10	10	0.1	-	Uneven ground, potential settlement, some self-armouring erosion (Acceptable)	New	431
Erosion	Y	A, B	Lobes 2, 3 and 4 – internal slope	571795	7394815	20	10	-	0.91%	Minor self-armouring erosion (Acceptable)	Unchanged since previous observation	418 and 445
		R	Lobes 2, 3 and 4 – southeast slope	571954	7394879	10	5	-	0.23%	Some minor erosion into boulders at toe (Acceptable)	Unchanged since previous observation	426
		T	Lobes 2, 3 and 4 – southeast slope	571843	7394827	15	0.5	-	0.03%	Self-armouring erosion and cracking(Acceptable)	Unchanged since previous observation	446
		W	Lobe 1 – west slope	571590	7394899	10	3	-	0.14%	Self-armouring erosion, multiple channels (Acceptable)	New	433
		Y	Lobe 1 – cover surface	571616	7394940	10	3	-	0.14%	Self-armouring erosion, multiple channels (Acceptable)	New	435

Table 4-37: Visual Inspection Checklist – Upper Site Pallet Line Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	C	Lobe 1 – west slope of the south side extension	571729	7394866	3	0.03	0.02	<0.01%	Minor crack (Acceptable)	Unchanged since previous observation	419
		K	Lobe 1 – south slope	571699	7394897	1	0.1	0.05	<0.01%	Minor crack (Acceptable)	Unchanged since previous observation	421
		L	Lobe 1 – south slope	571712	7394903	2	2	-	0.02%	Series of minor cracks (Acceptable)	Unchanged since previous observation	422
		Q	Lobe 5 – south slope	571991	7394911	3	0.1	0.05	0.03%	Minor tension crack and settlement (Acceptable)	Unchanged since previous observation	425
		AA	Lobe 1 – east slope	571810	7394937	6	0.1	0.02	<0.01%	Minor crack (Acceptable)	New	437
		AB	Lobe 1 – east slope	571816	7394923	25	0.1	0.02	0.01%	Series of parallel tension cracks on slope (Acceptable)	New	438 and 439
		AC	Lobe 1 – south slope	57175	7394856	10	0.1	0.02	<0.01%	Tension crack near toe of slope.(Acceptable)	New	440
		AD	Lobe 1 – south slope	571681	7394878	5	0.1	0.02	<0.01%	Tension crack on slope (Acceptable)	New	441

Table 4-37: Visual Inspection Checklist – Upper Site Pallet Line Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
		AE	Lobe 1 – south slope	571648	7394869	10.0	0.1	0.02	<0.01%	Tension crack on slope (Acceptable)	New	442
		AF	Lobe 1 – south slope	571625	7394873	10.0	0.1	0.02	<0.01%	Tension crack at crest of slope (Acceptable)	New	443
Animal Burrows	N											
Vegetation	Y	P	Lobe 5 – east slope	572001	7394912	2	2	-	0.43%	Sparse grass on slope	Unchanged since previous observation	
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	Y	I	Between Lobes 2,3 and 4 and Lobe 5	571942	7394925	25	3	-	0.34%	Ponded water on cover draining south (Acceptable)	Previously observed with tire tracks, unchanged since previous observation	420
		M	Between Lobe 1 and Lobes 2, 3 and 4	571789	7394881	-	-	-	-	-	Not observed in 2016	423
		O	Lobe 5 – east toe	572001	7394912	10	2	-	2.1%	Ponded water (Acceptable)	Unchanged since previous observation	424
		Z	East of Lobe 1	571805	7394954	20.0	1.0	-	0.01%	Seepage with sheen adjacent to Lobe 1 (Acceptable)	New	436
Debris and/or Liner Exposed	N											

Table 4-37: Visual Inspection Checklist – Upper Site Pallet Line Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	Y	E, F, G	Lobes 2, 3 and 4 – cover surface							Previously observed areas with rough/ segregated material and tire tracks, not considered significant (Acceptable)	Previously observed, unchanged	380, 414 and 417
		X	Lobe 1 – cover surface	571592	7394914	20	5	-	0.473%	Tire tracks (Acceptable)	New	434

Landfill Area:

Pallet Line – Lobe 1 = 21,160 m^2; Pallet Line – Lobes 2,3 and 4 = 21,950 m^2; Pallet Line – Lobe 5 = 940 m^2 Pallet Line – Abandoned Lobe = 4,840 m^2

Table 4-38: Preliminary Stability Assessment – Upper Site Pallet Line Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Occasional
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Isolated
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Acceptable	Occasional
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Occasional
Overall Landfill Performance	**Acceptable**	

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
373	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - facing south (ATT44_Photo44.jpg)	571555.8	7394884.3	10-Aug-2016
374	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - facing south (ATT45_Photo45.jpg)	571551.9	7394866.1	10-Aug-2016
375	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - facing south (ATT46_Photo46.jpg)	571557.4	7394836.6	10-Aug-2016
376	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - facing southwest (ATT47_Photo47.jpg)	571560.1	7394810.1	10-Aug-2016
377	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - facing southwest (ATT48_Photo48.jpg)	571553.9	7394792.5	10-Aug-2016
378	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing east (ATT49_Photo49.jpg)	571547.3	7394777.3	10-Aug-2016
379	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing east (ATT50_Photo50.jpg)	571574.3	7394763.1	10-Aug-2016
380	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing north (ATT51_Photo51.jpg)	571588.1	7394767.6	10-Aug-2016
381	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing north (ATT52_Photo52.jpg)	571605.9	7394775.3	10-Aug-2016
382	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing north (ATT53_Photo53.jpg)	571586.7	7394820.7	10-Aug-2016
383	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing north (ATT54_Photo54.jpg)	571582.8	7394859.5	10-Aug-2016
384	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing south (ATT55_Photo55.jpg)	571557.3	7394850.7	10-Aug-2016

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
385	DYE-M - Upper Site Pallet Line Landfill- Abandoned Lobe - facing south (ATT56_Photo56.jpg)	571578.7	7394814.7	10-Aug-2016
386	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT57_Photo57.jpg)	571580.3	7394876.9	10-Aug-2016
387	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing north (ATT58_Photo58.jpg)	571588.6	7394885.7	10-Aug-2016
388	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing north (ATT59_Photo59.jpg)	571594.1	7394921.1	10-Aug-2016
389	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT60_Photo60.jpg)	571599.3	7394948.4	10-Aug-2016
390	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT61_Photo61.jpg)	571639.7	7394949.5	10-Aug-2016
391	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT62_Photo62.jpg)	571688.3	7394955.0	10-Aug-2016
392	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT63_Photo63.jpg)	571738.0	7394961.2	10-Aug-2016
393	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing west (ATT64_Photo64.jpg)	571788.6	7394977.9	10-Aug-2016
394	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing south (ATT65_Photo65.jpg)	571789.2	7394976.9	10-Aug-2016
395	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing south (ATT66_Photo66.jpg)	571796.0	7394958.7	10-Aug-2016
396	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing north (ATT67_Photo67.jpg)	571810.2	7394941.8	10-Aug-2016
397	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing southwest (ATT68_Photo68.jpg)	571801.2	7394899.3	10-Aug-2016
398	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing west (ATT69_Photo69.jpg)	571774.8	7394875.0	10-Aug-2016
399	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing northeast (ATT70_Photo70.jpg)	571664.4	7394867.3	10-Aug-2016
400	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing west (ATT71_Photo71.jpg)	571662.1	7394868.8	10-Aug-2016
401	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT72_Photo72.jpg)	571635.9	7394917.5	10-Aug-2016
402	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing east (ATT73_Photo73.jpg)	571731.1	7394933.6	10-Aug-2016
403	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - facing north (ATT74_Photo74.jpg)	571763.4	7394890.1	10-Aug-2016
404	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing south (ATT75_Photo75.jpg)	571781.4	7394852.2	10-Aug-2016
405	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing south (ATT76_Photo76.jpg)	571750.9	7394818.2	10-Aug-2016

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
406	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing east (ATT77_Photo77.jpg)	571746.6	7394771.3	10-Aug-2016
407	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing north (ATT78_Photo78.jpg)	571775.0	7394760.4	10-Aug-2016
408	Not taken but number kept in photo log to maintain correct photo numbers that follow	571814.0	7394763.4	10-Aug-2016
409	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing north (ATT79_Photo79.jpg)	571855.9	7394799.7	10-Aug-2016
410	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing south (ATT80_Photo80.jpg)	571864.8	7394845.1	10-Aug-2016
411	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing northeast (ATT81_Photo81.jpg)	571886.6	7394852.7	10-Aug-2016
412	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing east (ATT82_Photo82.jpg)	571922.0	7394877.8	10-Aug-2016
413	DYE-M - Upper Site Pallet Line Landfill - Lobe 5 - facing west (ATT83_Photo83.jpg)	571998.2	7394932.1	10-Aug-2016
414	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing southwest (ATT84_Photo84.jpg)	571937.4	7394926.3	10-Aug-2016
415	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing southwest (ATT85_Photo85.jpg)	571895.4	7394913.7	10-Aug-2016
416	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing southwest (ATT86_Photo86.jpg)	571865.1	7394912.8	10-Aug-2016
417	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 - facing south - Previously reported segregated material (Feature G) considered as-built and not related to landfill performance (ATT87_Photo87.jpg)	571838.6	7394877.0	10-Aug-2016
418	DYE-M - Upper Site Pallet Line Landfill - - Lobes 2, 3 and 4 - - Internal slope - Feature A - Minor self-armouring erosion, facing east (Acceptable) (ATT292_Photo292.jpg)	571795.0	7394815.0	10-Aug-2016
419	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - west slope of the south side extension - Feature C - Minor cracking, facing north (ATT277_Photo277.jpg)	571729.0	7394866.0	10-Aug-2016
420	DYE-M - Upper Site Pallet Line Landfill between Lobes 2, 3 and 4 and Lobe 5 - Feature I - Ponded water on cover draining south, facing southeast (ATT291_Photo291.jpg)	571942.0	7394925.0	10-Aug-2016
421	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - south slope - Feature K - Minor crack, facing north (ATT279_Photo279.jpg)	571699.0	7394897.0	10-Aug-2016
422	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - south slope - Feature L - Series of minor cracks, facing east (Acceptable) (ATT278_Photo278.jpg)	571712.0	7394903.0	10-Aug-2016

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
423	DYE-M - Upper Site Pallet Line Landfill between Lobe 1 and Lobes 2, 3 and 4 - Previously observed ponded water (Feature M) not observed in 2016, facing south (ATT275_Photo275.jpg)	571789.0	7394881.0	10-Aug-2016
424	DYE-M - Upper Site Pallet Line Landfill - Lobe 5 - east toe - Feature O - Ponded water, facing east (ATT290_Photo290.jpg)	572001.0	7394912.0	10-Aug-2016
425	DYE-M - Upper Site Pallet Line Landfill - Lobe 5, south slope - Feature Q - Minor tension crack and settlement, facing west (ATT289_Photo289.jpg)	571991.0	7394911.0	10-Aug-2016
426	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 southeast slope - Feature R - Minor erosion into boulders at toe, facing west (ATT288_Photo288.jpg)	571954.0	7394879.0	10-Aug-2016
427	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 southeast slope - Feature S - Uneven ground, potential settlement, facing southwest (ATT287_Photo287.jpg)	571913.0	7394862.0	10-Aug-2016
428	DYE-M - Upper Site Pallet Line Landfill - Lobes 2, 3 and 4 southeast slope - Feature T - Self armouring erosion, facing west (Acceptable) (ATT285_Photo285.jpg)	571843.0	7394827.0	10-Aug-2016
429	DYE-M - Upper Site Pallet Line Landfill between Abandoned Lobe and Lobe 1 - Feature U - Two small sinkholes at toe of landfill slope, facing north (ATT264_Photo264.jpg)	571582.1	7394865.5	10-Aug-2016
430	DYE-M - Upper Site Pallet Line Landfill between Abandoned Lobe and Lobe 1 - Feature U - Two small sinkholes at toe of landfill slope, facing north (ATT265_Photo265.jpg)	571582.1	7394865.5	10-Aug-2016
431	DYE-M - Upper Site Pallet Line Landfill - Abandoned Lobe - Feature V - Rough surface and self-armouring erosion, facing south (ATT266_Photo266.jpg)	571565.3	7394869.7	10-Aug-2016
432	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature W - Minor erosion channel with accumulation of fines at toes of slope, facing north (ATT267_Photo267.jpg)	571589.4	7394891.9	10-Aug-2016
433	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature W - Minor erosion channel with fines accumulation at toe of slope, facing north (ATT268_Photo268.jpg)	571590.7	7394899.7	10-Aug-2016
434	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - Feature X - Tracked vehicle tracks, facing northeast (ATT269_Photo269.jpg)	571592.3	7394914.3	10-Aug-2016
435	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature Y - Self armouring erosion, accumulation of fines in small depression, facing east (ATT270_Photo270.jpg)	571616.8	7394940.8	10-Aug-2016
436	DYE-M - Upper Site Pallet Line Landfill - - Lobe 1 - Feature Z - Seepage with sheen at toe of slope, facing southeast (ATT271_Photo271.jpg)	571805.1	7394954.1	10-Aug-2016
437	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - Feature AA - Tension cracking 1 m below crest, facing south (ATT272_Photo272.jpg)	571810.6	7394937.0	10-Aug-2016

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
438	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - Feature AB - Parallel tension cracking, below crest of landfill facing south (ATT273_Photo273.jpg)	571810.6	7394937.0	10-Aug-2016
439	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature AB - Parallel tension cracking, below crest of landfill, facing south (ATT274_Photo274.jpg)	571816.2	7394923.2	10-Aug-2016
440	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature AC - Tension cracking near toe of slope, facing west (ATT276_Photo276.jpg)	571754.1	7394856.9	10-Aug-2016
441	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature AD - Tension cracking 3 m below crest of landfill, facing southwest (ATT280_Photo280.jpg)	571681.8	7394878.0	10-Aug-2016
442	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature AE - Tension cracking 1 m below crest of landfill, facing west (ATT281_Photo281.jpg)	571648.4	7394869.8	10-Aug-2016
443	DYE-M - Upper Site Pallet Line Landfill - Lobe 1 - Feature AF - Tension cracking at crest, facing west (ATT282_Photo282.jpg)	571625.5	7394873.2	10-Aug-2016
444	DYE-M - Upper Site Pallet Line Landfill – Lobe 1 - Feature AG - Minor settlement, facing east (ATT283_Photo283.jpg)	571672.1	7394929.6	10-Aug-2016
445	DYE-M - Upper Site Pallet Line Landfill – Lobes 2, 3 and 4 - Feature B - Self armouring erosion with fines accumulating at toe, facing north (ATT284_Photo284.jpg)	571791.3	7394776.3	10-Aug-2016
446	DYE- M - Upper Site Pallet Line Landfill – Lobes 2, 3 and 4 - Feature T - Minor cracking and self-armoring erosion, facing north (ATT286_Photo286.jpg)	571850.1	7394818.6	10-Aug-2016
447	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-53 before excavation (ATT405_Photo405.jpg)	571756.7	7394990.6	12-Aug-2016
448	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-53 after excavation (ATT406_Photo406.jpg)	571756.7	7394990.6	12-Aug-2016
449	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-53 after backfilling (ATT407_Photo407.jpg)	571756.7	7394990.6	12-Aug-2016
450	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-54 before excavation (ATT37_Photo37.jpg)	571660.1	7394858.6	10-Aug-2016
451	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-54 after excavation (ATT38_Photo38.jpg)	571660.1	7394858.6	10-Aug-2016
452	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-54 after backfilling (ATT39_Photo39.jpg)	571660.1	7394858.6	10-Aug-2016
453	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-55 before excavation (ATT28_Photo28.jpg)	571546.5	7394835.3	10-Aug-2016
454	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-55 after excavation (ATT29_Photo29.jpg)	571546.5	7394835.3	10-Aug-2016
455	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-55 after backfilling (ATT30_Photo30.jpg)	571546.5	7394835.3	10-Aug-2016

Table 4-39: Summary Table of Photographic Log – Upper Site Pallet Line Landfill

Photo	Description (file name)	Easting	Northing	Date
456	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-56 before excavation (ATT31_Photo31.jpg)	571524.7	7394766.0	10-Aug-2016
457	DYE-M - Upper Site Pallet Line Landfill - Between Lobes 5 and 6 - DM-56 after excavation (ATT32_Photo32.jpg)	571524.7	7394766.0	10-Aug-2016
458	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-56 after backfilling (ATT33_Photo33.jpg)	571524.7	7394766.0	10-Aug-2016
459	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-57 before excavation (ATT34_Photo34.jpg)	571591.3	7394748.7	10-Aug-2016
460	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-57 after excavation (ATT35_Photo35.jpg)	571591.3	7394748.7	10-Aug-2016
461	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-57 after backfilling (ATT36_Photo36.jpg)	571591.3	7394748.7	10-Aug-2016
462	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-58 before excavation (ATT40_Photo40.jpg)	571726.0	7394775.2	10-Aug-2016
463	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-58 after excavation (ATT41_Photo41.jpg)	571726.0	7394775.2	10-Aug-2016
464	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-58 after backfilling (ATT42_Photo42.jpg)	571726.0	7394775.2	10-Aug-2016
465	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-59 before excavation (ATT43_Photo43.jpg)	571783.7	7394741.9	10-Aug-2016
466	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-59 after excavation (ATT44_Photo44.jpg)	571783.7	7394741.9	10-Aug-2016
467	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-59 after backfilling (ATT45_Photo45.jpg)	571783.7	7394741.9	10-Aug-2016
468	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-60 before excavation (ATT52_Photo52.jpg)	571935.7	7394949.2	11-Aug-2016
469	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-60 after excavation (ATT53_Photo53.jpg)	571935.7	7394949.2	11-Aug-2016
470	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-60 after backfilling (ATT54_Photo54.jpg)	571935.7	7394949.2	11-Aug-2016
471	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-61 before excavation (ATT49_Photo49.jpg)	571885.0	7394821.4	11-Aug-2016
472	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-61 after excavation (ATT50_Photo50.jpg)	571885.0	7394821.4	11-Aug-2016
473	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-61 after backfilling (ATT51_Photo51.jpg)	571885.0	7394821.4	11-Aug-2016
474	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-62 before excavation (ATT46_Photo46.jpg)	571863.6	7394764.3	11-Aug-2016
475	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-62 after excavation (ATT47_Photo47.jpg)	571863.6	7394764.3	11-Aug-2016
476	DYE-M - Upper Site Pallet Line Landfill - Soil sampling - DM-62 after backfilling (ATT48_Photo48.jpg)	571863.6	7394764.3	11-Aug-2016

4.9.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-50, DM-51, DM-53, DM-54, DM-55, DM-56, DM-57, DM-58, DM-59, DM-60, DM-61 and DM-62 could not be collected due to refusal on rock.

4.9.4 Soil Sampling

Table 4-40 presents a summary of analytical results for soil samples collected at the Upper Site Pallet Landfill. DM-60 represents an upgradient sampling location, whereas DM-50, DM-51, DM-53, DM-54, DM-55, DM-56, DM-57, DM-58, DM-59, DM-61 and DM-62 represent downgradient sampling locations.

Table 4-40 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site Pallet Landfill, the background arithmetic means for copper, nickel, cobalt, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

DM-60

Sampling location DM-60 is located upgradient of the landfill, approximately 15 m north of the toe. The estimated elevation of this sampling point is 706 masl. As shown in Photos 468 and 469, the area is largely covered with sand and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-60 (0-15 cm), the concentrations of copper, nickel, cobalt and chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-50

Sampling location DM-50 is located downgradient of Lobe 1 of the landfill, approximately 15 m north of the toe and north of the access road. The estimated elevation of this sampling point is 695 masl. As shown in Photos 364 and 365, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-50 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years, with the exception of cobalt. The concentration of chromium (186 mg/kg) exceeded the baseline mean concentration plus 3σ (179 mg/kg). It is noted that this concentration did not exceed the baseline mean concentration plus 3σ for the West Landfill (309.6 mg/kg). No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

DM-51

Sampling location DM-51 is located downgradient of Lobe 1 of the landfill, approximately 15 m north of the toe and north of the access road. The estimated elevation of this sampling point is 695 masl. As shown in Photos 367 and 368, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-51 (0-15 cm), the concentrations of copper and chromium were slightly greater than those in previous years, whereas the concentrations of all other metals were less than or similar to previous years. PHC were detected for the first time; the modified TPH concentration (215 mg/kg) remained well below the

baseline mean concentration plus 3σ (1208 mg/kg). PHC F4 fraction was reported in 2016 at a concentration of 87 mg/kg. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-53

Sampling location DM-53 is located downgradient of Lobe 1 of the landfill, approximately 15 m north of the toe and north of the access road. The estimated elevation of this sampling point is 694 masl. As shown in Photos 447 and 448, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-53 (0-15 cm, duplicate location), the average concentrations of most metals were slightly greater than those reported in previous years. No cadmium, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-54

Sampling location DM-54 is located downgradient of Lobe 1 of the landfill, approximately 10 m south of the toe. The estimated elevation of this sampling point is 699.5 masl. As shown in Photos 450 and 451, the area consists of sand and gravel with some rocks and sparse vegetation. The soils consisted of brown sand with some gravel and stone.

In the shallow sample at DM-54 (0-15 cm), the concentrations of copper, cobalt, zinc and chromium were greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

DM-55

Sampling location DM-55 is located downgradient of the Abandoned Landfill Lobe of the landfill, approximately 10 m west of the toe. The estimated elevation of this sampling point is 697 masl. As shown in Photos 453 and 454, the area consists of sand, rock and boulders and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-55 (0-15 cm), the concentration of lead was greater than those reported in previous years, whereas the concentrations of all other metals were less or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-56

Sampling location DM-56 is located downgradient of the Abandoned Landfill Lobe of the landfill, approximately 8 m southwest of the toe. The estimated elevation of this sampling point is 689 masl. As shown in Photos 456 and 457, the area is largely covered with gravel, rock and boulders and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-56 (0-15 cm), the concentrations of most metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-57

Sampling location DM-57 is located downgradient of the Abandoned Landfill Lobe of the landfill, approximately 8 m south of the toe. The estimated elevation of this sampling point is 691 masl. As shown in Photos 459 and 460, the area consists of sand and gravel with some rocks and boulders and is not vegetated. The soils consisted of grey sand with some stone.

For the shallow sample at DM-57 (0-15 cm), the concentrations of most metals were slightly greater than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-58

Sampling location DM-58 is located downgradient of Lobes 2, 3 and 4 of the landfill, approximately 6 m west of the toe. The estimated elevation of this sampling point is 695 masl. As shown in Photos 462 and 463, the area is largely covered with gravel with some rocks and is not vegetated. The soils consisted of grey sand, gravel and stone.

For shallow sample at DM-58 (0-15 cm), the concentration of zinc (391 mg/kg) exceeded the baseline mean concentration plus 3σ (175 mg/kg) and was much greater than that reported in previous years, whereas the concentrations of most other metals were less than or similar to previous years, with the exception of lead; none of the other reported parameter concentrations exceeded their respective baseline mean concentrations plus 3σ. Confirmation of this zinc result is required following the review of data from the 2017 monitoring program. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

DM-59

Sampling location DM-59 is located downgradient of Lobes 2, 3 and 4 of the landfill, at the south of the toe. The estimated elevation of this sampling point is 692 masl. As shown in Photos 465 and 466, the area consists of sand and gravel with some rock and is not vegetated. The soils consisted of a grey sand with some gravel and stone.

For the shallow sample at DM-59 (0-15 cm), the concentrations of most metals were less than or similar to those reported in previous years, with the exception of zinc and chromium. The PHC F2 (903 mg/kg) concentration exceeded the baseline mean concentration plus 3σ (888 mg/kg), however the modified TPH concentration (937 mg/kg) remained well the baseline mean concentration plus 3σ (2,051 mg/kg). A modified TPH concentration of 244 mg/kg was reported at this location in 2014, whereas no PHC were detected in 2015. No cadmium, arsenic, mercury or PCB were detected at this location in 2016.

DM-61

Sampling location DM-61 is located downgradient of Lobes 2, 3 and 4 of the landfill, at the east toe. The estimated elevation of this sampling point is 700 masl. As shown in Photos 471 and 472, the area is largely covered with sand, gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-61 (0-15 cm), the concentrations of nickel, cobalt and chromium were greater than those observed in previous years, whereas the other metals concentrations were less than in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-62

Sampling location DM-62 is located downgradient of Lobes 2, 3 and 4 of the landfill, approximately 6 m southeast of the toe. The estimated elevation of this sampling point is 693 masl. As shown in Photos 474 and 475, the area is largely covered with sand, gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-62 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-40: Soil Chemical Analysis Results – Upper Site Pallet Line Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F3 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**36.7**	**74.6**	**16.5**	**1.0**	**10.0**	**75.3**	**71.8**	**1.0**	**0.1**	**0.05**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		88.1	150.5	35.4	1.4	82	174.6	179.2	2.8	0.12	0.44	261.1	887.7	805.8	NA
Upgradient															
DM-60a	0-15	30.9	**113**	**20.7**	<0.5	8.8	56	60	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-60 (deep) [1]															
Downgradient															
DM-50a	0-15	**82.6**	68	14.4	<0.5	**16.9**	**80.9**	**186**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-50 (deep) [1]															
DM-51a	0-15	**52.2**	56	12.3	<0.5	**23.4**	**84.8**	**112**	<1.0	<0.1	<0.05	<7	<4	**209**	87
DM-51 (deep) [1]															
DM-53a	0-15	**37.3**	46	10.4	<0.5	**11.7**	**87.6**	**82.6**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-53a dup	0-15	**41**	55	11.1	<0.5	**14**	**109**	**93**	1	<0.10	<0.05	<5	<10	<50	<50
DM-53a (Dup Avg)	0-15	**39**	51	11	<0.5	**13**	**98**	**88**	1	<0.1	<0.05	<6	<7	<29	<28
DM-53 (deep) [1]															
DM-54a	0-15	**47**	**75**	**18.5**	<0.5	**23.7**	**78.1**	**73.5**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-54 (deep) [1]															
DM-55a	0-15	33.8	73.6	15.6	<0.5	**37.6**	65.7	56.9	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-55 (deep) [1]															
DM-56a	0-15	30.8	74.2	14.1	<0.5	**14.7**	50.7	56	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-56 (deep) [1]															
DM-57a	0-15	**38**	**90**	**16.8**	<0.5	**11.9**	62.4	68.7	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-57 (deep) [1]															
DM-58a	0-15	29.9	67.5	14.1	<0.5	**15.8**	**391**	46.9	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-57 (deep) [1]															

Table 4-40: Soil Chemical Analysis Results – Upper Site Pallet Line Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F3 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**36.7**	**74.6**	**16.5**	**1.0**	**10.0**	**75.3**	**71.8**	**1.0**	**0.1**	**0.05**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		88.1	150.5	35.4	1.4	82	174.6	179.2	2.8	0.12	0.44	261.1	887.7	805.8	NA
DM-59a	0-15	**41.5**	**99.2**	**18.1**	<0.5	**10.5**	58.7	58.7	<1.0	<0.1	<0.05	<7	**903**	**30**	<6
DM-59 (deep) [1]															
DM-61a	0-15	**39.6**	**122**	**20**	<0.5	7	48	57.6	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-61 (deep) [1]															
DM-62a	0-15	**42.7**	**101**	**18.7**	<0.5	**10.2**	54.4	50.3	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-62 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

Shaded Values: Results exceed the Baseline arithmetic mean plus 3σ.

1: The deep soil samples at DM-50, DM-51, DM-53, DM-54, DM-55, DM-56, DM-57, DM-58, DM-59, DM-60, DM-61 and DM-62 could not be collected due to refusal on rock.

4.9.5 Conclusions and Overall Performance of the Upper Site Pallet Line Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site Pallet Line Landfill. Some minor settlement (including two small sinkholes), self-armouring erosion, minor tension cracks and ponding of water along the toe of the landfill were observed. The sinkholes appear to be caused by surface material settling between the rip rap alng the perimeter of the landfill. A minor sheen was observed in one instance on ponded water at the eastern toe of the slope of the Lobe 1. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at all designated locations in 2016 as a result of refusal (on boulders). The concentrations of metals were highest overall at the sample location DM-50 downgradient of Lobe 1. At DM-50, the concentrations of all metals were less than or similar to those reported in previous years, however, the concentration of chromium exceeded the baseline mean concentration plus 3σ for the second time in three consecutive years of monitoring. At DM-53, DM-54, DM-57 and DM-60, concentrations of most metals were slightly greater than those reported in previous years. At the majority of the remaining sampling locations, the concentrations of most metals were generally less than or similar to those reported in previous years. It is noted that the concentration of zinc at DM-58 was considerably greater than those reported in previous years and exceeded the baseline mean concentration plus 3σ. This should be confirmed following review of the 2017 data.

The only detectable concentrations of PHC were reported at DM-51 and DM-59; a PHC odour was noted during the sample collection at DM-59. PHC were detected at DM-51 for the first time, however, the modified TPH concentration remained below the baseline mean concentration. At DM-59, the PHC F2 concentration exceeded the baseline mean concentration plus 3σ, however, the modified TPH concentration (937 mg/kg) remained well the baseline mean concentration plus 3σ (2,051 mg/kg). A modified TPH concentration of 244 mg/kg was reported at this location in 2014, whereas no PHC were detected in 2015. No detectable concentrations of cadmium, mercury or PCB were noted in any of the soil samples in 2016.

Overall, it was noted that concentrations of metals at the lobes making up the Pallet Line Landfill were highest to the north towards the West Landfill. It is further noted that the observed exceedances were not consistent for one parameter or a group of parameters, suggesting that pre-existing conditions may be responsible for the observed variation. Collection of a larger dataset of results is required to assess changes to soil quality in this area resulting from the landfills.

4.9.6 Recommendations for Upper Site Pallet Line Landfill

It is recommended the elevated concentration of zinc observed at shallow DM-58 sampling location in 2016 be confirmed following comparison to the 2017 data from this location.

It is recommended that soil samples be collected in 2017 near the sheen that was observed on ponded water at the eastern toe of the slope of Lobe 1. It is further recommended that consideration be given to collecting soil samples in the vicinity of the other ponded water features. The purpose of these samples would be for comparison to the standards for this landfill, to determine if the seeps are influenced by the landfills. No additional modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

4.10 Upper Site Non-Hazardous Waste Landfill

4.10.1 Landfill Description

The Upper Site Non-Hazardous Waste Landfill (NHWL) is located on the north side of the road leading to the Upper Site, adjacent to the NWS warehouse. The NHWL was built for the disposal of non-hazardous demolition materials and wastes generated during the cleanup operations at the Upper Site. The landfill covers an area of approximately 21,100 m^2. Approximate sampling locations for soil and groundwater are provided in Figure DYE-M.11.

572100 E
572150 E
572200 E
572250 E
572300 E
572350 E
7395200 N
7395150 N
7395100 N
7395050 N
7395000 N
718m
719m
720m
721m
722m
724m
725m
726m
728m
717m
MW06-20
MW06-19
MW07-21
MW06-18
MW06-18 B
BM-10
2%
FEATURE A
TIRE TRACKS
FEATURE B
AREA OF
SEGREGATION
FEATURE B
AREA OF
SEGREGATION
FEATURE E
CRACKING
UPPER SITE
NON-HAZARDOUS
WASTE LANDFILL
WAREHOUSE
505
506
507
504
499
487
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LEGEND:

- CRACKING (NTS)
- SETTLEMENT (NTS)
- TIRE TRACKS (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION BACKGROUND
- PERMANENT BENCHMARK
- RIP RAP
- GROUND SURFACE COTOUR\

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 25 50
1:1,000 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
UPPER SITE
NON-HAZARDOUS WASTE LANDFILL

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO. 1530908 | PHASE 2000 | REV. A | FIGURE DYE-M.11

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PRO\1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0022.dwg

4.10.2 Visual Inspection

The Upper Site Non-Hazardous Waste Landfill exhibited a few area of observed cover material segregation and cracking. Table 4-41 presents a summary of observed visual inspection features and Table 4-42 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-43 is a log of photographs taken during the 2016 visual inspection.

Previously observed areas with segregated cover material (Feature B) were unchanged in 2016, indicating that they are likely as-built conditions and do not appear to be related to erosion. Previously observed ponded water (Features C and D) was not observed in 2016. Previously observed tire tracks near the east crest (Feature A) do not appear to have deteriorated (i.e., caused erosion). New minor tension cracking (Feature E) was observed on the crest of the eastern slope. Observed features do not appear to be impacting the stability of the landfill.

Table 4-41: Visual Inspection Checklist – Upper Site Non-Hazardous Waste Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site Non-Hazardous Waste Landfill
DATE OF INSPECTION: August 11, 2015
DATE OF PREVIOUS INSPECTION: August 10, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-41: Visual Inspection Checklist – Upper Site Non-Hazardous Waste Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	B	Southeast corner of crest	572294	7395095	27	10		1.3%	Area of segregation (Acceptable)	Previously observed, no change	495
		B	Cover surface	572269	7395133	10	10		0.5%	Area of segregation (Acceptable)	Previously observed, no change	484 and 496
		B	Near warehouse	572249	7395116	5	10		0.2%	Area of segregation (Acceptable)	Previously observed, no change	497
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	E	Cover surface, along east crest	572310.3	7395133.5	4	0.1		<0.01%	Minor tension cracking (Acceptable)	New	516
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Presence / Condition of Monitoring Instruments	Y	MW06-18, -19, -20 and MW07-21								Monitoring wells intact		500,504,508 and 512

Table 4-41: Visual Inspection Checklist – Upper Site Non-Hazardous Waste Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Features of Note / Other Observations	Y	A	East slope	572311	7395136	13	10		0.62%	Regraded area with tire tracks (Acceptable)	Previously observed, no change	478 and 494

Landfill Area = 21,100 m^2.

Table 4-42: Preliminary Stability Assessment – Upper Site Non-Hazardous Waste Landfill

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Isolated
Animal Burrows	Not Observed	-
Vegetation Establishment	Not Observed	-
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other (Tire Tracks)	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Table 4-43: Summary Table of Photographic Log – Upper Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
477	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing north (ATT88_Photo88.jpg)	572301.5	7395090.7	11-Aug-2016
478	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing north - Feature A - Regraded area with tire tracks (ATT89_Photo89.jpg)	572308.6	7395119.3	11-Aug-2016
479	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing south (ATT90_Photo90.jpg)	572317.3	7395147.7	11-Aug-2016
480	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT91_Photo91.jpg)	572317.2	7395147.6	11-Aug-2016
481	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing southwest (ATT92_Photo92.jpg)	572279.9	7395155.6	11-Aug-2016
482	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT93_Photo93.jpg)	572268.0	7395158.6	11-Aug-2016
483	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT94_Photo94.jpg)	572249.5	7395130.0	11-Aug-2016
484	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing east - Feature B - segregated cover material (ATT95_Photo95.jpg)	572248.1	7395133.7	11-Aug-2016
485	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT96_Photo96.jpg)	572235.9	7395168.3	11-Aug-2016
486	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT97_Photo97.jpg)	572323.7	7395351.7	11-Aug-2016
487	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing west (ATT98_Photo98.jpg)	572175.3	7395183.9	11-Aug-2016

Table 4-43: Summary Table of Photographic Log – Upper Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
488	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing south (ATT99_Photo99.jpg)	572150.9	7395173.9	11-Aug-2016
489	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing south (ATT100_Photo100.jpg)	572142.3	7395141.4	11-Aug-2016
490	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing southeast (ATT101_Photo101.jpg)	572137.4	7395105.8	11-Aug-2016
491	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing east (ATT102_Photo102.jpg)	572158.1	7395068.7	11-Aug-2016
492	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing northeast (ATT103_Photo103.jpg)	572186.7	7395067.4	11-Aug-2016
493	DYE-M - Upper Site Non-Hazardous Waste Landfill, facing northeast (ATT104_Photo104.jpg)	572216.8	7395091.1	11-Aug-2016
494	DYE-M - Upper Site Non-Hazardous Waste Landfill - east slope - Feature A - Regraded area with tire tracks, facing southeast (Acceptable) (ATT294_Photo294.jpg)	572311.0	7395136.0	11-Aug-2016
495	DYE-M - Upper Site Non-Hazardous Waste Landfill - southeast corner of crest - Feature B - Previously observed segregated cover material, no change, facing west (Acceptable) (ATT293_Photo293.jpg)	572294.0	7395095.0	11-Aug-2016
496	DYE-M - Upper Site Non-Hazardous Waste Landfill - Cover surface - Feature B - Area of cover material segregation, facing west (Acceptable) (ATT296_Photo296.jpg)	572269.0	7395133.0	11-Aug-2016
497	DYE-M - Upper Site Non-Hazardous Waste Landfill - Near warehouse - Feature B - Area of cover material segregation, facing north (Acceptable) (ATT297_Photo297.jpg)	572249.0	7395116.0	11-Aug-2016
498	DYE-M - Upper Site Non-Hazardous Waste Landfill - Cover surface - Previously observed Feature C - Ponded water not observed in 2016, facing north (ATT299_Photo299.jpg)	572195.0	7395134.0	11-Aug-2016
499	DYE-M - Upper Site Non-Hazardous Waste Landfill - Cover surface along north crest - Previously observed Feature D - Ponded water and wet area not observed in 2016, facing southeast (ATT298_Photo298.jpg)	572157.2	7395183.1	11-Aug-2016
500	DYE-M - Upper Site Non-Hazardous Waste Landfill - Water sampling - MW06-19 (ATT134_Photo134.jpg)	572113.4	7395141.7	12-Aug-2016
501	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-19 before excavation (ATT135_Photo135.jpg)	572112.2	7395140.6	12-Aug-2016
502	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-19 after excavation (ATT136_Photo136.jpg)	572112.2	7395140.6	12-Aug-2016

Table 4-43: Summary Table of Photographic Log – Upper Site Non-Hazardous Waste Landfill

Photo	Description (file name)	Easting	Northing	Date
503	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-19 after backfilling (ATT137_Photo137.jpg)	572112.2	7395140.6	12-Aug-2016
504	DYE-M - Upper Site Non-Hazardous Waste Landfill - Water sampling - MW06-20 (ATT130_Photo130.jpg)	572223.2	7395203.4	12-Aug-2016
505	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-20 before excavation (ATT131_Photo131.jpg)	572221.5	7395214.1	12-Aug-2016
506	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-20 after excavation (ATT132_Photo132.jpg)	572221.5	7395214.1	12-Aug-2016
507	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-20 after backfilling (ATT133_Photo133.jpg)	572221.5	7395214.1	12-Aug-2016
508	DYE-M - Upper Site Non-Hazardous Waste Landfill - Water sampling - MW07-21 (ATT126_Photo126.jpg)	572302.6	7395178.3	12-Aug-2016
509	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW07-21 before excavation (ATT127_Photo127.jpg)	572306.0	7395178.1	12-Aug-2016
510	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW07-21 after excavation (ATT128_Photo128.jpg)	572306.0	7395178.1	12-Aug-2016
511	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW07-21 after backfilling (ATT129_Photo129.jpg)	572306.0	7395178.1	12-Aug-2016
512	DYE-M - Upper Site Non-Hazardous Waste Landfill - Water sampling - MW06-18 (ATT124_Photo124.jpg)	572281.6	7395067.9	12-Aug-2016
513	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-18 before excavation (ATT121_Photo121.jpg)	572283.2	7395067.2	12-Aug-2016
514	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-18 after excavation (ATT122_Photo122.jpg)	572283.2	7395067.2	12-Aug-2016
515	DYE-M - Upper Site Non-Hazardous Waste Landfill - Soil sampling - MW06-18 after backfilling (ATT123_Photo123.jpg)	572283.2	7395067.2	12-Aug-2016
516	DYE-M - Upper Site Non-Hazardous Waste Landfill - east landfill crest - Feature E - Weathered tension crack 5 m from crest edge, facing south. (ATT295_Photo295.jpg)	572310.3	7395133.5	11-Aug-2016

4.10.3 Summary of Sampling Deviations

The field work was conducted as per the TOR, with the following exceptions:

- The deep soil samples at MW06-18, MW06-19, MW06-20 and MW07-21 could not be collected due to refusal on rock;
- The groundwater sample at MW06-18 could not be collected because the well was dry; and,
- The groundwater sample at MW06-20 could not be collected because the monitoring well went dry and did not recover following initial purging.

4.10.4 Soil Sampling

Table 4-44 presents a summary of analytical results for soil samples collected at the Upper Site NHWL. MW06-18 represents an upgradient sampling location, whereas MW06-19, MW06-20 and MW07-21 represent downgradient sampling locations.

Table 4-44 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site NHWL, the background arithmetic means for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

MW06-18

Sampling location MW06-18 is located upgradient of the landfill, approximately 15 m south of the toe. The estimated elevation of this sampling point is 726.5 masl. As shown in Photos 513 and 514, the area is largely covered with sand, gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at MW06-18 (0-15 cm), the concentrations of copper, lead, zinc and chromium were greater than those reported in 2014; no sample was collected at this location in 2015. No cadmium, arsenic or mercury were detected at this location in 2016. PHC were detected for the first time, however, the modified TPH concentration (42 mg/kg) remained well below the baseline mean concentration (216 mg/kg). The PCB concentration (0.06 mg/kg) was greater than reported in 2014 (0.034 mg/kg). None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW06-19

Sampling location MW06-19 is located downgradient of the landfill, approximately 10 m west of the toe. The estimated elevation of this sampling point is 723 masl. As shown in Photos 501 and 502, the area is largely covered with sand, gravel, rocks and boulders and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at MW06-19 (0-15 cm), the concentrations of copper, cobalt and chromium were greater than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW06-20

Sampling location MW06-20 is located downgradient of the landfill, approximately 15 m north of the toe. The estimated elevation of this sampling point is 722 masl. As shown in Photos 505 and 506, the area is largely covered with sand, gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at MW06-20 (0-15 cm), the concentrations of all detected metals were significantly greater than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW07-21

Sampling location MW07-21 is located downgradient of the landfill, approximately 15 m north of the toe. The estimated elevation of this sampling point is 722 masl. As shown in Photos 509 and 510, the area is largely covered with sand, gravel, rocks and boulders and is not vegetated. The soils consisted of wet brown sand with some gravel.

For the shallow sample at MW07-21 (0-15 cm), the concentrations of all metals were less than those reported in 2015 but similar to those in 2014. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-44: Soil Chemical Analysis Results – Upper Site Non-Hazardous Waste Landfill

ID	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**26.6**	**64.7**	**14.2**	**1.0**	**10.0**	**57.1**	**41.2**	**1.0**	**0.10**	**0.05**	**30.0**	**10.0**	**10.0**	**NA**
Baseline + 3σ		74.2	178.5	31.5	1.0	33.0	148.2	114.5	2.1	0.10	0.33	41.3	15.0	777.0	NA
Upgradient															
MW06-18a	0-15	**34.5**	47.8	11.9	<0.5	**15.1**	48.2	34.1	<1.0	<0.1	**0.06**	<7	<4	**36**	23
MW06-18 (deep) [1]															
Downgradient															
MW06-19a	0-15	23.7	**81.8**	**15**	<0.5	9.9	36.4	40.4	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW06-19 (deep) [1]															
MW06-20a	0-15	**54.2**	**72.6**	**18.1**	<0.5	**10.8**	**67.1**	**42.5**	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW06-20 (deep) [1]															
MW07-21a	0-15	21.8	49.3	10.2	<0.5	6.5	32.5	22.8	<1.0	<0.1	<0.05	<7	<4	<8	<6
MW07-21 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at MW06-18, MW06-19, MW06-20 and MW07-21 could not be collected due to refusal on rock.

4.10.5 Groundwater Sampling

Groundwater sampling and monitoring well inspection field records are included in Appendix B. Table 4-45 presents a summary of groundwater levels and analytical results for groundwater samples collected at the Upper Site NHWL. The groundwater sample at MW06-18 could not be collected because the well was dry.

MW06-19

The depth to groundwater measured at MW06-19 (duplicate location in 2016) was 0.93 m below grade. Low concentrations of nickel, cobalt and chromium, the only metals detected in 2016, were detected at this location for the first time. It is noted there were no groundwater parameter pairs for which the concentrations in the original and duplicate were over five times the MDL. No PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

MW06-20

The depth to groundwater measured at MW06-20 in 2016 was 0.46 m below grade. The groundwater sample at MW06-20 could not be collected because the monitoring well went dry and would not recover following initial readings.

MW07-21

The depth to groundwater measured at MW06-19 in 2016 was 0.70 m below grade. Low concentrations of copper, lead and zinc, the only metals detected in 2016, were detected at this location for the first time. No PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-45: Monitoring Well Groundwater Levels and Groundwater Chemical Analysis Results – Upper Site Non-Hazardous Waste Landfill

ID	GW Depth BGS (m)	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 (mg/L)	F2 (mg/L)	F3 (mg/L)	F4 (mg/L)
Baseline Mean		**0.005**	**0.22**	**0.003**	**0.001**	**0.005**	**4.0**	**0.27**	**0.009**	**0.0004**	**0.003**	**0.05**	**0.50**	**1.0**	**NA**
Baseline + 3σ		0.52	0.59	0.13	0.005	0.28	21	0.79	0.039	0.0004	0.0053	0.05	0.50	1.00	NA
Upgradient															
MW06-18 [1]															
Downgradient															
MW06-19	0.93	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	<0.005	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100
MW06-19 dup	0.93	<0.005	0.046	0.0008	<0.0001	<0.0001	<0.005	0.003	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	<0.1
MW06-19 (Dup Avg)	0.93	<0.003	0.024	0.0007	<0.0001	<0.0001	<0.005	0.002	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	<0.1
MW06-20 [2]	0.46														
MW07-21	0.70	0.0006	<0.001	<0.0005	<0.0001	0.0003	0.02	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100

Notes:

ID: Monitoring well location ID.

GW: Groundwater.

BGS: Below ground surface.

NA: Not available

Bold Values: Results exceed Baseline arithmetic mean.

1: The groundwater sample at MW06-18 could not be collected because the well was dry.

2: The groundwater sample at MW06-20 could not be collected because the monitoring well went dry and would not recover following initial readings.

4.10.6 Conclusions and Overall Performance of the Upper Site Non-Hazardous Waste Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site NHWL. Some areas with cover material segregation and cracking on the cover surface the landfill were observed. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at all seven designated locations in 2016 as a result of refusal (on boulders). The concentrations of metals were highest overall at the sample location MW06-20, located downgradient of the north side of the landfill. The concentrations of all detected metals observed at MW06-20 were also significantly greater than those reported in previous years. At MW06-18 and MW06-19, the metal concentrations were slightly greater than or similar to those reported in 2014. No cadmium, arsenic or mercury were detected in any of the soil samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in any of the soil samples in 2016.

PHC were detected at upgradient location MW06-18 for the first time, however, the modified TPH concentration (42 mg/kg) remained well below the baseline mean concentration (216 mg/kg). PCB were detected at MW06-18 in 2016; the concentration (0.06 mg/kg) was greater than reported in 2014 (0.034 mg/kg). No detectable concentrations of PHC or PCB were noted in any of the remaining soil samples in 2016.

In 2016, groundwater samples were collected from two of four monitoring wells adjacent to the landfill. At MW06-19 and MW07-21, low concentrations of some metals were detected for the first time. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in either of the groundwater samples in 2016.

Based on the results, there does not appear to be significant impact to groundwater quality from the landfill at the monitoring wells adjacent to the landfill.

4.10.7 Recommendations for Upper Site Non-Hazardous Waste Landfill

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases at MW06-20 relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

4.11 Upper Site North Warning System Landfill

4.11.1 Landfill Description

The Upper Site NWS Landfill is located southwest of the Station Area, on the west side of the road. The Upper Site NWS Landfill was initially created during DEW Line operations. The area around the landfill has very little vegetative cover (<20%) (ESG 2002b). The Upper Site NWS Landfill was regraded and covered with clean fill in 2008 during the remediation of DYE-M. The landfill area is approximately 9,100 m^2. Approximate soil sampling locations are provided in Figure DYE-M.12.

572450 E
572500 E
572550 E
572600 E
572650 E
7394750 N
7394700 N
7394650 N
7394600 N

FEATURE D EROSION
FEATURE C EROSION
FEATURE B DEBRIS
UPPER SITE NWS LANDFILL (REGRADED)
SOUTH LANDFILL-WEST (REGRADED)
HELIPAD AR (REGRADED)
ACCESS ROAD
ACCESS ROAD

DM18
DM22
DM21
DM20
DM23
DM19

LEGEND:

- DEBRIS
- EROSION (NTS)
- SOIL SAMPLING LOCATION
- 521 PHOTOGRAPH LOCATION
- REGRADED RIP RAP
- 729m GROUND SURFACE CONTOUR

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 12.5 25
1:750 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
UPPER SITE NWS LANDFILL

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO. 1530908 | PHASE 2000 | REV. A | FIGURE DYE-M.12

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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4.11.2 Visual Inspection

The Upper Site NWS Landfill exhibited a few erosion features in 2016. Table 4-46 presents a summary of observed visual inspection features and Table 4-47 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-48 is a log of photographs taken during the 2016 visual inspection.

No new features were observed in 2016. A series of minor self-armouring erosion channels were observed on the south slope (Feature C) exhibiting accumulation of fine materials at the bottom of the slope (previously noted as sedimentation). In addition, an erosion channel was noted on the cover surface at the west end of the landfill (Feature D). A previously observed piece of debris at the south toe of the landfill (Feature B) is steel cable likely remaining from landfill construction and not exposed waste. The observed features have no significant impact on the stability of the landfill. Feature A has not been assigned to this landfill.

Table 4-46: Visual Inspection Checklist – Upper Site NWS Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site NWS Landfill
DATE OF INSPECTION: August 10, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-46: Visual Inspection Checklist – Upper Site NWS Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	C	South slope	572583	7394682	40	15	0.02	6.6%	Minor self-armouring erosion channels, total of 6 channels, ~2 m to 10 m apart (Acceptable)	Previously observed	532 and 534
		D	West end of cover surface	572526	7394725	9	0.2	0.02	0.02%	Minor self-armouring erosion channel (Acceptable)	Previously observed	535
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	Y	B	Lower south slope	572576	7394649	1	-	-	-	Debris, steel cable (Acceptable)	Previously observed	533

Table 4-46: Visual Inspection Checklist – Upper Site NWS Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	N											

Landfill Area = 9,100 m^2.

Table 4-47: Preliminary Stability Assessment – Upper Site NWS Landfill

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Not Observed	-
Animal Burrows	Not Observed	-
Vegetation Establishment	Not Observed	-
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Acceptable	Isolated
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-48: Summary Table of Photographic Log – Upper Site NWS Landfill

Photo	Description (file name)	Easting	Northing	Date
517	DYE-M - Upper Site NWS Landfill, facing northwest (ATT2_Photo2.jpg)	572614.8	7394708.5	10-Aug-2016
518	DYE-M - Upper Site NWS Landfill, facing southwest (ATT3_Photo3.jpg)	572611.7	7394709.0	10-Aug-2016
519	DYE-M - Upper Site NWS Landfill, facing south (ATT4_Photo4.jpg)	572620.6	7394692.9	10-Aug-2016
520	DYE-M - Upper Site NWS Landfill, facing south (ATT5_Photo5.jpg)	572615.9	7394663.2	10-Aug-2016
521	DYE-M - Upper Site NWS Landfill, facing west (ATT6_Photo6.jpg)	572598.1	7394637.4	10-Aug-2016
522	DYE-M - Upper Site NWS Landfill, facing north (ATT7_Photo7.jpg)	572582.8	7394643.6	10-Aug-2016
523	DYE-M - Upper Site NWS Landfill, facing west (ATT8_Photo8.jpg)	572571.9	7394655.8	10-Aug-2016
524	DYE-M - Upper Site NWS Landfill, facing north (ATT9_Photo9.jpg)	572531.7	7394691.3	10-Aug-2016
525	DYE-M - Upper Site NWS Landfill, facing east (ATT10_Photo10.jpg)	572532.6	7394713.0	10-Aug-2016
526	DYE-M - Upper Site NWS Landfill, facing north (ATT11_Photo11.jpg)	572525.6	7394717.8	10-Aug-2016
527	DYE-M - Upper Site NWS Landfill, facing east (ATT12_Photo12.jpg)	572506.5	7394718.7	10-Aug-2016
528	DYE-M - Upper Site NWS Landfill, facing south (ATT13_Photo13.jpg)	572507.0	7394740.7	10-Aug-2016

Table 4-48: Summary Table of Photographic Log – Upper Site NWS Landfill

Photo	Description (file name)	Easting	Northing	Date
529	DYE-M - Upper Site NWS Landfill, facing east (ATT14_Photo14.jpg)	572540.8	7394750.8	10-Aug-2016
530	DYE-M - Upper Site NWS Landfill, facing east (ATT15_Photo15.jpg)	572568.7	7394741.4	10-Aug-2016
531	DYE-M - Upper Site NWS Landfill, facing south (ATT16_Photo16.jpg)	572581.7	7394691.4	10-Aug-2016
532	DYE-M - Upper Site NWS Landfill - Feature C - minor erosion channels, facing west (ATT17_Photo17.jpg)	572569.6	7394705.3	10-Aug-2016
533	DYE-M - Upper Site NWS Landfill - Lower south slope - Feature B - Debris, steel cable, facing south. (Acceptable) (ATT212_Photo212.jpg)	572576.0	7394649.0	10-Aug-2016
534	DYE-M - Upper Site NWS Landfill - Upper south slope - Feature C - Minor erosion channels, total of 6 channels, 2 to 10 m apart, facing northwest. (Acceptable) (ATT211_Photo211.jpg)	572583.0	7394682.0	10-Aug-2016
535	DYE-M - Upper Site NWS Landfill - west of cover surface - Feature D - Minor erosion, facing east. (ATT213_Photo213.jpg)	572526.0	7394725.0	10-Aug-2016
536	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-18 before excavation (ATT2_Photo2.jpg)	572596.5	7394731.2	10-Aug-2016
537	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-18 after excavation (ATT3_Photo3.jpg)	572596.5	7394731.2	10-Aug-2016
538	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-18 after backfilling (ATT5_Photo5.jpg)	572596.5	7394731.2	10-Aug-2016
539	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-19 before excavation (ATT15_Photo15.jpg)	572602.1	7394627.8	10-Aug-2016
540	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-19 after excavation (ATT16_Photo16.jpg)	572602.1	7394627.8	10-Aug-2016
541	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-19 after backfilling (ATT17_Photo17.jpg)	572602.1	7394627.8	10-Aug-2016
542	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-21 before excavation (ATT9_Photo9.jpg)	572519.1	7394687.7	10-Aug-2016
543	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-21 after excavation (ATT10_Photo10.jpg)	572519.1	7394687.7	10-Aug-2016
544	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-21 after backfilling (ATT11_Photo11.jpg)	572519.1	7394687.7	10-Aug-2016
545	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-20 before excavation (ATT12_Photo12.jpg)	572563.8	7394660.2	10-Aug-2016
546	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-20 after excavation (ATT13_Photo13.jpg)	572563.8	7394660.2	10-Aug-2016
547	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-20 after backfilling (ATT14_Photo14.jpg)	572563.8	7394660.2	10-Aug-2016

Table 4-48: Summary Table of Photographic Log – Upper Site NWS Landfill

Photo	Description (file name)	Easting	Northing	Date
548	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-22 before excavation (ATT6_Photo6.jpg)	572495.0	7394703.7	10-Aug-2016
549	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-22 after excavation (ATT7_Photo7.jpg)	572495.0	7394703.7	10-Aug-2016
550	DYE-M - Upper Site NWS Landfill - Soil sampling - DM-22 after backfilling (ATT8_Photo8.jpg)	572495.0	7394703.7	10-Aug-2016

4.11.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-18, DM-19, DM-20, DM-21 and DM-23 could not be collected due to refusal on rock.

4.11.4 Soil Sampling

Table 4-49 presents a summary of analytical results for soil samples collected at the Upper Site NWS Landfill. DM-18 represents an upgradient sampling location, whereas DM-19, DM-20, DM-21, DM-22 and DM-23 represent downgradient sampling locations.

Table 4-49 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site NWS Landfill, the background arithmetic means for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic mean for mercury is also greater than the baseline mean plus 3σ.

DM-18

Sampling location DM-18 is located upgradient of the landfill, immediately north of the toe. The estimated elevation of this sampling point is 733.5 masl. As shown in Photos 536 and 537, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with some gravel.

For the shallow sample at DM-18 (0-15 cm), the concentrations of most metals were less than the concentrations reported in 2015 but similar to those reported in 2014. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016.

DM-19

Sampling location DM-19 is located downgradient of the landfill, approximately 7 m south of the toe. The estimated elevation of this sampling point is 725.5 masl. As shown in Photos 539 and 540, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel.

For shallow sample at DM-19 (0-15 cm), the concentrations of all metals were less than the concentrations reported in 2014; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-20

Sampling location DM-20 is located downgradient of the landfill, immediately west of the toe. The estimated elevation of this sampling point is 727 masl. As shown in Photos 545 and 546, the area consists of gravel and rock with boulders and is not vegetated. The soils consisted of a reddish-brown sand with some gravel and stone.

For the shallow sample at DM-20 (0-15 cm), the concentration of lead was greater than those reported in previous years, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-21

Sampling location DM-21 is located downgradient of the landfill, approximately 6 m west of the toe. The estimated elevation of this sampling point is 726 masl. As shown in Photos 542 and 543, the area consists of gravel and rock with boulders and is not vegetated. The soils consisted of a grey sand with some gravel and stone.

For the shallow sample at DM-21 (0-15 cm), the concentrations of copper, nickel, cobalt and lead were greater than the concentrations reported in 2014;no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-22

Sampling location DM-22 is located downgradient of the landfill, approximately 13 m southwest of the toe. The estimated elevation of this sampling point is 725.5 masl. As shown in Photos 548 and 549, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey brown sand with some gravel.

For the shallow sample at DM-22 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years, with the exception of lead, which was slightly greater. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at DM-22 (30-40 cm), the concentrations of some metals were greater than those in the shallow sample. The concentrations of lead and zinc represent a new historical maxima at this location, whereas the concentrations of all other metals were less than or similar to previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-23

Sampling location DM-23 is located downgradient of the landfill, approximately 13 m south of the toe. The estimated elevation of this sampling point is 726 masl. As shown in Photos 579 and 580, the area consists of sand, gravel and rock with boulders and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For shallow sample at DM-23 (0-15 cm, duplicate location), the average concentrations of most metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-49: Soil Chemical Analysis Results – Upper Site NWS Landfill

ID	Depth (m)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**25.4**	**55.3**	**10.0**	**1.0**	**10.0**	**63.1**	**20.0**	**1.0**	**0.10**	**0.10**	**10.0**	**4.0**	**9.0**	**NA**
Baseline + 3σ		70.2	265.8	23.0	1.3	35.2	154.6	125.6	2.7	0.10	0.56	10.0	33.5	39.5	NA
Upgradient															
DM-18a	0-15	**33.1**	43.7	**10.9**	<0.5	**14.7**	52.6	**40.1**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-18 (deep) [1]															
Downgradient															
DM-19a	0-15	12.7	16.5	4.7	<0.5	6.1	29	14.1	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-19 (deep) [1]															
DM-20a	0-15	19.2	20.8	6.6	<0.5	**31.3**	47.3	13.9	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-20 (deep) [1]															
DM-21a		18.8	21.1	9.6	<0.5	**14.7**	**86.7**	14.8	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-21 (deep) [1]															
DM-22b	0-15	**30.6**	34.9	**12.3**	<0.5	**10.3**	40	**20.7**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-22a	30-40	**47.5**	21.4	**14.3**	<0.5	**14.2**	57.2	18.8	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-23a	0-15	14.2	35.9	8.5	<0.5	6.9	41.4	**29.7**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-23a dup	0-15	14	43	8.9	<0.5	7	51	**31**	<1	<0.10	<0.05	<5	<10	<50	<50
DM-23a (Dup Avg)	0-15	14	39	9	<0.5	7	46	**30**	<1	<0.1	<0.05	<6	<7	<29	<28
DM-23 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at DM-18, DM-19, DM-20, DM-21 and DM-23 could not be collected due to refusal on rock.

4.11.5 Conclusions and Overall Performance of the Upper Site NWS Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Upper Site NWS Landfill. Self-armouring erosion channels were observed along the south slope and at the west end of the landfill. The overall stability performance of this landfill was assessed as Acceptable.

Soil samples were collected at all six of the designated locations in 2016; at all locations, with the exception of DM-22, deep samples could not be collected as a result of refusal (on boulders). The concentrations of metals were highest overall at the sample location DM-18, located upgradient of the north side of the landfill and at the deep sample location DM-22, located downgradient of the southwest toe of the landfill. At DM-18, DM-19, DM-20, DM-22 and DM-23, the concentrations of most metals were less than or similar those reported in previous years, whereas at DM-21, the concentrations of most metals were greater than those reported in 2014. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

There is no evident ongoing impact of the NWS landfill on soil quality.

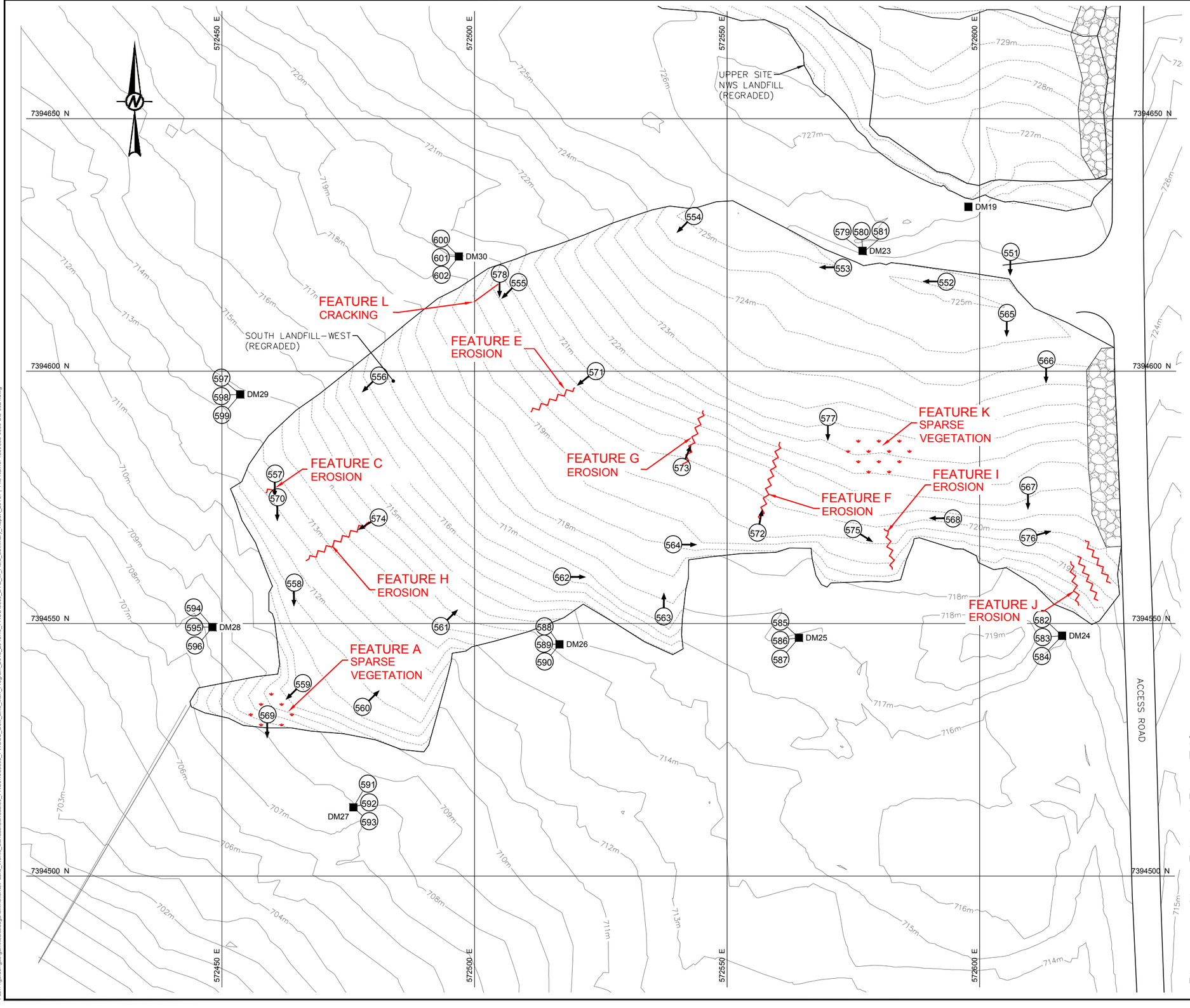
4.11.6 Recommendations for Upper Site NWS Landfill

No modifications to the ongoing monitoring program at this landfill are recommended.

4.12 Upper Site South Landfill West

4.12.1 Landfill Description

The Upper Site South Landfill West is located approximately 25 metres south and downgradient of the Upper Site NWS Landfill. The Upper Site South Landfill West was initially created during DEW Line operations. The landfill was regraded and covered with clean fill in 2008 during the remediation of DYE-M. The landfill covers an area of approximately 11,700 m^2. Approximate soil sampling locations are provided in Figure DYE-M.13.



LEGEND:

- EROSION (NTS)
- CRACKING (NTS)
- VEGETATION (NTS)
- SOIL SAMPLING LOCATION
- 568 PHOTOGRAPH LOCATION
- REGRADED RIP RAP
- 729m GROUND SURFACE CONTOUR

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 12.5 25
1:750 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
UPPER SITE
SOUTH LANDFILL WEST

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.13

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Path: \\golder.gds\gal\Mississauga\SIM\Client\Public_Works_Canada\Canada\99_PROJ\1530908_PWGSC_Dew_Line_Mon_Program_2015_2016\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0024.dwg

4.12.2 Visual Inspection

There were a number of locations at the South Landfill West where erosion and vegetation features were observed, as some minor tension cracking. Table 4-50 presents a summary of observed visual inspection features and Table 4-51 presents the Preliminary Stability Assessment results. This landfill was assessed to have an "Acceptable" overall performance because all of the observed features were assessed as "Acceptable." Table 4-52 is a log of photographs taken during the 2016 visual inspection.

Some new minor erosion channels (Features I and J) were observed in 2016. An accumulation of fine grained material was observed in a low area below self-armouring erosion (Feature C, previously noted). A new area of sparse vegetation was observed (Feature K) in addition to areas of previously observed sparse vegetation (Feature A) on the cover surface. The observed features do not appear to be impacting the stability of the landfill. Features B and D have not been assigned to the Upper Site South Landfill West.

Table 4-50: Visual Inspection Checklist – Upper Site South Landfill West

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site South Landfill West
DATE OF INSPECTION: August 10, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 3
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-50: Visual Inspection Checklist – Upper Site South Landfill West

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	N											
Erosion	Y	C	Cover surface	572461	7394575	1	0.3	0.1	<0.01%	Minor self-armouring erosion with accumulation of fines in a low area from erosion above (Acceptable)	Previously observed, no change	557 and 570
		E	Cover surface	572524	7394600	10	0.3	-	0.03%	Minor self-armouring erosion with accumulation of fines below (Acceptable)	Previously observed, no change	571
		F	Cover surface	572556	7394568	20	0.2	0.03	0.03%	Minor erosion channel from the middle of landfill towards south (Acceptable)	Previously observed, no change	572
		G	Cover surface	572541	7394581	14	0.2	0.02	0.02%	Minor self-armouring erosion (Acceptable)	Previously observed, no change	573
		H	Cover surface	572481	7394571	19	0.2	0.02	0.03%	Minor self-armouring erosion channel (Acceptable)	Previously observed, no change	574
		I	Cover surface	572574	7394568	10	0.1	0.02	0.01%	Minor self-armouring erosion (Acceptable)	New	568 and 575
		J	Cover surface	572609	7394567	15	5	0.02	0.64%	Minor self-armouring erosion channels (Acceptable)	New	567 and 576
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	Y	L	North crest	572505.0	7394619.3	5	0.01	-	0.01%	Minor tension cracking (Acceptable)	New	578
Animal Burrows	N											
Vegetation	Y	A	South slope	572459	7394532	1	1	-	<0.01%	Sparse vegetation	Previously observed, no change	569

Table 4-50: Visual Inspection Checklist – Upper Site South Landfill West

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
		K	Cover surface	572570	7394590	1	1	-	<0.01%	Sparse vegetation	New	577
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											
Features of Note / Other Observations	N											

Landfill Area = 11,700 m^2.

Table 4-51: Preliminary Stability Assessment – Upper Site South Landfill West

Feature	Severity Rating	Extent
Settlement	Not Observed	-
Erosion	Acceptable	Occasional
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Acceptable	Isolated
Animal Burrows	Not Observed	-
Vegetation Establishment	Acceptable	Occasional
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Not Observed	-
Overall Landfill Performance	**Acceptable**	

Table 4-52: Summary Table of Photographic Log – Upper Site South Landfill West

Photo	Description (file name)	Easting	Northing	Date
551	DYE-M - Upper Site South Landfill West, facing south. (ATT18_Photo18.jpg)	572606.1	7394623.6	10-Aug-2016
552	DYE-M - Upper Site South Landfill West, facing west. (ATT19_Photo19.jpg)	572593.4	7394617.7	10-Aug-2016
553	DYE-M - Upper Site South Landfill West, facing west. (ATT20_Photo20.jpg)	572572.9	7394620.5	10-Aug-2016
554	DYE-M - Upper Site South Landfill West, facing southwest (ATT21_Photo21.jpg)	572543.4	7394630.7	10-Aug-2016
555	DYE-M - Upper Site South Landfill West, facing southwest (ATT22_Photo22.jpg)	572508.7	7394617.6	10-Aug-2016
556	DYE-M - Upper Site South Landfill West, facing southwest (ATT23_Photo23.jpg)	572481.1	7394599.1	10-Aug-2016
557	DYE-M - Upper Site South Landfill West, facing south - C - Minor self-armouring erosion with accumulation of fines below (ATT24_Photo24.jpg)	572460.5	7394579.7	10-Aug-2016
558	DYE-M - Upper Site South Landfill West, facing south (ATT25_Photo25.jpg)	572464.3	7394558.1	10-Aug-2016
559	DYE-M - Upper Site South Landfill West, facing southwest (ATT26_Photo26.jpg)	572466.0	7394538.2	10-Aug-2016
560	DYE-M - Upper Site South Landfill West, facing northeast (ATT27_Photo27.jpg)	572477.8	7394533.5	10-Aug-2016
561	DYE-M - Upper Site South Landfill West, facing northeast (ATT28_Photo28.jpg)	572493.3	7394549.5	10-Aug-2016

Table 4-52: Summary Table of Photographic Log – Upper Site South Landfill West

Photo	Description (file name)	Easting	Northing	Date
562	DYE-M - Upper Site South Landfill West, facing east (ATT29_Photo29.jpg)	572517.3	7394559.3	10-Aug-2016
563	DYE-M - Upper Site South Landfill West, facing north (ATT30_Photo30.jpg)	572537.4	7394551.4	10-Aug-2016
564	DYE-M - Upper Site South Landfill West, facing east (ATT31_Photo31.jpg)	572539.3	7394565.7	10-Aug-2016
565	DYE-M - Upper Site South Landfill West, facing south (ATT32_Photo32.jpg)	572605.4	7394611.5	10-Aug-2016
566	DYE-M - Upper Site South Landfill West, facing south (ATT33_Photo33.jpg)	572613.2	7394602.3	10-Aug-2016
567	DYE-M - Upper Site South Landfill West, facing south - J - Self-armouring erosion channel (ATT34_Photo34.jpg)	572609.6	7394577.3	10-Aug-2016
568	DYE-M - Upper Site South Landfill West, facing west - I - Self-armouring erosion (ATT35_Photo35.jpg)	572594.7	7394570.8	10-Aug-2016
569	DYE-M - Upper Site South Landfill West - south slope - A - Sparse vegetation, facing south (ATT215_Photo215.jpg)	572459.0	7394532.0	10-Aug-2016
570	DYE-M - Upper Site South Landfill West - Cover surface - C - Erosion with accumulation of fines, facing south. (Acceptable) (ATT214_Photo214.jpg)	572461.0	7394575.0	10-Aug-2016
571	DYE-M - Upper Site South Landfill West - Cover surface - E - Minor erosion self-armouring with accumulation of fines below, facing southwest (ATT221_Photo221.jpg)	572524.0	7394600.0	10-Aug-2016
572	DYE-M - Upper Site South Landfill West - Cover surface - F - Minor erosion channel from the middle of landfill towards south, facing north (ATT216_Photo216.jpg)	572556.0	7394568.0	10-Aug-2016
573	DYE-M - Upper Site South Landfill West - Cover surface - G - Minor self-armouring erosion, facing north (Acceptable) (ATT220_Photo220.jpg)	572541.0	7394581.0	10-Aug-2016
574	DYE-M - Upper Site South Landfill West - Cover surface - H - Minor self-armouring erosion channel, facing southwest (Acceptable) (ATT222_Photo222.jpg)	572481.0	7394571.0	10-Aug-2016
575	DYE-M - Upper Site South Landfill West - I - Minor self-armouring erosion with accumulation of fines, facing southeast (ATT217_Photo217.jpg)	572574.9	7394568.7	10-Aug-2016
576	DYE-M - Upper Site South Landfill West - J - Series of erosion channels with accumulation of fines, facing east (ATT218_Photo218.jpg)	572609.6	7394567.1	10-Aug-2016
577	DYE-M - Upper Site South Landfill West - K - Sparse vegetation, facing south (ATT219_Photo219.jpg)	572570.0	7394590.9	10-Aug-2016

Table 4-52: Summary Table of Photographic Log – Upper Site South Landfill West

Photo	Description (file name)	Easting	Northing	Date
578	DYE-M - Upper Site South Landfill West - L - Minor tension cracking on north crest, facing south (ATT239_Photo239.jpg)	572505.0	7394619.3	10-Aug-2016
579	DYE-M - Upper Site South Landfill West - Soil sampling - DM-23 before excavation (ATT240_Photo240.jpg)	572576.8	7394623.8	10-Aug-2016
580	DYE-M - Upper Site South Landfill West - Soil sampling - DM-23 after excavation (ATT241_Photo241.jpg)	572576.8	7394623.8	10-Aug-2016
581	DYE-M - Upper Site South Landfill West - Soil sampling - DM-23 after backfilling (ATT242_Photo242.jpg)	572576.8	7394623.8	10-Aug-2016
582	DYE-M - Upper Site South Landfill West - Soil sampling - DM-24 before excavation (ATT18_Photo18.jpg)	572616.3	7394547.6	10-Aug-2016
583	DYE-M - Upper Site South Landfill West - Soil sampling - DM-24 after excavation (ATT19_Photo19.jpg)	572616.3	7394547.6	10-Aug-2016
584	DYE-M - Upper Site South Landfill West - Soil sampling - DM-24 after backfilling (ATT20_Photo20.jpg)	572616.3	7394547.6	10-Aug-2016
585	DYE-M - Upper Site South Landfill West - Soil sampling - DM-25 before excavation (ATT21_Photo21.jpg)	572564.2	7394547.2	10-Aug-2016
586	DYE-M - Upper Site South Landfill West - Soil sampling - DM-25 after excavation (ATT22_Photo22.jpg)	572564.2	7394547.2	10-Aug-2016
587	DYE-M - Upper Site South Landfill West - Soil sampling - DM-25 after backfilling (ATT23_Photo23.jpg)	572564.2	7394547.2	10-Aug-2016
588	DYE-M - Upper Site South Landfill West - Soil sampling - DM-26 before excavation (ATT24_Photo24.jpg)	572516.8	7394545.9	10-Aug-2016
589	DYE-M - Upper Site South Landfill West - Soil sampling - DM-26 after excavation (ATT25_Photo25.jpg)	572516.8	7394545.9	10-Aug-2016
590	DYE-M - Upper Site South Landfill West - Soil sampling - DM-26 after backfilling (ATT26_Photo26.jpg)	572516.8	7394545.9	10-Aug-2016
591	DYE-M - Upper Site South Landfill West - Soil sampling - DM-27 before excavation (ATT27_Photo27.jpg)	572470.9	7394514.9	10-Aug-2016
592	DYE-M - Upper Site South Landfill West - Soil sampling - DM-27 after excavation (ATT228_Photo228.jpg)	572476.0	7394513.6	10-Aug-2016
593	DYE-M - Upper Site South Landfill West - Soil sampling - DM-27 after backfilling (ATT229_Photo229.jpg)	572476.0	7394513.6	10-Aug-2016
594	DYE-M - Upper Site South Landfill West - Soil sampling - DM-28 before excavation (ATT230_Photo230.jpg)	572448.1	7394549.3	10-Aug-2016
595	DYE-M - Upper Site South Landfill West - Soil sampling - DM-28 after excavation (ATT231_Photo231.jpg)	572448.1	7394549.3	10-Aug-2016
596	DYE-M - Upper Site South Landfill West - Soil sampling - DM-28 after backfilling (ATT232_Photo232.jpg)	572448.1	7394549.3	10-Aug-2016
597	DYE-M - Upper Site South Landfill West - Soil sampling - DM-29 before excavation (ATT233_Photo233.jpg)	572453.6	7394595.4	10-Aug-2016

Table 4-52: Summary Table of Photographic Log – Upper Site South Landfill West

Photo	Description (file name)	Easting	Northing	Date
598	DYE-M - Upper Site South Landfill West - Soil sampling - DM-29 after excavation (ATT234_Photo234.jpg)	572453.6	7394595.4	10-Aug-2016
599	DYE-M - Upper Site South Landfill West - Soil sampling - DM-29 after backfilling (ATT235_Photo235.jpg)	572453.6	7394595.4	10-Aug-2016
600	DYE-M - Upper Site South Landfill West - Soil sampling - DM-30 before excavation (ATT236_Photo236.jpg)	572496.9	7394622.7	10-Aug-2016
601	DYE-M - Upper Site South Landfill West - Soil sampling - DM-30 after excavation (ATT237_Photo237.jpg)	572496.9	7394622.7	10-Aug-2016
602	DYE-M - Upper Site South Landfill West - Soil sampling - DM-30 after backfilling (ATT238_Photo238.jpg)	572496.9	7394622.7	10-Aug-2016

4.12.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-19, DM-23, DM-24, DM-25, DM-26, DM-27, DM-28 and DM-29 could not be collected due to refusal on rock (assumed boulder).

4.12.4 Soil Sampling

Table 4-53 presents a summary of analytical results for soil samples collected at the Upper Site South Landfill West. DM-19 and DM-23 represent upgradient sampling locations, whereas DM-24, DM-25, DM-26, DM-27, DM-28, DM-29 and DM-30 represent downgradient sampling locations. It should be noted that while sampling locations DM-19 and DM-23 are considered to be located upgradient of the Upper Site South Landfill West, they are also located downgradient of the nearby Upper Site NWS Landfill.

Table 4-53 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site South Landfill West, the background arithmetic means for copper, nickel, cobalt, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic means for nickel and mercury are also greater than the baseline means plus 3σ.

DM-19

Sampling location DM-19 is located upgradient of the landfill, approximately 7 m south of the toe of the nearby NWS landfill. The estimated elevation of this sampling point is 725.5 masl. As shown in Photos 539 and 540, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel.

For shallow sample at DM-19 (0-15 cm), the concentrations of all metals were less than the concentrations reported in 2014; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-23

Sampling location DM-23 is located upgradient of the landfill, approximately 4 m north of the toe. The estimated elevation of this sampling point is 726 masl. As shown in Photos 579 and 580, the area consists of sand, gravel and rock with boulders and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-23 (0-15 cm, duplicate location), the average concentrations of most metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-24

Sampling location DM-24 is located downgradient of the landfill, approximately 6 m south of the toe. The estimated elevation of this sampling point is 717 masl. As shown in Photos 582 and 583, the area is largely covered with gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-24 (0-15 cm), the concentrations of most metals were less than the concentrations reported in 2014, with the exception of cobalt; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-25

Sampling location DM-25 is located downgradient of the landfill, approximately 13 m south of the toe. The estimated elevation of this sampling point is 717 masl. As shown in Photos 585 and 586, the area is largely covered with sand and gravel with some rock and is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-25 (0-15 cm), the concentrations of most metals were less than those reported in 2014, with the exception of copper; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-26

Sampling location DM-26 is located downgradient of the landfill, approximately 6 m south of the toe. The estimated elevation of this sampling point is 714 masl. As shown in Photos 588 and 589, the area is largely covered with sand and gravel with some rock and is not vegetated. The soils consisted of brown sand and some gravel.

For the shallow sample at DM-26 (0-15 cm), the concentrations nickel, cobalt and chromium were greater than those reported in 2014, whereas the concentrations of all other metals were less than those in 2014; no sample was collected at this location in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-27

Sampling location DM-27 is located downgradient of the landfill, approximately 15 m south of the toe. The estimated elevation of this sampling point is 708 masl. As shown in Photos 591 and 592, the area is largely covered with sand and some gravel and rock and is not vegetated. The soils consisted of grey sand with some gravel.

For the shallow sample at DM-27 (0-15 cm, duplicate location), the average concentrations of all metals were less than the concentrations reported in 2014; no sample was collected at this location in 2015. The calculated RPD values indicated the original and duplicate results differ by greater than 30% for zinc and these results should therefore be interpreted with caution. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-28

Sampling location DM-28 is located downgradient of the landfill, approximately 12 m west of the toe. The estimated elevation of this sampling point is 708.5 masl. As shown in Photos 594 and 595, the area is largely covered with gravel, rocks and boulders and is not vegetated. The soils consisted of brown sand, gravel and stone.

For the shallow sample at DM-28 (0-15 cm), the concentrations of all metals were less than those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-29

Sampling location DM-29 is located downgradient of the landfill, approximately 10 m north of the toe. The estimated elevation of this sampling point is 714 masl. As shown in Photos 597 and 598, the area is largely covered with gravel and rock and is not vegetated. The soils consisted of brown sand with gravel and stone.

For the shallow sample at DM-29 (0-15 cm), the concentrations of all metals were less than or similar to those reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-30

Sampling location DM-30 is located cross-gradient of the landfill, approximately 7 m north of the toe. The estimated elevation of this sampling point is 720 masl. As shown in Photos 600 and 601, the area is largely covered with sand and gravel is not vegetated. The soils consisted of grey sand with gravel and stone.

For the shallow sample at DM-30 (0-15 cm), the concentrations of all metals were less than or similar to the concentrations reported in previous years. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

For the deep sample at DM-30 (30-40 cm), metal concentrations were slightly higher than those in the shallow sample. The concentrations of all metals were less than or similar to those reported in previous years, with the exception of chromium. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-53: Soil Chemical Analysis Results – Upper Site South Landfill West

ID	Depth (m)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F3 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**26.3**	**42.4**	**12.6**	**1.0**	**10.0**	**83.9**	**56.4**	**2.3**	**0.10**	**0.05**	**10.0**	**4.0**	**9.0**	**NA**
Baseline + 3σ		88.3	102.2	52.2	21.4	92.0	226.7	178.6	46.9	0.10	0.56	10.0	10.8	130.8	NA
Upgradient															
DM-19a	0-15	12.7	16.5	4.7	<0.5	6.1	29	14.1	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-19 (deep) [1]															
DM-23a	0-15	14.2	35.9	8.5	<0.5	6.9	41.4	29.7	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-23a dup	0-15	14	**43**	8.9	<0.5	7	51	31	<1	<0.10	<0.05	<5	<10	<50	<50
DM-23a (Dup Avg)	0-15	14	39	9	<0.5	7	46	30	<1	<0.1	<0.05	<6	<7	<29	<28
DM-23 (deep) [1]															
Downgradient															
DM-24a	0-15	21.8	**45.5**	**13.5**	<0.5	9.7	64.8	**58.9**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-24 (deep) [1]															
DM-25a	0-15	**35.3**	**52.2**	**13.3**	<0.5	9.3	66.9	**64.9**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-25 (deep) [1]															
DM-26a	0-15	**32.2**	**53**	12.4	<0.5	8.1	53.1	**81.7**	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-26 (deep) [1]															
DM-27a	0-15	12.6	17	8	<0.5	7.3	49.3	18.6	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-27a dup	0-15	17	21	9.7	<0.5	7	71	21	<1	<0.10	<0.05	<5	<10	<50	<50
DM-27a (Dup Avg)	0-15	15	19	9	<0.5	7	60	20	<1	<0.1	<0.05	<6	<7	<29	<28
DM-27 (deep) [1]															
DM-28a	0-15	15.6	30.6	8.5	<0.5	5.4	40.1	23.4	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-28 (deep) [1]															
DM-29a	0-15	16.8	38.4	8.2	<0.5	6.7	31.5	22.7	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-29 (deep) [1]															
DM-30b	0-15	20.7	24.3	7.6	<0.5	7.2	40.1	26.7	<1.0	<0.1	<0.05	<7	<4	<8	<6

Table 4-53: Soil Chemical Analysis Results – Upper Site South Landfill West

ID	Depth (m)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F3 (mg/kg)
Background Mean		60.4	141.3	19.7	1.0	10.0	70.1	89.8	1.0	0.5	0.002	NA	NA	NA	NA
Baseline Mean		**26.3**	**42.4**	**12.6**	**1.0**	**10.0**	**83.9**	**56.4**	**2.3**	**0.10**	**0.05**	**10.0**	**4.0**	**9.0**	**NA**
Baseline + 3σ		88.3	102.2	52.2	21.4	92.0	226.7	178.6	46.9	0.10	0.56	10.0	10.8	130.8	NA
DM-30a	30-40	**28**	29.5	9.3	<0.5	8.3	49.7	32.6	<1.0	<0.1	<0.05	<7	<4	<8	<6

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at DM-19, DM-23, DM-24, DM-25, DM-26, DM-27, DM-28 and DM-29 could not be collected due to refusal on rock.

4.12.5 Conclusions and Overall Performance of the Upper Site South Landfill West

Based on the visual inspection, there does not appear to be any significant erosion, settlement, exposed waste or indications of instability at the Upper Site South Landfill West. Some self-armouring erosion and minor cracking were observed on the cover surface. The overall stability performance of this landfill was assessed as Acceptable.

Deep soil samples could not be collected at all sampling locations, with the exception of DM-30, as a result of refusal (on boulders). The concentrations of metals were highest overall at the sample location DM-24, DM-25 and DM-26, located downgradient of the south side of the landfill. At DM-26 concentrations of nickel, cobalt and chromium were greater than those reported in 2014, whereas the concentrations of all other metals were less than those in 2014. At DM-24 and DM-25, the concentrations of most metals were less than those reported in previous years, which was similarly the case for all other sampling locations. No detectable concentrations of cadmium, arsenic, mercury, PHC or PCB were noted in any of the samples in 2016. No exceedances of the baseline mean concentrations plus 3σ were reported in 2016.

There is no evident ongoing impact of the Upper Site South Landfill West on soil quality.

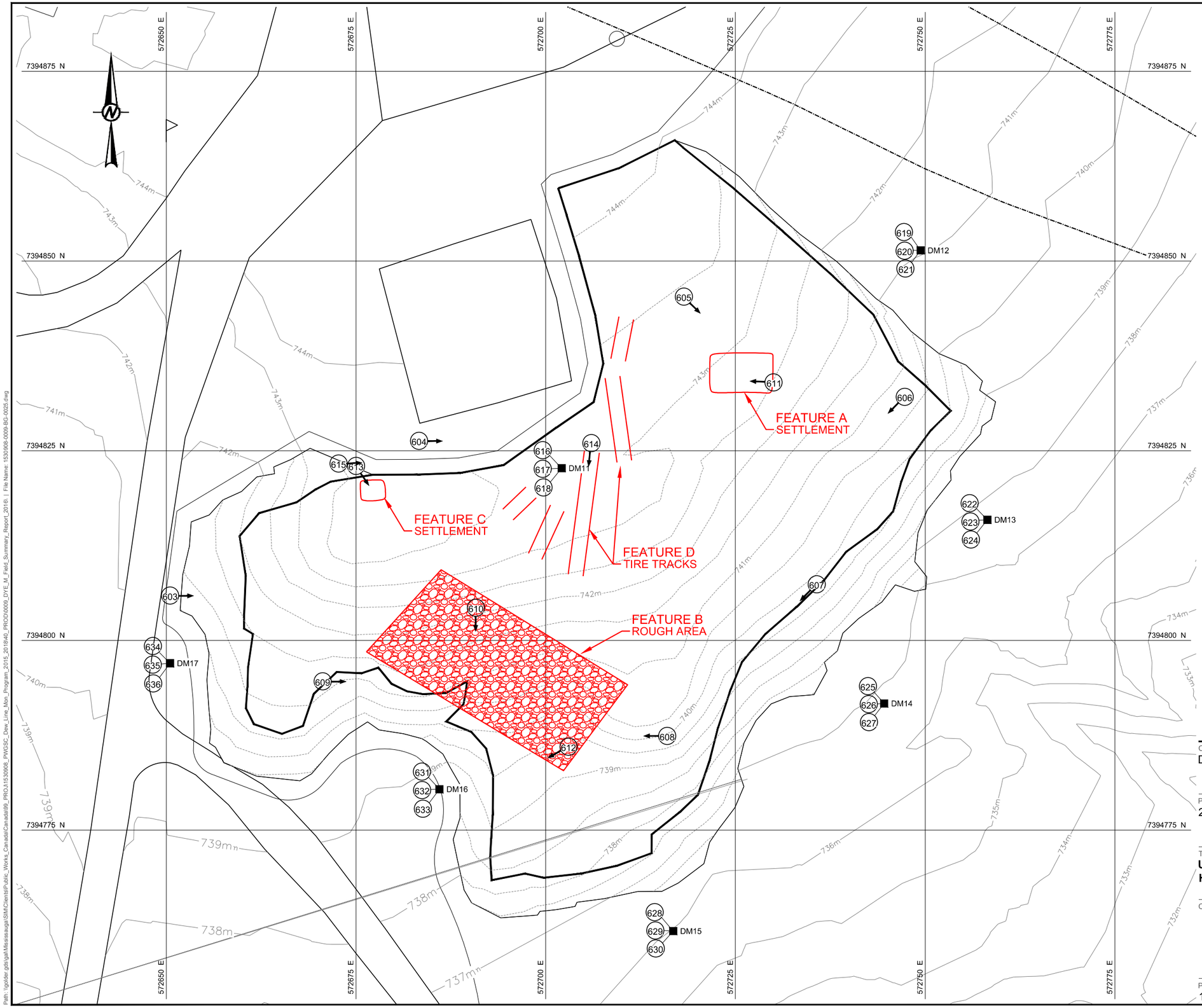
4.12.6 Recommendations for Upper Site South Landfill West

No modifications to the ongoing monitoring program at this landfill are recommended.

4.13 Upper Site Helipad Landfill

4.13.1 Landfill Description

The Upper Site Helipad Landfill is located between the existing helipad and the south side of the station pad. It is a former landfill that was created during DEW Line operations. The Upper Site Helipad Landfill was regraded and covered with clean fill in 2008 during the remediation of DYE-M. The area of the regraded landfill is approximately 5,600 m^2. Approximate soil sampling locations are provided in Figure DYE-M.14.



LEGEND:

- SETTLEMENT (NTS)
- ROUGH AREAS (NTS)
- TIRE TRACKS (NTS)
- SOIL SAMPLING LOCATION
- PHOTOGRAPH LOCATION (608)
- GROUND SURFACE CONTOUR (736m)

NOTE
GRID PROJECTION IS NAD83 ZONE 20N.
ELEVATIONS ARE GEODETIC.

REFERENCE

PREVIOUS INSPECTION FIGURE PROVIDED BY AECOM, PROJECT NO. 60323208 (0171-LANDFILL MONITORING), DATED MARCH 2015.

0 10 20
1:500 METRES

CLIENT
DEPARTMENT OF NATIONAL DEFENCE CANADA

PROJECT
2016 DYE-M MONITORING REPORT

TITLE
UPPER SITE
HELIPAD

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-07
DESIGNED	RM
PREPARED	TDR
REVIEWED	DCJ
APPROVED	DP

PROJECT NO.	PHASE	REV.	FIGURE
1530908	2000	A	DYE-M.14

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Public_Works_Canada\Canada\99_PRO\A1530908_PWGSC_Dew_Line_Mon_Program_2015_2018\40_PROD\0009_DYE_M_Field_Summary_Report_2016\ | File Name: 1530908-0009-BG-0025.dwg

4.13.2 Visual Inspection

Locations with observed minor settlement and cover material segregation were noted at the Upper Site Helipad Landfill. Table 4-54 presents a summary of observed visual inspection features and Table 4-55 presents the Preliminary Stability Assessment results. This landfill was assessed to have an “Acceptable” overall performance because all observed features were assessed as “Acceptable.” Table 4-56 is a log of photographs taken during the 2016 visual inspection.

Some minor settlement (Features A and C) was observed on the cover surface. An area of cover material segregation and/or rough grading (Feature B) was observed at the southwest end of the landfill. Some tire tracks were also observed on the cover surface (Feature D). The observed features do not appear to be impacting the stability of the landfill.

Table 4-54: Visual Inspection Checklist – Upper Site Helipad Landfill

SITE NAME: DYE-M Cape Dyer
LANDFILL DESIGNATION: Upper Site Helipad Landfill
DATE OF INSPECTION: August 10, 2016
DATE OF PREVIOUS INSPECTION: August 11, 2015
INSPECTED BY: Kevin Rattray
REPORT PREPARED BY: Kevin Rattray
MONITORING EVENT NUMBER: 2
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Table 4-54: Visual Inspection Checklist – Upper Site Helipad Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Settlement	Y	A	Cover surface	572730	7394834	8	6	0.3	0.86%	Minor settlement (Acceptable)	Unchanged since previous observation	611
		C	Cover surface	572675	7394823	3	3	0.3	0.16%	Minor settlement (Acceptable)	Unchanged since previous observation	613
Erosion	Y	B	South slope	572703	7394786	30	15	-	8.1%	Rough area (Acceptable)	Unchanged since previous observation	612
Lateral Movement	N											
Frost Action	N											
Sloughing	N											
Cracking	N											
Animal Burrows	N											
Vegetation	N											
Staining	N											
Vegetation Stress	N											
Seepage or Ponded Water	N											
Debris and/or Liner Exposed	N											
Presence / Condition of Monitoring Instruments	N											

Table 4-54: Visual Inspection Checklist – Upper Site Helipad Landfill

Checklist Item	Present (Y/N)	Feature ID (A, B, etc.)	Location Description	Easting	Northing	Length (m)	Width (m)	Depth (m)	Extent of Landfill Area (%)	Description (Severity Rating)	Comparison to Historical Observations	Photos
Features of Note / Other Observations	Y	D	Cover surface	572706	7394826	30	5	0.2	2. 7%	Tire tracks (Acceptable)	Previously observed tire tracks with ponded water; no ponded water in 2016	614

Landfill Area = 5,600 m^2.

Table 4-55: Preliminary Stability Assessment – Upper Site Helipad Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Lateral Movement	Not Observed	-
Frost Action	Not Observed	-
Sloughing	Not Observed	-
Cracking	Not Observed	-
Animal Burrows	Not Observed	-
Vegetation Establishment	Not Observed	-
Staining	Not Observed	-
Vegetation Stress	Not Observed	-
Seepage/Ponded Water	Not Observed	-
Debris and/or Liner Exposure	Not Observed	-
Other	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Table 4-56: Summary Table of Photographic Log – Upper Site Helipad Landfill

Photo	Description (file name)	Easting	Northing	Date
603	DYE-M - Upper Site Helipad Landfill, facing east (ATT36_Photo36.jpg)	572650.5	7394805.9	10-Aug-2016
604	DYE-M - Upper Site Helipad Landfill, facing east (ATT37_Photo37.jpg)	572683.3	7394826.3	10-Aug-2016
605	DYE-M - Upper Site Helipad Landfill, facing southeast (ATT38_Photo38.jpg)	572718.2	7394845.3	10-Aug-2016
606	DYE-M - Upper Site Helipad Landfill, facing southwest (ATT39_Photo39.jpg)	572747.3	7394832.1	10-Aug-2016
607	DYE-M - Upper Site Helipad Landfill, facing southwest (ATT40_Photo40.jpg)	572735.7	7394807.4	10-Aug-2016
608	DYE-M - Upper Site Helipad Landfill, facing west (ATT41_Photo41.jpg)	572716.0	7394787.4	10-Aug-2016
609	DYE-M - Upper Site Helipad Landfill - Feature B - rough area, facing east (ATT42_Photo42.jpg)	572670.6	7394794.6	10-Aug-2016
610	DYE-M - Upper Site Helipad Landfill - Feature B - rough area, facing south (ATT43_Photo43.jpg)	572690.8	7394804.3	10-Aug-2016
611	DYE-M - Upper Site Helipad Landfill - Cover surface - Feature A - Minor settlement, facing west (Acceptable) (ATT226_Photo226.jpg)	572730.0	7394834.0	10-Aug-2016
612	DYE-M - Upper Site Helipad Landfill - south slope - Feature B - Rough area, facing west (Acceptable) (ATT227_Photo227.jpg)	572703.0	7394786.0	10-Aug-2016
613	DYE-M - Upper Site Helipad Landfill - Cover surface - Feature C - Settlement, facing southeast (Acceptable) (ATT224_Photo224.jpg)	572675.0	7394823.0	10-Aug-2016

Table 4-56: Summary Table of Photographic Log – Upper Site Helipad Landfill

Photo	Description (file name)	Easting	Northing	Date
614	DYE‑M - Upper Site Helipad Landfill - Cover surface - Feature D - Tire tracks (Acceptable); no ponded water in 2016, facing south (ATT225_Photo225.jpg)	572706.0	7394826.0	10-Aug-2016
615	DYE‑M - Upper Site Helipad Landfill - Adjacent to helipad, facing east (ATT223_Photo223.jpg)	572672.7	7394823.3	10-Aug-2016
616	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-11 before excavation (ATT261_Photo261.jpg)	572702.1	7394822.7	10-Aug-2016
617	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-11 after excavation (ATT262_Photo262.jpg)	572702.1	7394822.7	10-Aug-2016
618	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-11 after backfilling (ATT263_Photo263.jpg)	572702.1	7394822.7	10-Aug-2016
619	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-12 before excavation (ATT258_Photo258.jpg)	572749.4	7394851.4	10-Aug-2016
620	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-12 after excavation (ATT259_Photo259.jpg)	572749.4	7394851.4	10-Aug-2016
621	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-12 after backfilling (ATT260_Photo260.jpg)	572749.4	7394851.4	10-Aug-2016
622	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-13 before excavation (ATT255_Photo255.jpg)	572758.2	7394815.9	10-Aug-2016
623	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-13 after excavation (ATT256_Photo256.jpg)	572758.2	7394815.9	10-Aug-2016
624	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-13 after backfilling (ATT257_Photo257.jpg)	572758.2	7394815.9	10-Aug-2016
625	DYE-MDYE-M - Upper Site Helipad Landfill - Soil sampling - DM-14 before excavation (ATT252_Photo252.jpg)	572744.6	7394791.7	10-Aug-2016
626	DYE-MDYE-M - Upper Site Helipad Landfill - Soil sampling - DM-14 after excavation (ATT253_Photo253.jpg)	572744.6	7394791.7	10-Aug-2016
627	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-14 after backfilling (ATT254_Photo254.jpg)	572744.6	7394791.7	10-Aug-2016
628	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-15 before excavation (ATT249_Photo249.jpg)	572716.8	7394761.7	10-Aug-2016
629	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-15 after excavation (ATT250_Photo250.jpg)	572716.8	7394761.7	10-Aug-2016
630	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-15 after backfilling (ATT251_Photo251.jpg)	572716.8	7394761.7	10-Aug-2016
631	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-16 before excavation (ATT246_Photo246.jpg)	572686.0	7394780.4	10-Aug-2016
632	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-16 after excavation (ATT247_Photo247.jpg)	572686.0	7394780.4	10-Aug-2016
633	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-16 after backfilling (ATT248_Photo248.jpg)	572686.0	7394780.4	10-Aug-2016

Table 4-56: Summary Table of Photographic Log – Upper Site Helipad Landfill

Photo	Description (file name)	Easting	Northing	Date
634	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-17 before excavation (ATT243_Photo243.jpg)	572650.5	7394797.0	10-Aug-2016
635	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-17 after excavation (ATT244_Photo244.jpg)	572650.5	7394797.0	10-Aug-2016
636	DYE-M - Upper Site Helipad Landfill - Soil sampling - DM-17 after backfilling (ATT245_Photo245.jpg)	572650.5	7394797.0	10-Aug-2016

4.13.3 Summary of Sampling Deviations

The field work was conducted as per the TOR with the following exceptions:

- The deep soil samples at DM-11, DM-12, DM-13, DM-14, DM-15, DM-16 and DM-17 could not be collected due to refusal on rock.

4.13.4 Soil Sampling

Table 4-57 presents a summary of analytical results for soil samples collected at the Upper Site Helipad Landfill. DM-11 is a sampling location within the landfill footprint (cover), whereas DM-12, DM-13, DM-14, DM-15, DM-16 and DM-17 represent downgradient sampling locations. The deep soil samples at DM-11, DM-12, DM-13, DM-14, DM-15, DM-16 and DM-17 could not be collected due to refusal.

Table 4-57 also lists the arithmetic mean background and baseline values for the landfill, in addition to the baseline plus 3σ limits. At the Upper Site Helipad Landfill, the background arithmetic means for copper, nickel, cobalt, zinc, chromium and mercury are greater than the baseline arithmetic means. The background arithmetic means for chromium and mercury are also greater than the baseline means plus 3σ.

DM-11

Sampling location DM-11 is located within the landfill footprint (cover), immediately west of an area with tire tracks as shown in Photo 614. The estimated elevation of this sampling point is 743 masl. As shown in Photos 616 and 617, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-11 (0-15 cm), the concentrations of most metals were less than those observed in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-12

Sampling location DM-12 is located downgradient of the landfill, approximately 6 m northeast of the toe. The estimated elevation of this sampling point is 741 masl. As shown in Photos 619 and 620, the area is largely covered with sand and gravel and is not vegetated. The soils consisted of brown sand with some gravel.

For the shallow sample at DM-12 (0-15 cm), the concentrations of most metals were less than those observed in 2015. No cadmium, arsenic or mercury were detected at this location in 2016. A modified TPH concentration of 52 mg/kg and PHC F4 fraction concentration of 10 mg/kg were observed in 2016; no PHC were observed at this location in 2015. An elevated PCB concentration of 1.17 mg/kg was observed in 2016, which represents an

increase from the concentration of 0.08 mg/kg observed in 2015 and exceeded the baseline concentration plus 3σ (0.51 mg/kg).

DM-13

Sampling location DM-13 is located downgradient of the landfill, approximately 6 m south of the toe. The estimated elevation of this sampling point is 737 masl. As shown in Photos 622 and 623, the area consists of sand and gravel with some rocks and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-13 (0-15 cm), the concentrations of copper, nickel, lead and zinc were greater than those observed in 2015, whereas the concentrations of other detected metals were less than those observed in 2015. No cadmium, arsenic or mercury were detected at this location in 2016. A modified TPH concentration of 98 mg/kg and PHC F4 fraction concentration of 41 mg/kg was observed in 2016, which represents an increase from the concentration of 61 mg/kg observed in 2015. An elevated PCB concentration of 1.17 mg/kg was observed in 2016; no PCB were detected at this location in 2015. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-14

Sampling location DM-14 is located downgradient of the landfill, immediately south of the toe. The estimated elevation of this sampling point is 736.5 masl. As shown in Photos 625 and 626, the area is largely covered with sand and gravel with some rocks and is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-14 (0-15 cm), the concentrations of nickel, cobalt, lead and chromium were greater than those observed in 2015, whereas the concentrations of other detected metals were less than in 2015. No cadmium, arsenic, mercury or PHC were detected at this location in 2016. The PCB concentration of 1.14 mg/kg exceeded the baseline concentration plus 3σ (0.51 mg/kg); no PCB were detected at this location in 2015.

DM-15

Sampling location DM-15 is located downgradient of the landfill, approximately 5 m south of the toe. The estimated elevation of this sampling point is 736 masl. As shown in Photos 628 and 629, the area is largely covered with sand, rock and boulders is not vegetated. The soils consisted of brown sand with some gravel and stone.

For the shallow sample at DM-15 (0-15 cm), the concentrations of copper, lead, zinc and chromium were greater than those observed in 2015, whereas the concentrations of other detected metals were less in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-16

Sampling location DM-16 is located downgradient of the landfill, approximately 7 m south of the toe. The estimated elevation of this sampling point is 738.5 masl. As shown in Photos 631 and 632, the area consists of sand and gravel with some rocks and boulders and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-16 (0-15 cm), the concentrations of most metals were less than those observed in 2015. No cadmium, arsenic, mercury, PHC or PCB were detected at this location in 2016. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

DM-17

Sampling location DM-17 is located downgradient of the landfill, immediately west of the toe. The estimated elevation of this sampling point is 740.5 masl. As shown in Photos 634 and 635, the area consists of sand and gravel with rocks and boulders and is not vegetated. The soils consisted of grey sand with some gravel and stone.

For the shallow sample at DM-17 (0-15 cm), the concentrations of most metals were less than those observed in 2015. No cadmium, arsenic or mercury were detected at this location in 2016. A modified TPH concentration of 87 mg/kg and PHC F4 fraction concentration of 25 mg/kg were observed in 2016; no PHC were detected in 2015. An elevated PCB concentration of 0.13 mg/kg was observed in 2016; no PCB were detected at this location in 2015. None of the reported values exceeded their respective baseline mean concentrations plus 3σ.

Table 4-57: Soil Chemical Analysis Results – Upper Site Helipad Landfill

ID	Depth (m)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	F1 (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
Background Mean		58.8	136.6	19.3	1.0	10.0	70.0	223.0	1.0	0.5	0.0002	NA	NA	NA	NA
Baseline Mean		**34.6**	**79.4**	**13.8**	**1.0**	**12.3**	**69.5**	**90.1**	**1.3**	**0.10**	**0.11**	**10.0**	**12.8**	**88.2**	**NA**
Baseline + 3σ		76.7	275.8	31.1	1.0	48.7	126.9	220.1	3.8	0.10	0.51	NA	NA	NA	NA
Landfill Cover															
DM-11a	0-15	**59.6**	77.7	**16.8**	<0.5	**14.7**	57.8	75.1	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-11 (deep) [1]															
Downgradient															
DM-12a	0-15	**35.2**	79.2	13	<0.5	**17.4**	61.8	76.5	<1.0	<0.1	**1.17**	<7	<4	46	10
DM-12 (deep) [1]															
DM-13a	0-15	**47.7**	54.6	10.7	<0.5	**22.3**	**80.2**	45	<1.0	<0.1	**0.32**	<7	<4	92	41
DM-13 (deep) [1]															
DM-14a	0-15	**36.3**	67.4	13	<0.5	**13.9**	66.9	61.8	<1.0	<0.1	**1.14**	<7	<4	<8	<6
DM-14 (deep) [1]															
DM-15a	0-15	**35.9**	66.4	12.4	<0.5	10.7	51.6	56.9	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-15 (deep) [1]															
DM-16a	0-15	**38.6**	43.2	11.6	<0.5	8.7	66.5	38.7	<1.0	<0.1	<0.05	<7	<4	<8	<6
DM-16 (deep) [1]															
DM-17a	0-15	**42.9**	64.5	11.6	<0.5	**22**	59	36.5	<1.0	<0.1	**0.13**	<7	<4	81	25
DM-17 (deep) [1]															

Notes:

NA: Not available; ID: Soil sample location ID.

Underlined values: Results exceed Background arithmetic mean.

Bold Values: Results exceed Baseline arithmetic mean.

1: The deep soil samples at DM-11, DM-12, DM-13, DM-14, DM-15, DM-16 and DM-17 could not be collected due to refusal on rock.

4.13.5 Conclusions and Overall Performance of the Upper Site Helipad Landfill

Based on the visual inspection, there does not appear to be any significant erosion, settlement, cracking, exposed waste or indications of instability at the Upper Site Helipad Landfill. Some minor settlement, rough grading and tire tracks were observed in this landfill. The overall stability performance of this landfill was assessed as Acceptable.

Deep samples could not be collected at any of the seven designated locations in 2016 as a result of refusal (on boulders). Concentrations of the metals were highest at the sample locations DM-11, located upgradient of the landfill and at downgradient sampling locations DM-12 and DM-13. At DM-11, DM-12, DM-16 and DM-17, the concentrations of most metals were less than in 2015 whereas at DM-13, DM-14, DM-15, the concentrations of some metals (four metals at each location) were greater than in 2015. None of the reported metals concentrations exceeded their respective baseline mean concentrations plus 3σ

PHC were detected at DM-12, DM-13 and DM-17, at modified TPH concentrations ranging from 52 mg/kg to 98 mg/kg. At DM-12, the concentration increased from the modified TPH concentration reported in 2015, whereas no PHC were detected at DM-13 or DM-17 in 2015. Elevated concentrations of PCB are noted at DM-12, DM-13, DM-14 and DM-17, at concentrations ranging from 0.13 mg/kg to 1.17 mg/kg; these concentrations were greater than those reported in 2015. The concentrations of PCB at DM-12 and DM-14 exceeded the baseline concentration plus 3σ. No detectable concentrations of PCB or PHC were noted in 2016 at any other sampling locations at this landfill.

Overall, it was noted that a number of the soil sampling results (e.g., metals at DM-13, DM-14 and DM-15 and PCB at DM-12, DM-13, DM-14 and DM-17) were greater than in previous years. This may be reflective of an ongoing impact from the landfill, however fewer than seven samples have been collected for trend confirmation.

4.13.6 Recommendations for Upper Site Helipad Landfill

No modifications to the ongoing monitoring program at this landfill are recommended. Additional data is required to assess if the increases relate to impact from the landfill or reflect variations in natural conditions or sampling/analytical program influences.

5.0 QA/QC RESULTS

The results of the QA/QC program described in Section 3.3 are discussed herein. The results are described in terms of accuracy, reliability (blank analysis) and reproducibility (duplicate analysis).

The five DEW Line sites visited in 2016 were executed as a single field program using standard operating procedures which were consistent for all sites in the field program. The QA/QC analysis below contains both program-level (applicable to all five sites) and site-level discussions, which focus on the DYE-M site. The laboratory reports related to the QA/QC discussion are contained in Appendix C.

5.1 Sample Hold Times

The generally accepted hold times for the parameters analyzed in this program are:

- Metals in soil: 180 days, metals in water: 60 days;
- Mercury in soil and water: 28 days;
- PCB in soil: 365 days, PCB in water: 14 days;
- PHC-F1 in soil: 48 hours (if unpreserved), PHC-F1 in water: 7 days; and,
- PHC F2-F4 in soil: 14 days, PHC F2-F4 in water: 7 days.

At DYE-M, the soil sampling was carried out on August 10-13, 2016 and the samples were received at Paracel and AGAT on August 18, 2016 and extraction for PCB in soil and PHC F1 in water commenced that day, which was eight days post sampling for those collected on August 10th.

Maximum hold times were exceeded for PHC-F1 (soil) by more than 5 days due to its very short hold time of 48 hours. The very short hold time for unpreserved PHC-F1 in soil is a known issue but it has been decided to not preserve this parameter in order to maintain consistency with earlier years and data in the program. The hold times for PHC F2-F4 were all met for soil.

The groundwater sampling was carried out on August 12 and 13, 2016 and the samples were received at Paracel and AGAT on August 18, 2016 and analysis commenced day, which was six days post sampling for those collected on August 12th. At DYE-M, there were no exceedances of the maximum hold times for any parameters in groundwater.

5.2 Accuracy

Accuracy is a measure of how close a measured value is to the true value. The accuracy of the laboratory data is generally evaluated by the laboratory through the use of matrix spikes or surrogate recoveries. For the DYE-M samples, Paracel performed a spike analysis on water and one on soil. The spike recoveries for barium, copper, chromium, silver, thallium and zinc in soil were below the lower end of the acceptable range; however the majority of parameters met the acceptable data quality objectives, therefore Paracel accepted the batch. The spike recoveries for groundwater were well within the acceptable range and therefore met the acceptable data quality objectives. AGAT also performed a matrix spike on the batch that included DYE-M soil and water samples and all of their results were within their own data quality objectives.

Paracel performed lab blanks for soil and water, and all results were all non-detect. AGAT also performed lab blanks in the batches that included DYE-M soil and water samples and all of their results were non-detect.

Matrix spike recoveries outside the acceptable range of individual parameters indicate the barium, chromium and zinc soil results from Paracel should be interpreted with caution. All other spike recoveries for the monitoring program are within the acceptable limits and the accuracy of the results is considered acceptable on this basis.

5.3 Reliability

Reliability is a measure of certainty that the concentrations reported by the labs are reliable indicators of field conditions and have not been affected other sources of contamination such as ambient air or cross-contamination from other samples. The analysis of blanks provides a measure of reliability. A set of bottles of deionized water from Paracel accompanied the team on the entire 2016 monitoring program as a Trip Blank. These bottles were not opened at the sites. The analytical reports from Paracel indicate that no parameters were detected in the Trip Blank. One Field Blank was prepared on the 2016 program. Sample bottles were filled with distilled water in the field at FOX-2. No parameters were detected in the Field Blank.

Two Equipment Blanks were prepared: one to test the decontamination of the groundwater probe, and the other to test the decontamination of the soil sample trowel. No parameters were detected in the Shovel Blank. Zinc was the only parameter detected in the Probe Blank, at a concentration (0.006 mg/L) marginally above the MDL of 0.005 mg/L. The Trip Blank, Field Blank and two Equipment Blank sample results are summarized in the table below.

Blank Samples

ID	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 (mg/L)	F2 (mg/L)	F3 (mg/L)	F4 (mg/L)
Trip Blank	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	<0.005	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100
Field Blank	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	<0.005	<0.001	<0.001	<0.0001	<0.00005	<0.025	NA	NA	NA
Shovel Blank	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	<0.005	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100
Probe Blank	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	0.006	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	<0.100

Note: NA – Not analyzed.

The Trip Blank, Field Blank and two Equipment Blank sample results indicate that the laboratory results from the 2016 monitoring program were not affected by external influences associated with sampling, storage and transport.

5.4 Reproducibility (Duplicate Analysis)

The reproducibility of lab results was measured through the testing of field duplicate samples. Duplicate soil samples were prepared in the field by mixing up a homogeneous batch of soil in the test pit being sampled, and taking portions of soil and alternately filling the sample jars for the two labs. Duplicate groundwater samples were prepared by alternately filling bottles for each lab for each parameter type.

The labs also performed internal duplicate analysis. Paracel's internal duplicate analysis of soil indicated all duplicate pairs met the program's targets, with the exception of the PHC F3 fraction, which had a RPD of 33%. This exceedance was attributed to inhomogeneity of the sample material. Paracel also completed a duplicate analysis for groundwater and all duplicate pairs met the program's targets. AGAT performed a duplicate analysis

of parameters in soil; a maximum RPD of 5.1% was achieved. AGAT also performed a duplicate analysis of parameters in groundwater, in which the only detected parameters with concentrations great enough to calculate an RPD achieved a maximum RPD of 11.8%, and thus their duplicates met the program requirements.

The total number of original soil samples collected for the 2016 program was 213, for which 21 duplicate soil samples were prepared and analyzed, providing a duplicate ratio of approximately 10%. A total of 41 groundwater samples were collected and six duplicates were analyzed, which is a duplicate ratio of greater than 10% for each site and for the program. The distribution of duplicate soil and groundwater samples over the five sites is provided in the table below.

Seven soil duplicates and two groundwater duplicates were prepared at DYE-M.

Soil Samples and Duplicates

	DEW Line Site					Totals
	DYE-M	FOX-2	FOX-3	FOX-4	FOX-5	
Soil Samples Collected	93	31	31	34	24	213
Duplicate Soil Samples	7	4	4	4	2	21
Percent	8%	13%	13%	12%	8%	10%

Groundwater Samples and Duplicates

	DEW Line Site					Totals
	DYE-M	FOX-2	FOX-3	FOX-4	FOX-5	
Monitoring Well Sampled	9	9	7	7	9	41
Duplicate Groundwater Samples	2	1	1	1	1	6
Percent	22%	11%	14%	14%	11%	15%

To determine the reproducibility of the original and duplicate sample results, the RPD was calculated according to the following equation:

$$RPD = \frac{|x_2 - x_1|}{\left(\frac{x_1 + x_2}{2}\right)} \times 100\%$$

Where, x_1 and x_2 are the original and duplicate concentrations of a given parameter in a pair. RPD can only be calculated if concentrations of given parameters are greater than the analytical method detection limits (MDL) in both the duplicate and original samples of the pair. Additionally, the RPD calculation is less meaningful when the reported concentrations are less than five (5) times the MDL. RPD have been calculated wherever the concentrations of a parameter were five (5) times greater than the MDL in both the original and duplicate samples. Sample RPD were calculated by taking the average of the parameter RPD for a given sample-duplicate pair, and a program-level RPD was calculated by taking the average of all sample RPD to arrive at a program-wide indication of repeatability.

The TOR sets a data quality objective (DQO) for the RPD in soil and groundwater between a sample and its blind field duplicate of 30%. A discussion or the RPD for the program and at DYE-M is provided below.

5.4.1 Soil Samples

Organics and PCB

Program Level Interpretation

The PCB concentrations were below the detection limit for all of the duplicate pairs of soil samples in the program.

PHC F3 was detected in five of the duplicate pairs in the program and PHC F2 was detected in one of those five paris. In each case it was the sample analyzed by Paracel that reported the detections, whereas the duplicate samples analyzed by AGAT did not. Paracel's MDL was equal to the program's requirement whereas AGAT's MDL was higher and they showed no exceedance of their MDL. None of the above are at concentrations that are greater than five times the program MDL therefore RPD were not calculated.

Metals

Program Level Interpretation

Mercury and cadmium concentrations were below detection limits for all 21 original and duplicate pairs in the program.

RPD calculations were undertaken for the seven remaining metals (copper, nickel, cobalt, lead, zinc, chromium and arsenic) for the 21 pairs of duplicate soil samples. The program-level average RPD for the soil sample duplicate analysis was 18%, which met the specified data quality objective for field duplicates for inorganics of 30%.

Two of the 21 soil sample pairs in the program had a sample average RPD of over 30%; one of which was collected at FOX-2. Fifteen parameter pairs exhibited an RPD of over 30%; three of them were at FOX-2. Overall, the most frequent metals to have an RPD over 30% were zinc, copper and nickel. The results for the samples analyzed by AGAT exhibited generally higher metals concentrations in 15 cases; Paracel's overall concentrations were higher in four cases, and in two cases it was evenly spilt. There appears to be a bias, in that results from AGAT were generally higher than those of Paracel but this does not impact interpretation of the results.

Site Level Interpretation

From the seven soil sample duplicates taken at DYE-M there were 42 potential parameter pairs for RPD analysis (6 metals for a total of 7 samples). Mercury and cadmium were not detectable in all samples, and none of the arsenic concentrations exceeded five times the MDL. As shown in the table below, all of the 42 potential metal parameter pairs, with the exception of lead at DM-33a, exhibited concentrations greater than five times the MDL in both the original and duplicate, and therefore 41 individual RPD were calculated. Five RPD exceeded 30% (zinc at DM-07b, zinc at DM-27a, copper and zinc at DM-33a and zinc at DM-49b); these were attributed to inhomogeneity of the soil sample material. The individual RPD ranged from 0% to 50%. Zinc exhibited the highest RPD, from 17% to 50% and chromium was the lowest, from 4% to 16%. The average of the 41 RPD calculations from the four samples was just 16%, which was on the low side of the range of RPD in the program and met the field data quality objective of less than 30%. The table below summarizes the metals results and RPD calculations for DYE-M.

All of the individual RPD at DYE-M were below 30%, with the exceptions of zinc at DM-07b (34%), zinc at DM-27a (37%), copper and zinc at DM-33a (32% and 50%, respectively) and zinc at DM-49b (33%), and the site average RPD was 16%. In light of the relatively low average RPD, it concluded that the reproducibility of the soil sample results at DYE-M was acceptable.

Relative Percent Difference Analysis of Soil Data at DYE-M

		Parameter Concentrations (mg/kg)							
Sample ID	**Lab**	**Cu**	**Ni**	**Co**	**Pb**	**Zn**	**Cr**	**Sample Average RPD**	**Any Over 30%?**
MDL		<1	<1	<1	<1	<1	<1		
DM-02a	Paracel	31.8	32.8	8.2	6.7	35.4	56.4	11%	no
DM-02a (duplicate)	AGAT	32	38	8.2	5	42	59		
RPD		1%	15%	0%	29%	17%	5%		
DM-07b	Paracel	25.6	33.1	9.5	5.1	34.9	61.3	15%	1 (Zn)
DM-07b (duplicate)	AGAT	29	41	11.2	5	49	65		
RPD		12%	21%	16%	2%	**34%**	6%		
DM-23a	Paracel	14.2	35.9	8.5	6.9	41.4	29.7	8%	no
DM-23a (duplicate)	AGAT	14	43	8.9	7	51	31		
RPD		1%	18%	5%	1%	21%	4%		
DM-27a	Paracel	12.6	17	8	7.3	49.3	18.6	20%	1 (Zn)
DM-27a (duplicate)	AGAT	17	21	9.7	7	71	21		
RPD		30%	21%	19%	4%	**36%**	12%		
DM-33a	Paracel	16.0	57.2	11.6	**4.0**	31.9	46.8	30%	2 (Cu and Zn)
DM-33a (duplicate)	AGAT	22	74	14.9	**3**	53	55		
RPD		**32%**	26%	25%		**50%**	16%		
DM-49b	Paracel	111	75.7	17.2	13.9	120	195	14%	1 (Zn)
DM-49b (duplicate)	AGAT	116	72	14.7	12	168	221		
RPD		4%	5%	16%	15%	**33%**	13%		
DM-53a	Paracel	37.3	46	10.4	11.7	87.6	82.6	14%	no
DM-53a (duplicate)	AGAT	41	55	11.1	14	109	93		
RPD		9%	18%	7%	18%	22%	12%		
								16%	5

Note: Parameters with concentrations <5 x MDL are **bold and highlighted yellow**.

5.4.2 Groundwater Samples

Organics and PCB

The PHC F1-F4 results for all six of the duplicate pairs of groundwater samples in the program were below the detection limit and all PCB concentrations were below the detection limit. The reliability of these results is therefore considered acceptable.

Metals

Program Level Interpretation

Mercury was not detected in any original-duplicate groundwater pair; the reproducibility of the results is therefore considered acceptable. Six groundwater duplicate samples for a total of eight metals detected at greater than the MDL in one or more samples, resulted in 48 potential parameter pairs for duplicate analysis via RPD calculation. The metals concentrations were very low overall; in fact 33 of the possible 48 pairs exhibited one or both values less than five times the MDL and therefore, in addition to analyzing the QC by RPD analysis it is noted that of the 48 parameter pairs, there were:

- 22 pairs where both labs reported non-detect for the same metals in the parameter pair (good repeatability);
- 10 pairs where one lab reported non-detect and the other lab reported a value less than five times the MDL for the pair (good repeatability);
- 1 pair where both labs reported values that were less than five times the MDL (good repeatability);
- 10 pairs where both labs reported values that were greater than five times the MDL, so an RPD could be calculated. Of those:
    - 6 were under 30% (good repeatability)
    - 4 were over 30% (poor repeatability); and,
- 5 pairs where one lab reported a value less than five times the MDL and the other lab reported a value over five times the MDL and the RPD was over 30% (poor repeatability).

The average of the 10 RPD calculated for analysis of metals in water was 50%, which exceeds the data quality objective of 30%. This however omits the 38 other parameter pairs. A broader representation of program level RPD can be achieved by including all parameter pairs which either had values reported or were non-detect in both parameters. This leaves out only the 10 pairs where one member was non-detect. An RPD of zero has been assigned to pairs for which both members were non-detect. Using this metric, the program level RPD is 26%.

Site Level Interpretation

At DYE-M, the duplicate groundwater samples were collected at MW06-19 and MW12-01. Copper, cadmium, mercury, zinc and arsenic were non-detect in both samples collected at these monitoring locations, therefore they were excluded from the RPD calculations. As shown in the table below, there was only one groundwater parameter pair for which the concentrations in the original and duplicate were over five times the MDL (nickel at MW12-01); thus, only one RPD was calculated for the groundwater duplicates at DYE-M. The RPD is 35% which is just over the field data quality objective of 30%. A possible reason for the higher than desired RPD for this sample could be the limited purging due to the small volume of groundwater available in the well.

Relative Percent Difference Analysis of Groundwater Data at DYE-M

		Parameter Concentrations (mg/L)					
Sample ID	**Lab**	**Ni**	**Co**	**Pb**	**Cr**	**Average RPD**	**Any Over 30%?**
MDL		<0.001	<0.0005	<0.0001	<0.001		
MW06-19	Paracel	**<0.001**	**<0.0005**	**<0.0001**	**<0.001**	-	-
MW06-19 Duplicate)	AGAT	0.046	**0.0008**	**<0.0001**	**0.003**		
RPD							
MW12-01	Paracel	0.04	**0.0006**	**<0.0001**	**<0.001**	35%	1 (Ni)
MW12-01 Duplicate)	AGAT	0.057	**<0.0005**	**0.0002**	**0.003**		
		35%					
						35%	1

Note: Parameters with concentrations <5 x MDL are **bold and highlighted yellow**.

5.4.3 Overall Lab Data Reproducibility

Based on a sample average of the field RPD for soil of 16% and considering that only five individual soil parameter pairs exhibited an RPD slightly over 30%, it is concluded that the lab data is acceptable. The reproducibility of groundwater data was higher (only RPD calculated was 35%), however, the reported concentrations are low. It is noted that the concentrations of copper, cadmium, mercury, zinc and arsenic were non-detect in both samples at the two groundwater duplicate locations, which suggests the lab data is acceptable.

5.5 QA/QC Conclusions

The QA/QC analysis has shown that:

- Achieving maximum hold times of PHC is not possible given the logistics of transport from the remote site location unless samples are field preserved;
- With the exception of zinc detected marginally over the MDL in the Probe Blank, the concentrations of parameters in the two Equipment Blanks and one Field Blank were non-detect, as they should be to indicate that no spurious contaminates were biasing the samples while in transit;
- The duplicate analyses for soil met the program field data quality objectives; and,
- The duplicate analyses for water indicated a notable difference in zinc results reported by the two labs, however, the reported concentrations are low.

Report Signature Page

We trust that this Monitoring Report meets the project requirements of DND. Please direct any questions to the undersigned.

GOLDER ASSOCIATES LTD.



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APPENDIX A

Report Limitations

REPORT LIMITATIONS

This report has been prepared as an assessment of the environmental condition of the subject site. The monitoring program described in this report was conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practising under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

The assessment of environmental conditions at this Site has been made using the results of chemical analysis of soil and groundwater from a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at sampling locations. Subsurface conditions may vary from those encountered at the sample locations. Additional study, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive sampling and testing, to dismiss the possibility that part of a Site may be contaminated and remain undetected. Visual inspection comments are based on observed conditions at the time of the inspection and may change with time.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibility of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on the information contained in this report.

The content of this report is based on information collected during our monitoring program, our present understanding of the Site conditions, and our professional judgement in light of such information at the time of writing this report. This report provides a professional opinion and therefore no warranty is expressed, implied, or made as to the conclusions and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws. With respect to regulatory compliance issues, it should be noted that regulatory statutes and the interpretation of regulatory statutes are subject to change.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

APPENDIX B

Field Records

Thermistor Inspection Record Sheets

Monitoring Well Sampling Logs

Soil Sampling Record Sheets

Appendix B1

DYE-M Thermistor Sheets

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Lower Sites Tier II Disposal Facility		
Thermistor Number:	**VT-1**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7388321.9**	E **561880.9**	Elev	**336.3 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110005**	Nodal Points	13		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.38	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	1.00	1.9000
2	0.94	-0.1000
3	0.91	-1.0000
4	0.89	-1.8000
5	0.87	-2.0000
6	0.85	-3.1000
7	0.84	-3.5000
8	0.83	-3.8000

Bead	ohms	Degrees C
9	0.8200	-4.1000
10	0.8200	-4.3000
11	0.8100	-4.4000
12	0.8100	-4.6000
13	0.8000	-4.7000

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Lower Sites Tier II Disposal Facility		
Thermistor Number:	**VT-2**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7388235.5**	E **561836.6**	Elev	**339.4 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110052**	Nodal Points	8		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.63	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	1.18	7.8800
2	1.17	7.3500
3	1.09	4.8700
4	1.00	1.9300
5	0.94	-0.2100
6	0.91	-1.1900
7	0.88	-2.0000
8	0.85	-3.2100

Bead	ohms	Degrees C

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2015
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Lower Sites Tier II Disposal Facility		
Thermistor Number:	**VT-3**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-15**
*Coordinates and Elevation		N **7388281.8**	E **561927.1**	Elev	**339.4 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110053**	Nodal Points	7		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.75	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	1.19	8.0
2	1.12	5.9
3	1.04	3.3
4	0.96	0.4
5	0.92	-0.8
6	0.89	-1.7
7	0.86	-2.6

Bead	ohms	Degrees C

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Lower Sites Tier II Disposal Facility		
Thermistor Number:	**VT-4**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7388184.4**	E **561861.4**	Elev	**340.4 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110054**	Nodal Points	12		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.50	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.24	9.70	9	0.8700	-2.4000
2	1.23	9.60	10	0.8600	-2.7000
3	1.19	8.00	11	0.8500	-3.0000
4	1.10	5.10	12	0.8500	-3.3000
5	1.00	2.00			
6	0.93	-0.30			
7	0.91	-1.16			
8	0.89	-1.80			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Power House		
Thermistor Number:	**VT-5**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7387478.1**	E **562757.9**	Elev	**368.0 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110024**	Nodal Points	11		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.75	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.35	13.8	9	0.86	-2.8
2	1.37	14.2	10	0.83	-3.9
3	1.22	9.1	11	0.81	-4.6
4	1.14	6.4			
5	1.03	2.8			
6	0.94	-0.1			
7	0.91	-1.2			
8	0.88	-2.1			

Battery Information

Batteries changed ?	Yes		No	x	Monitoring Year: 2016
Battery model number installed:	Existing ULB1 and ULB15				
Expected battery life (years):	2020				

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Power House		
Thermistor Number:	**VT-6**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7387454.4**	E **562755.9**	Elev	**369.5 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110025**	Nodal Points	10		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	☐	X	Bead 1 appears damaged (very high temp)
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.50	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	2.47	144.6	9	0.82	-4.1
2	1.15	6.9	10	0.80	-4.7
3	1.09	4.9			
4	1.00	1.8			
5	0.93	-0.5			
6	0.90	-1.4			
7	0.88	-2.2			
8	0.85	-3.0			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Power House		
Thermistor Number:	**VT-7**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7387448.9**	E **562789.8**	Elev	**367.6 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110026**	Nodal Points	10		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.87	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.06	3.97	9	0.83	-3.83
2	1.00	1.87	10	0.82	-3.99
3	0.94	-0.08			
4	0.92	-0.92			
5	0.82	-4.26			
6	0.87	-2.49			
7	0.86	-2.92			
8	0.84	-3.47			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 11 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Upper Site Tier II Disposal Facility		
Thermistor Number:	**VT-8**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**11-Aug-16**
*Coordinates and Elevation		N **7394615.5**	E **571051.5**	Elev	**645.4 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110057**	Nodal Points	15		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-10**		
Battery Levels	Main 11.34	Aux 12.65	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.04	3.20	9	0.82	-4.1
2	1.01	2.30	10	0.80	-4.7
3	1.05	3.70	11	0.78	-5.4
4	1.03	2.95	12	0.77	-5.8
5	0.95	0.12	13	0.76	-6.2
6	0.91	-1.18	14	0.75	-6.5
7	0.88	-2.13	15	0.75	-6.7
8	0.85	-3.27			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 11 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Upper Site Tier II Disposal Facility		
Thermistor Number:	**VT-9**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**11-Aug-16**
*Coordinates and Elevation		N **7394558.0**	E **571088.7**	Elev	**645.5 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110058**	Nodal Points	16		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-10**		
Battery Levels	Main 11.34	Aux 13.14	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.08	4.4	9	0.83	-3.7
2	1.05	3.4	10	0.81	-4.4
3	1.06	3.8	11	0.80	-5.0
4	1.06	4.0	12	0.78	-5.4
5	0.99	1.7	13	0.77	-5.8
6	0.91	-0.7	14	0.76	-6.1
7	0.89	-1.8	15	0.76	-6.3
8	0.86	-2.9	16	0.75	-6.6

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 11 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Upper Site Tier II Disposal Facility		
Thermistor Number:	**VT-10**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**11-Aug-16**
*Coordinates and Elevation		N **7394609**	E **571121**	Elev	**648.2 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110059**	Nodal Points	10		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-10**		
Battery Levels	Main 11.34	Aux 11.02	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.01	2.09	9	0.79	-5.24
2	1.06	3.73	10	0.77	-5.87
3	1.01	2.23			
4	0.92	-0.62			
5	0.88	-1.96			
6	0.85	-3.06			
7	0.83	-3.83			
8	0.81	-4.80			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 11 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Upper Site Tier II Disposal Facility		
Thermistor Number:	**VT-11**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**11-Aug-16**
*Coordinates and Elevation		N **7394655.5**	E **571132.2**	Elev	**648.9 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110051**	Nodal Points	12		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-10**		
Battery Levels	Main 11.34	Aux 13.50	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.05	3.60	9	0.86	-2.85
2	1.04	3.30	10	0.83	-3.80
3	0.99	1.80	11	0.81	-4.60
4	1.05	3.40	12	0.79	-5.10
5	1.06	3.80			
6	0.98	1.40			
7	0.92	-0.86			
8	0.89	-1.60			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 12 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Lower Sites Tier II Disposal Facility		
Thermistor Number:	**VT-BL**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**12-Aug-16**
*Coordinates and Elevation		N **7388226.9**	E **561629.6**	Elev	**330.4 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110027**	Nodal Points	14		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	☐	X	Beads 3, 5 and 6 not working
Lock condition	☐	X	Replaced with new one
Battery Installation Date	**2012-09-08**		
Battery Levels	Main 11.34	Aux 13.26	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.35	13.4	9	0.8500	-3.2
2	1.31	12.0	10	0.8100	-4.4
3	Off		11	0.7900	-5.1
4	1.24	9.7	12	0.7700	-5.6
5	Off		13	0.7700	-5.8
6	Off		14	0.7600	-6.0
7	1	1.9			
8	0.8600	-2.8			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

ANNEX M: Thermistor Inspection Template

Inspector Name:	Kevin Rattray	Inspection Date:	August 11 , 2016
Inspector Signature / Prepared By:			

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name:	**DYE-M**	Landfill:	Upper Site Tier II Disposal Facility		
Thermistor Number:	**VT-BU**	Inclination:	Vertical		
Datalogger model no:		Datalogger cable download model:			
*Install Date:	**Unknown**	First Date Event	**2014**	Last Date Event	**11-Aug-16**
*Coordinates and Elevation		N **7394470.7**	E **571142.6**	Elev	**636.90 m**
Length of Cable (m)		Cable Lead Above Ground (m)			
Datalogger Serial #	**7110028**	Nodal Points	14		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	X	☐	
Cover	X	☐	
Data Logger	X	☐	
Cable	X	☐	
Beads	X	☐	
Lock condition	☐	X	Replaced with new lock
Battery Installation Date	**2012-09-10**		
Battery Levels	Main 11.34	Aux 13.26	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	1.11	5.42	9	0.79	-5.04
2	1.12	5.95	10	0.77	-5.85
3	1.11	5.54	11	0.76	-6.31
4	0.98	1.23	12	0.76	-6.48
5	0.96	0.55	13	0.75	-6.54
6	0.92	-0.90	14	0.75	-6.50
7	0.88	-2.08			
8	0.83	-3.75			

Battery Information

Batteries changed ? Yes [ ] No [x] Monitoring Year: 2016

Battery model number installed: Existing ULB1 and ULB15

Expected battery life (years): 2020

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Appendix B2

DYE-M Monitoring Well Data

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW12-01 Lower Tier 2
Sample Number(s) include dups.: 2
Bottles filled (by parameter type) All (half large PCB bottle)
Date of Sampling Event: 13 August 2016 Time: 13:30
Weather Sunny, +7
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition.
Lock (condition, presence, model, manufacturer): Needs to be replaced

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): 66
Static water level (cm) from top of pipe: 178.5
Static water level (cm) (below ground surface) calculated: 112.5
Measured well refusal depth (cm) (measured after sampling from top of pipe): 234.5
Thickness of water column (cm): 56 Static Volume of water in well (mL): 851
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: 250ml / 3min
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	7.25	7.25	7.24	
Conductivity (mS/cm)	0.413	0.426	0.405	
Turbidity (NTU)	3.1	0	5.2	
Temperature (degC)	7.46	5.73	5.44	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): -
Number of washes: - Number of rinses: -

Other relevant comments: Well ran dry at large bottles (PCB).

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW12-02 Upper Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) 0 dry well
Date of Sampling Event: 12 August 2016 Time: 16:30
Weather Sunny, north wind, +7
Names of Samplers JB, RN
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition, lid in need of repair.
Lock (condition, presence, model, manufacturer): -

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): interface probe
Well pipe height above ground (cm) (to top of pipe): -
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 124.5 dry well
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments: Evidence of frozen bottom.

Annex J: Monitoring Wells Sampling Log

Site Name:	DYE-M	Landfill Name:	Lower Powerhouse
Monitoring Well ID:	MW05-05		
Sample Number(s) include dups.:	-		
Bottles filled (by parameter type)	-		
Date of Sampling Event:	13 August 2016	Time:	10:50
Weather	Sunny, +8		
Names of Samplers	JB, JP		

Description of well condition and surrounding ground conditions (note ponding of water):
Some ponding water in casing, well in good condition, dry ground.

Lock (condition, presence, model, manufacturer): Broken

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface probe
Well pipe height above ground (cm) (to top of pipe):	33
Static water level (cm) from top of pipe:	-
Static water level (cm) (below ground surface) calculated:	-
Measured well refusal depth (cm) (measured after sampling from top of pipe):	172.5 dry well

Thickness of water column (cm):	-	Static Volume of water in well (mL):	-
Free product thickness (mm):	-	Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N):	-	Recharge Rate:	-
Volume Purged (L) (note multiple purging events):	-		

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s):	Decon interface with soap and water.		
Number of washes:	1	Number of rinses:	1

Other relevant comments: Dry well, evidence of ice on probe.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M | Landfill Name: Lower Powerhouse
Monitoring Well ID: MW05-06
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2016 Time: 10:30
Weather Sunny, +7
Names of Samplers JB, Jay P
Description of well condition and surrounding ground conditions (note ponding of water):
Well in good condition, dry ground, some water ponding in casing.
Lock (condition, presence, model, manufacturer): Broken

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): -
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 173
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Decon interface probe with soap and water.
Number of washes: 1 Number of rinses: 1

Other relevant comments: Dry well, evidence of ice

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name: Lower Powerhouse
Monitoring Well ID: MW05-07
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2016 Time: 10:15
Weather 8 degrees
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Good condition, dry ground, ponding water in well casing.
Lock (condition, presence, model, manufacturer): Ok

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 30
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 152
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon
Number of washes: 1 Number of rinses: 1

Other relevant comments: Well dry.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M | Landfill Name: Lower Powerhouse
Monitoring Well ID: MW05-08
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2016 Time: 10:00
Weather Sunny, +8
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Well in good condition, some ponding in casing, dry ground.
Lock (condition, presence, model, manufacturer): Good

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 46
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 175.5 dry well
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon interface
Number of washes: 1 Number of rinses: 1

Other relevant comments:

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW05-09 LNHWL
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2016 Time:16:10
Weather Sunny, +8
Names of Samplers JB, JEB
Description of well condition and surrounding ground conditions (note ponding of water):
Good condition, dry ground.
Lock (condition, presence, model, manufacturer): New crown

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 38
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 141 dry
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): -
Number of washes: - Number of rinses: -

Other relevant comments:

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name: LNHWL
Monitoring Well ID: MW05-12
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2016 Time:16:15
Weather Sunny, +8
Names of Samplers JB, KL
Description of well condition and surrounding ground conditions (note ponding of water):
Good, dry ground.
Lock (condition, presence, model, manufacturer): No lock

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 38
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 174 dry
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): -
Number of washes: - Number of rinses: -

Other relevant comments:

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW05-13 Lower Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) VOC's and metal only
Date of Sampling Event: 13 August 2016 Time:
Weather Sunny, +7
Names of Samplers -
Description of well condition and surrounding ground conditions (note ponding of water):
Good, dry ground, some standing water in casing.
Lock (condition, presence, model, manufacturer): Casing latch broken, no lock

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface Probe
Well pipe height above ground (cm) (to top of pipe):	20
Static water level (cm) from top of pipe:	165
Static water level (cm) (below ground surface) calculated:	145
Measured well refusal depth (cm) (measured after sampling from top of pipe):	175.5

Thickness of water column (cm):	10.5	Static Volume of water in well (mL):	160
Free product thickness (mm):	-	Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	8.13	-	-	Slow recharge.
Conductivity (mS/cm)	0.202	-	-	Not able to stabilize.
Turbidity (NTU)	5.9	-	-	
Temperature (degC)	8.62	-	-	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon interface
Number of washes: 1 Number of rinses: 1

Other relevant comments: Well ran dry, partial sample.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW05-15 Lower Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) All (partial PCBs) large bottle
Date of Sampling Event: 13 August 2016 Time: 14:00
Weather Sunny, +8
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Good condition, dry ground.
Lock (condition, presence, model, manufacturer): Good

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface Probe		
Well pipe height above ground (cm) (to top of pipe):			59
Static water level (cm) from top of pipe:			185
Static water level (cm) (below ground surface) calculated:			126
Measured well refusal depth (cm) (measured after sampling from top of pipe):			216
Thickness of water column (cm):	31	Static Volume of water in well (mL):	471
Free product thickness (mm):	-	Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	7.5	7.31	-	Slow recharge
Conductivity (mS/cm)	0.651	0.639	-	Unable to stabilize
Turbidity (NTU)	8	11.9	-	
Temperature (degC)	7.51	8.14	-	

Visual/olfactory observations:
Clean, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap, water decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments: Well ran dry at large PCB bottle.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW05-16 Lower Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) 0 dry well
Date of Sampling Event: 13 August 2016 Time: 14:30
Weather Sunny, +8
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Well in good condition, dry ground.
Lock (condition, presence, model, manufacturer): Ok

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): -
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 181 Dry
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water
Number of washes: 1 Number of rinses: 1

Other relevant comments: Evidence of mud and ice on bottom of probe.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW06-18 Upper NHWL
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 12 August 2016 Time:
Weather Sunny, slight north wind, +5.
Names of Samplers -
Description of well condition and surrounding ground conditions (note ponding of water):
Ponding water in casing. Well at a 90 degree angle towards the north, prop back up and chim with rocks.
Lock (condition, presence, model, manufacturer): Lock damaged replaced with crown.

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): -
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 104 dry well
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): -
Number of washes: - Number of rinses: -

Other relevant comments: Dry well

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW06-19 Upper NHWL
Sample Number(s) include dups.: + dup
Bottles filled (by parameter type) All
Date of Sampling Event: 12 August 2016 Time: 12:15
Weather Sunny, slight north wind, +5
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition, 5cm of ponding water in casing.
Lock (condition, presence, model, manufacturer): Good

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface probe
Well pipe height above ground (cm) (to top of pipe):	69
Static water level (cm) from top of pipe:	161.5
Static water level (cm) (below ground surface) calculated:	92.5
Measured well refusal depth (cm) (measured after sampling from top of pipe):	180.5

Thickness of water column (cm):	19	Static Volume of water in well (mL):	289
Free product thickness (mm):	-	Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	10.24	9.85	-	
Conductivity (mS/cm)	0.08	0.078	-	
Turbidity (NTU)	31.8	0	-	
Temperature (degC)	5.4	4.58	-	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments:

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW06-20 Upper NHWL
Sample Number(s) include dups.: -
Bottles filled (by parameter type) N/A
Date of Sampling Event: 12 August 2016 Time: 11:30
Weather Sunny, slight north wind, +5
Names of Samplers -
Description of well condition and surrounding ground conditions (note ponding of water):
Good condition, moist ground, 10cm water ponding in casing.
Lock (condition, presence, model, manufacturer): Good

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 58
Static water level (cm) from top of pipe: 103.5
Static water level (cm) (below ground surface) calculated: 45.5
Measured well refusal depth (cm) (measured after sampling from top of pipe): 117.5
Thickness of water column (cm): 14 Static Volume of water in well (mL): 213
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	10.14	10.62	-	
Conductivity (mS/cm)	0.28	-	-	
Turbidity (NTU)	457	-	-	
Temperature (degC)	5.5	-	-	

Visual/olfactory observations:
Cloudy, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments: Not recharging, unable to sample.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW07-21 Upper NHWL
Sample Number(s) include dups.: -
Bottles filled (by parameter type) All
Date of Sampling Event: 12 August 2016 Time: 10:30
Weather Sunny, north wind, +5.
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Well in good condition, 5cm of water ponding in casing.
Lock (condition, presence, model, manufacturer): Good

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): 57
Static water level (cm) from top of pipe: 126.5
Static water level (cm) (below ground surface) calculated: 69.5
Measured well refusal depth (cm) (measured after sampling from top of pipe): 134
Thickness of water column (cm): 7.5 Static Volume of water in well (mL): 114
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: 250ml / 4min
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	7.17	7.32	7.61	Not able to stabilize,
Conductivity (mS/cm)	0.084	0.088	0.087	not enough water.
Turbidity (NTU)	0	0	0	
Temperature (degC)	6.48	3.8	3.42	

Visual/olfactory observations:
Cloudy, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): -
Number of washes: - Number of rinses: -

Other relevant comments: Ground surface of well is iced, very slow recovery filling up samples

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW07-22 Upper Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) N/A dry well
Date of Sampling Event: 12 August 2016 Time: 14:00
Weather Sunny, north wind, +7
Names of Samplers JB
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition.
Lock (condition, presence, model, manufacturer): Lock changed to crown.

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 59
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 219.3 dry
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon interface
Number of washes: 1 Number of rinses: 1

Other relevant comments: Dry well no evidence of ice.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW07-23 Upper Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) All (half large PCB bottle)
Date of Sampling Event: 12 August 2016 Time: 14:45
Weather Sunny, +7
Names of Samplers JB, RN
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition,
Lock (condition, presence, model, manufacturer): No lock, added new crown lock.

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface Probe
Well pipe height above ground (cm) (to top of pipe):	69
Static water level (cm) from top of pipe:	236
Static water level (cm) (below ground surface) calculated:	167
Measured well refusal depth (cm) (measured after sampling from top of pipe):	247
Thickness of water column (cm):	11
Static Volume of water in well (mL):	167
Free product thickness (mm):	-
Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	8.75	8.71	-	
Conductivity (mS/cm)	0.183	0.181	-	
Turbidity (NTU)	15.5	22	-	
Temperature (degC)	7.52	7.28	-	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon
Number of washes: 1 Number of rinses: 1

Other relevant comments: Slow recharge, did soil sample then only retrieved half bottle of PCB. Well

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW08-24 Upper Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) VOC's, metals and mercury only
Date of Sampling Event: 12 August 2016 Time: 15:00
Weather Sunny, +7
Names of Samplers JB, RN
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition.
Lock (condition, presence, model, manufacturer): Damaged replaced with crown

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface Probe		
Well pipe height above ground (cm) (to top of pipe):			63
Static water level (cm) from top of pipe:			147.2
Static water level (cm) (below ground surface) calculated:			84.2
Measured well refusal depth (cm) (measured after sampling from top of pipe):			169.5
Thickness of water column (cm):	22.3	Static Volume of water in well (mL):	339
Free product thickness (mm):	-	Evidence of Sludge or siltation:	Sludge

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	8.98	9.06	-	Not able to finalize,
Conductivity (mS/cm)	0.065	0.065	-	very little recharge.
Turbidity (NTU)	79.9	110	-	
Temperature (degC)	8.31	7.34	-	

Visual/olfactory observations:
Yellow/cloudy, no odour, sludge

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon interface
Number of washes: 1 Number of rinses: 1

Other relevant comments: VOC's, metals and mercury only, well ran dry.

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name:
Monitoring Well ID: MW08-25 Upper Tier 2
Sample Number(s) include dups.: -
Bottles filled (by parameter type) N/A dry well
Date of Sampling Event: 12 August 2016 Time: 16:00
Weather Sunny, north wind, +7
Names of Samplers -
Description of well condition and surrounding ground conditions (note ponding of water):
Dry ground, well in good condition.
Lock (condition, presence, model, manufacturer): Damaged, new crown lock installed.

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): -
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 147 dry well
Thickness of water column (cm): - Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Water and soap decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments: Dry well, evidence of ice on bottom.

Annex J: Monitoring Wells Sampling Log

Site Name:	DYE-M	Landfill Name:	Lower Non Hazardous
Monitoring Well ID:	MW09-26		
Sample Number(s) include dups.:	0		
Bottles filled (by parameter type)	Partial no PCB large bottle		
Date of Sampling Event:	13 August 2016	Time:	15:30
Weather	Sunny, +8		
Names of Samplers	JB, JEB		

Description of well condition and surrounding ground conditions (note ponding of water):
Good, water ponding in casing, ground is moist.

Lock (condition, presence, model, manufacturer): replace with crown. Damaged latch on casing.

Pre-Measured Data (from water well record log)

Depth of well installation (cm):	360	Diameter of well (cm):	4.4
Depth to top of screen (cm):	60	Length of screened section (cm):	190

Field Measurements

Measurement method (interface probe, tape, etc):	Interface Probe
Well pipe height above ground (cm) (to top of pipe):	45
Static water level (cm) from top of pipe:	134.5
Static water level (cm) (below ground surface) calculated:	89.5
Measured well refusal depth (cm) (measured after sampling from top of pipe):	185.5

Thickness of water column (cm):	51	Static Volume of water in well (mL):	775
Free product thickness (mm):	-	Evidence of Sludge or siltation:	-

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N):	-	Recharge Rate:	-
Volume Purged (L) (note multiple purging events):	-		

Parameter	Initial	Stablized	Final	Notes
pH	7.24	7.29	-	Not able to stabilize.
Conductivity (mS/cm)	1.45	1.48	-	Very little recharge.
Turbidity (NTU)	0	0	-	
Temperature (degC)	6.49	6.03	-	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s):	Soap and water decon interface probe		
Number of washes:	1	Number of rinses:	1

Other relevant comments:

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name: Lower Non Hazardous
Monitoring Well ID: MW09-27
Sample Number(s) include dups.: -
Bottles filled (by parameter type) All
Date of Sampling Event: 13 August 2016 Time: 15:45
Weather Sunny, +8
Names of Samplers JB, JEB
Description of well condition and surrounding ground conditions (note ponding of water):
Well in good condition, dry ground.
Lock (condition, presence, model, manufacturer): New crown lock

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface Probe
Well pipe height above ground (cm) (to top of pipe): 33
Static water level (cm) from top of pipe: 138
Static water level (cm) (below ground surface) calculated: 105
Measured well refusal depth (cm) (measured after sampling from top of pipe): 218
Thickness of water column (cm): 80 Static Volume of water in well (mL): 1216
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	7.73	7.61	7.52	
Conductivity (mS/cm)	0.609	0.568	0.56	
Turbidity (NTU)	0	0	0	
Temperature (degC)	6.37	5.01	4.5	

Visual/olfactory observations:
Clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water decon interface probe
Number of washes: 1 Number of rinses: 1

Other relevant comments: Not recharging

Annex J: Monitoring Wells Sampling Log

Site Name: DYE-M Landfill Name: LNHWL
Monitoring Well ID: MW09-28
Sample Number(s) include dups.: -
Bottles filled (by parameter type) -
Date of Sampling Event: 13 August 2015 Time:15:55
Weather Sunny, +8
Names of Samplers JB, JEB
Description of well condition and surrounding ground conditions (note ponding of water):
Good, dry ground.
Lock (condition, presence, model, manufacturer): New crown

Pre-Measured Data (from water well record log)

Depth of well installation (cm): 360 Diameter of well (cm): 4.4
Depth to top of screen (cm): 60 Length of screened section (cm): 190

Field Measurements

Measurement method (interface probe, tape, etc): Interface probe
Well pipe height above ground (cm) (to top of pipe): 38
Static water level (cm) from top of pipe: -
Static water level (cm) (below ground surface) calculated: -
Measured well refusal depth (cm) (measured after sampling from top of pipe): 103
Thickness of water column (cm): #VALUE! Static Volume of water in well (mL): -
Free product thickness (mm): - Evidence of Sludge or siltation: -

Purge Information Summary

Purging/sampling equipment, sampling technique and equipment calibration information:
-

Well purged (Y/N): - Recharge Rate: -
Volume Purged (L) (note multiple purging events): -

Parameter	Initial	Stablized	Final	Notes
pH	-	-	-	
Conductivity (mS/cm)	-	-	-	
Turbidity (NTU)	-	-	-	
Temperature (degC)	-	-	-	

Visual/olfactory observations:
-

Decontamination of sampling equipment

Type of decontamination fluid(s): Soap and water
Number of washes: 1 Number of rinses: 1

Other relevant comments: Dry well, evidence of sand on probe

Appendix B3

DYE-M Thermistor Inspection Sheets

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rattray	Inspection Date: Aug 12/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYE 14		Landfill: Tier 2 lower	
Thermistor Number: VT-1		Inclination: 90°	
Datalogger model no: RX 16		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)		
Datalogger Serial # 0741000 5	Nodal Points	13	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☐	
Lock condition	☐	☐	Replace w/ CROWA
Battery Installation Date			
Battery Levels	Main	11.34	Aux 13.38

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1,00	1.9
2	0,94	-0.1
3	0,91	-1
4	0,89	-1,8
5	0,87	-2,4
6	0,85	-3,1
7	0,84	-3,5
8	0,83	-3,8

Bead	~~ohms~~ V	Degrees C
9	0,82	-4,1
10	0,82	-4,3
11	0,81	-4,4
12	0,81	-4,6
13	0,80	-4,7

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016

Battery model number installed: ULB-15

Expected battery life (years): 4 17 - 06 M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock is 8/12/16 13:18 at 13:48.

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rathbone	Inspection Date: Aug 12/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DEM		Landfill:	
Thermistor Number: VT2		Inclination:	
Datalogger model no: RXLL		Datalogger cable download model:	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 07110052		Nodal Points 8	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☐	
Lock condition	☐	☐	Replace w/ new.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.63	

Manual Ground Temperature Readings

Bead	ohms V	Degrees C
1	1.18	7.88
2	1.17	7.35
3	1.09	4.87
4	1.00	1.93
5	0.94	-0.28
6	0.91	-1.19
7	0.88	-2.00
8	0.85	-3.21

Bead	ohms	Degrees C

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016.

Battery model number installed: ULB-15

Expected battery life (years): 4 17/06M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock is 8/12/16 - 0 13:18 at 13:59.

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rutherford	Inspection Date: Aug 12/2016
Inspector Signature / Prepared By: Kevin Rutherford	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYEM		Landfill: Lower Inv 2	
Thermistor Number: VT3		Inclination: 90°	
Datalogger model no: RX-1		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 07110053		Nodal Points 7	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Lock condition	☐	☐	Replace w/ crown.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.75	

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1.19	8.0
2	1.12	5.9
3	1.04	~~5.3~~ 3.3
4	0.96	0.4
5	0.92	-0.8
6	0.89	-1.7
7	0.86	-2.6
~~8~~		

Bead	ohms	Degrees C

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016

Battery model number installed: ULB 15

Expected battery life (years): Y17 106 M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock: 8/12/16 → 12:54 @ 1:38pm

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Ruth	Inspection Date: Aug 12/2016.
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYEM.		Landfill: Lower The 2.	
Thermistor Number: VT4		Inclination: ~~80~~ 85°	
Datalogger model no: 2X16		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)		
Datalogger Serial # 071100	Nodal Points 12		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Lock condition	☐	☐	Replace with crown.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.50	

Manual Ground Temperature Readings

Bead	~~ohms~~ Ω	Degrees C
1	1.24	9.7
2	1.23	9.6
3	1.19	8.0
4	1.10	5.1
5	1.00	2.0
6	0.93	-0.3
7	0.91	-1.16
8	0.89	-1.8

Bead	~~ohms~~ Ω	Degrees C
9	0.87	-2.4
10	0.86	-2.7
11	0.85	-3.0
12	0.85	-3.3

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016.

Battery model number installed: 4LB-15

Expected battery life (years): 1/17 OGM.

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock: 8/12/16 13:51 @ 2:25 pm.

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rathy	Inspection Date: Aug 12 / 2016.
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYEM		Landfill: Lower Powerhouse.	
Thermistor Number: VTS		Inclination: 90°	
Datalogger model no: RX 6		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)		
Datalogger Serial # 07110024	Nodal Points 11		

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Lock condition	☐	☐	replaced w/ crown
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.75	

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1.35	13.8
2	1.37	14.2
3	1.22	9.1
4	1.14	6.4
5	1.03	2.8
6	0.94	-0.1
7	0.91	-1.2
8	0.88	-2.1

Bead	~~ohms~~ V	Degrees C
9	0.86	-2.8
10	0.83	-3.9
11	0.81	-4.6

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016.

Battery model number installed: 7117/06 M ULB-15

Expected battery life (years):

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock. 8/12/16 10:18 → 10:58

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rathy	Inspection Date: Aug 12 / 2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYE M		Landfill: Lower Powerhouse	
Thermistor Number: VTG		Inclination: 90°	
Datalogger model no: RX1		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 07110025		Nodal Points 10	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☒	☐	
Cover	☒	☐	
Data Logger	☒	☐	
Cable	☒	☐	Bead #1 not working
Beads	☐	☐	Replace w/ spare
Lock condition	☐	☐	
Battery Installation Date			
Battery Levels	Main 11.34		Aux 13.75

Manual Ground Temperature Readings

Bead	~~ohms~~ Ω	Degrees C
1	2.47	144.6
2	1.15	6.9
3	1.09	4.9
4	1.00	1.8
5	0.93	-0.5
6	0.90	-1.4
7	0.88	-2.2
8	0.85	-3.0

Bead	~~ohms~~ Ω	Degrees C
9	0.82	-4.1
10	0.80	-4.7
11	N/A	
12		
13		
14		
15		
16		

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016

Battery model number installed: ULB-15

Expected battery life (years): 417 / 06M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock: 8/12/16 9:15: → 10:28

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rattray	Inspection Date: Aug 17/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: PEM		Landfill: Lower Pomeroons	
Thermistor Number: VT7		Inclination: 85°	
Datalogger model no: RX16		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 0711007 6		Nodal Points 10	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Lock condition	☐	☐	Replace w/ crown.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.87	

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1.06	3.97
2	1.00	1.87
3	0.94	-0.08
4	0.92	-0.92
5	0.82	-4.26
6	0.87	-2.47
7	0.86	-2.92
8	0.84	-3.71

Bead	~~ohms~~ V	Degrees C
9	0.83	-3.83
10	0.82	-3.97

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016.

Battery model number installed: ULB-45

Expected battery life (years): 4/7 - 06 M.

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock : 8/12/2016 10:43 @ 11:20 am.

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rathlow	Inspection Date: Aug 11/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some information can be pre-populated from thermistor logs)

Site Name: DJEM		Landfill: Tier 2, upper -	
Thermistor Number: VT-6		Inclination: 90°	
Datalogger model no: RX		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 07110057		Nodal Points 15	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Lock condition	☐	☐	Replaced w/ new
Battery Installation Date			
Battery Levels	Main 11.34	Aux 12.65	

Manual Ground Temperature Readings

Bead	~~ohms~~ ✓	Degrees C
1	1.04	3.2
2	1.01	2.3
3	1.05	3.7
4	1.03	2.95
5	0.95	0.12
6	0.91	-1.18
7	0.88	-2.23
8	0.85	-3.27

Bead	~~ohms~~ ✓	Degrees C
9	0.82	-4.1
10	0.80	-4.7
11	0.78	-5.4
12	0.77	-5.8
13	0.76	-6.2
14	0.75	-6.5
15	0.75	-6.7

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016.

Battery model number installed: ULB-15

Expected battery life (years): 4.7 0 6M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock: 8/11/16 12:31 @ 1510.

ANNEX M: Thermistor Inspection Template

Inspector Name: Keith Rattray	Inspection Date: Aug 11/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DVEM	Landfill: Tier 2 upper
Thermistor Number: VT9	Inclination: 90
Datalogger model no: RX	Datalogger cable download model: USB
*Install Date:	First Date Event / Last Date Event
*Coordinates and Elevation	N / E / Elev
Length of Cable (m)	Cable Lead Above Ground (m)
Datalogger Serial # 07110058	Nodal Points 16

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☒	☐	
Cover	☒	☐	
Data Logger	☒	☐	
Cable	☒	☐	
Beads	☒	☐	
Lock condition	☐	☐	Replaced w/ crown.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.14	

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1.08	4.4
2	1.05	3.4
3	1.06	3.8
4	1.06	4.0
5	0.99	1.7
6	0.97	-0.7
7	0.89	-1.8
8	0.86	-2.9

Bead	~~ohms~~ V	Degrees C
9	0.93	-3.7
10	0.81	-4.4
11	0.80	-5.0
12	0.78	-5.4
13	0.77	-5.8
14	0.76	-6.1
15	0.76	-6.3
16	0.75	-6.6

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016

Battery model number installed: ULB-15

Expected battery life (years): 4 1/2 - 6M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger Clock: 8/11/16 12:01 @ 12:55

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rattley	Inspection Date: Aug 11 2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYER		Landfill: Tier 2 upper	
Thermistor Number: VT10		Inclination: 90°	
Datalogger model no: RX		Datalogger cable download model: 9858	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 09110059		Nodal Points 10	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☒	☐	
Cover	☒	☐	
Data Logger	☒	☐	
Cable	☒	☐	
Beads	☒	☐	
Lock condition	☐	☐	Replaced w/ crown
Battery Installation Date			
Battery Levels	Main 11.34	Aux 11.02	

Manual Ground Temperature Readings

Bead	~~ohms~~ ✓	Degrees C
1	1.01	2.09
2	1.06	3.73
3	1.01	2.23
4	0.92	-0.62
5	0.88	-1.96
6	0.85	-3.06
7	0.83	-3.83
8	0.81	-4.8

Bead	~~ohms~~ ✓	Degrees C
9	0.79	-5.24
10	0.77	-5.8

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016

Battery model number installed: Lakis 15

Expected battery life (years): 4/12 06 M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock 8/11/16 12BC 12:46

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Kelley	Inspection Date: Aug 11
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYE-M		Landfill: Tier 2 upper	
Thermistor Number: VT-11		Inclination: 90	
Datalogger model no: Rx		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 0711057		Nodal Points 12	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☒	☐	
Cover	☒	☐	
Data Logger	☒	☐	
Cable	☒	☐	
Beads	☒	☐	
Lock condition	☐	☐	Replaced w/ crown
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.5	

Manual Ground Temperature Readings

Bead	ohms ✓	Degrees C
1	1.05	3.6
2	1.04	3.3
3	0.99	1.7
4	1.05	3.4
5	1.06	3.8
6	0.98	1.4
7	0.92	-0.86
8	0.89	-1.8

Bead	ohms ✓	Degrees C
9	0.86	-2.85
10	0.83	-3.8
11	0.81	-4.6
12	0.79	-5.1

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016

Battery model number installed: ULB315

Expected battery life (years): Y17 06M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock: 8/11/16 : 11:58 @ 12:35

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin R. Hoag	Inspection Date: Aug 12 / 2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYFM		Landfill: Tier 2 lower.	
Thermistor Number: TL		Inclination: 90°	
Datalogger model no: 12X	6	Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 671000 27		Nodal Points 14	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☐	3, 5, 6 not working
Lock condition	☐	☐	Replace w/ new.
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.36	

Manual Ground Temperature Readings

Bead	~~Ohms~~ V	Degrees C
1	1.35	13.4
2	1.31	12.0
3	—	—
4	1.24	9.7
5	—	—
6	—	—
7	1.00	1.9
8	0.86	-2.8

Bead	~~ohms~~ V	Degrees C
9	0.85	-3.2
10	0.81	-4.4
11	0.79	-5.1
12	0.77	-5.6
13	0.77	-5.8
14	0.76	-6.0

Battery Information

Batteries changed ? Yes ☐ No ☑ Monitoring Year: 2016

Battery model number installed: LSB-15

Expected battery life (years): 4 1/2 DGM

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger time: 8/12/16 @ 13:29 @ 2:14pm.

ANNEX M: Thermistor Inspection Template

Inspector Name: Kevin Rattley	Inspection Date: Aug 11/2016
Inspector Signature / Prepared By:	

Thermistor Information (*Some Information can be pre-populated from thermistor logs)

Site Name: DYEM		Landfill: Tier 2	
Thermistor Number: BU		Inclination: 90°	
Datalogger model no: RX 16		Datalogger cable download model: USB	
*Install Date:		First Date Event	Last Date Event
*Coordinates and Elevation	N	E	Elev
Length of Cable (m)		Cable Lead Above Ground (m)	
Datalogger Serial # 07110078		Nodal Points 14	

Thermistor Inspection

	Good	Needs Maintenance	Description
Casing	☒	☐	
Cover	☒	☐	
Data Logger	☒	☐	
Cable	☒	☐	
Beads	☑	☐	
Lock condition	☐	☐	requires replacement
Battery Installation Date			
Battery Levels	Main 11.34		Aux 13.26

Manual Ground Temperature Readings

Bead	~~ohms~~ V	Degrees C
1	1.11	5.47
2	1.12	5.95
3	1.11	5.54
4	0.98	1.23
5	0.96	0.55
6	0.92	-0.90
7	0.88	-2.08
8	0.83	-3.75

Bead	~~ohms~~ V	Degrees C
9	0.79	-5.04
10	0.77	-5.85
11	0.76	-6.31
12	0.76	-6.48
13	0.75	-6.54
14	0.75	-6.50
~~15~~		
~~16~~		

Battery Information

Batteries changed ? Yes ☐ No ☒ Monitoring Year: 2016

Battery model number installed: ULB 15

Expected battery life (years): Y17 06M

Datalogger Programming (Describe programming completed; beads and frequency)

Observations and Proposed Maintenance

Datalogger clock 8/11/16 13:12:20 @ 13:58

Appendix B4

DYE-M Monitoring Well Log Sheets

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower Tier II

Monitoring Well ID: MW12-01

Sample Number(s) include dups.: All (half Large PCB bottle)

Bottles filled (by parameter type): All (half Large PCB bottle)

Date of Sampling Event: Aug 13 Time: 13:30

Weather: +7 sunny

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water): dry ground well in good condition

Lock (condition, presence, model, manufacturer): need to be replaced

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): _____

Well pipe height above ground (cm) (to top of pipe)= 66 cm

Static water level (cm) from top of pipe = 178.5cm

Static water level (cm) (below ground surface) calculated = 234.5cm

Measured well refusal depth (cm) (measure after sampling)= _____

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: 250ml/3min

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	7.25	7.25	7.24	
Conductivity (uS/cm)	.413	.426	.405	
Turbidity (NTU)	3.1	00	5.2	
Temperature (degC)	7.46	5.73	5.44	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): _____

Number washes: _____ Number rinses: _____

Other Relevant Comments: well ran dry at Large bottles (PCB)

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: upper site Tier 2

Monitoring Well ID: MW 12-02

Sample Number(s) include dups.:

Bottles filled (by parameter type): ∅ dry well

Date of Sampling Event: Aug 12 Time: 16:30

Weather: +7 sunny N wind

Names of Samplers: JB, RN

Description of Well Condition and Surrounding ground conditions (note ponding of water):

dry ground, well in good condition, Lid in need of repair

Lock (condition, presence, model, manufacturer):

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)=

Static water level (cm) from top of pipe =

Static water level (cm) (below ground surface) calculated =

Measured well refusal depth (cm) (measure after sampling)= 124.5cm dry well

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): soap + water decon interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: evidence of frozen bottom.

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower power house

Monitoring Well ID: MW05-05

Sample Number(s) include dups.: Ø

Bottles filled (by parameter type): Ø

Date of Sampling Event: Aug 13 Time: 10:50

Weather: +8 sunny

Names of Samplers: JB, JD

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Some ponding water in casing, well in good condition, dry ground

Lock (condition, presence, model, manufacturer): Broken

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): _____

Well pipe height above ground (cm) (to top of pipe)= 33cm

Static water level (cm) from top of pipe = Ø

Static water level (cm) (below ground surface) calculated = 172.5cm

Measured well refusal depth (cm) (measure after sampling)= 172.5cm dry well

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl: colour, odour, presence of free product/sheen/globules, siltation...): _____

Decontamination of sampling equipment

Type of decontamination fluid (s): decon interface w soap + water

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well evidence of ice on probe

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower powerhouse

Monitoring Well ID: MW05-06

Sample Number(s) include dups.: Ø

Bottles filled (by parameter type): Ø

Date of Sampling Event: Aug 13 Time: 10:30

Weather: +7 sunny

Names of Samplers: SB, Jay P

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Well good condition, dry ground, some water ponding in casing

Lock (condition, presence, model, manufacturer): Broken

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): _____

Well pipe height above ground (cm) (to top of pipe)= _____

Static water level (cm) from top of pipe = _____

Static water level (cm) (below ground surface) calculated = 178.2 cm

Measured well refusal depth (cm) (measure after sampling)= 173 cm

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): _____

Decontamination of sampling equipment

Type of decontamination fluid (s): decon interface probe w water & soap

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well evidence of ice

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower powerhouse

Monitoring Well ID: MW 08-07

Sample Number(s) include dups.:

Bottles filled (by parameter type):

Date of Sampling Event: Aug 13 Time: 10:15

Weather: +8

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

good condition, dry ground, ponding water in wellcasing

Lock (condition, presence, model, manufacturer): OK

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)= 30cm

Static water level (cm) from top of pipe = 0

Static water level (cm) (below ground surface) calculated = 152cm

Measured well refusal depth (cm) (measure after sampling)= 152cm

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): water/soap decon

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Powerhouse Landfill

Monitoring Well ID: MW05-08

Sample Number(s) include dups.: Ø

Bottles filled (by parameter type): Ø

Date of Sampling Event: Aug-13 Time: 10:00

Weather: +8 Sunny

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Wellgood condition, some ponding in casing, dry ground

Lock (condition, presence, model, manufacturer): good

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 46cm

Static water level (cm) from top of pipe = _____

Static water level (cm) (below ground surface) calculated = 175.5cm

Measured well refusal depth (cm) (measure after sampling)= 175.5cm dry well

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): _____

Decontamination of sampling equipment

Type of decontamination fluid (s): water + soap decon interface

Number washes: 1 Number rinses: 1

Other Relevant Comments: _____

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: _____ Landfill Name: Lower Non Haz

Monitoring Well ID: MW05-09

Sample Number(s) include dups.: ø

Bottles filled (by parameter type): ø

Date of Sampling Event: Aug 13 Time: 16:10

Weather: +8 Sunny

Names of Samplers: JB, JEB

Description of Well Condition and Surrounding ground conditions (note ponding of water): Good condition, dry ground

Lock (condition, presence, model, manufacturer): new crown.

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 88 cm

Static water level (cm) from top of pipe = _____

Static water level (cm) (below ground surface) calculated = 141

Measured well refusal depth (cm) (measure after sampling)= 141 dry

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): _____

Decontamination of sampling equipment

Type of decontamination fluid (s): _____

Number washes: _____ Number rinses: _____

Other Relevant Comments: _____

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: _____ Landfill Name: _____

Monitoring Well ID: MW05-12

Sample Number(s) include dups.: Ø

Bottles filled (by parameter type): Ø

Date of Sampling Event: Aug 13 Time: 16:15

Weather: +8 Sunny

Names of Samplers: JB, KL,

Description of Well Condition and Surrounding ground conditions (note ponding of water): good dry ground

Lock (condition, presence, model, manufacturer): no Lock,

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): _____

Well pipe height above ground (cm) (to top of pipe)= 38cm

Static water level (cm) from top of pipe = _____

Static water level (cm) (below ground surface) calculated = 174cm

Measured well refusal depth (cm) (measure after sampling)= 174cm dry

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): _____

Decontamination of sampling equipment

Type of decontamination fluid (s): _____

Number washes: _____ Number rinses: _____

Other Relevant Comments: Ø

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower Tier II

Monitoring Well ID: MW05-13

Sample Number(s) include dups.: 8

Bottles filled (by parameter type): VOC's and metal only

Date of Sampling Event: Aug 13 Time:

Weather: +7 sunny

Names of Samplers:

Description of Well Condition and Surrounding ground conditions (note ponding of water):

good, dry ground some standing water in casing

Lock (condition, presence, model, manufacturer): ~~cast~~ casing Latch broken No Lock

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface

Well pipe height above ground (cm) (to top of pipe)= 20 cm

Static water level (cm) from top of pipe = 165.

Static water level (cm) (below ground surface) calculated = 175.5

Measured well refusal depth (cm) (measure after sampling)= /

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	8.13			Low recharge
Conductivity (~~uS~~/cm) uS	.202			not able to
Turbidity (NTU)	5.9			stabilize
Temperature (degC)	8.62			

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): water/soap decon interface

Number washes: 1 Number rinses: 1

Other Relevant Comments: Well ran dry, partial sample

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower Tier II

Monitoring Well ID: MW05-15

Sample Number(s) include dups.:

Bottles filled (by parameter type): All (PActual PCB's) Large bottle

Date of Sampling Event: Aug-13 Time: 14:00

Weather: +8 sunny

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

Good condition, dry ground,

Lock (condition, presence, model, manufacturer): good

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface Probe

Well pipe height above ground (cm) (to top of pipe)= 59 cm

Static water level (cm) from top of pipe = 185cm

Static water level (cm) (below ground surface) calculated = 216 cm

Measured well refusal depth (cm) (measure after sampling)=

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	7.50	7.81		slow recharge
Conductivity (uS/cm) mS	.651	.639		unable to
Turbidity (NTU)	8.0	11.9		Stabilize
Temperature (degC)	7.51	8.14		

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour.

Decontamination of sampling equipment

Type of decontamination fluid (s): Soap/water decon & interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: Well ran dry at Large PCB bottle

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower Tier II

Monitoring Well ID: MW05-16

Sample Number(s) include dups.:

Bottles filled (by parameter type): 6 dry well

Date of Sampling Event: Aug 13 Time: 14:30

Weather: +8 sunny

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

well in good condition, dry ground

Lock (condition, presence, model, manufacturer): OK

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)=

Static water level (cm) from top of pipe =

Static water level (cm) (below ground surface) calculated = 181cm

Measured well refusal depth (cm) (measure after sampling)= 181cm dry

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (time stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): Soapa water

Number washes: 1 Number rinses: 1

Other Relevant Comments: evidence of mud and ice on bottom of probe

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: upper site NHWL

Monitoring Well ID: MW6-18

Sample Number(s) include dups.:

Bottles filled (by parameter type):

Date of Sampling Event: Aug 12 Time:

Weather: +5°c Sunny Slight NWind

Names of Samplers:

Description of Well Condition and Surrounding ground conditions (note ponding of water):

ponding water in casing. well on a 90° angle towards north, prop back up + chim

Lock (condition, presence, model, manufacturer): w Rocks. Lock damaged replaced w crow

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)=

Static water level (cm) from top of pipe =

Static water level (cm) (below ground surface) calculated =

Measured well refusal depth (cm) (measure after sampling)= 104cm dry well

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation…):

Decontamination of sampling equipment

Type of decontamination fluid (s):

Number washes: Number rinses:

Other Relevant Comments: dry well

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: upper MHW1

Monitoring Well ID: MW06-19

Sample Number(s) include dups.: + dup

Bottles filled (by parameter type): All

Date of Sampling Event: Aug 12 Time: 12:05

Weather: +5 Sunny Slight N wind

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water): Dry ground well in good condition, 5cm of ponding water in casing

Lock (condition, presence, model, manufacturer): good

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): _____

Well pipe height above ground (cm) (to top of pipe)= 69cm

Static water level (cm) from top of pipe = 161.5

Static water level (cm) (below ground surface) calculated = 180.5

Measured well refusal depth (cm) (measure after sampling)= _____

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	10.24	9.85		
Conductivity (uS/cm) mS	080	.078		
Turbidity (NTU)	31.8	00		
Temperature (degC)	5.40	4.58		

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): Soap/water decon interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: _____

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Ayr Landfill Name: upper Nith

Monitoring Well ID: MW26-20

Sample Number(s) include dups.:

Bottles filled (by parameter type): N/A

Date of Sampling Event: Aug 12 Time: 11:30

Weather: ~5°c Sunny Slight Wind

Names of Samplers:

Description of Well Condition and Surrounding ground conditions (note ponding of water):

good condition, moist ground, ~10cm water ponding in casing.

Lock (condition, presence, model, manufacturer): good

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 58 cm

Static water level (cm) from top of pipe = 103.5 cm

Static water level (cm) (below ground surface) calculated = 117.5 cm

Measured well refusal depth (cm) (measure after sampling)= 117.5 cm

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	10.14	10.62		
Conductivity (~~uS~~/cm) MS	.280	.		
Turbidity (NTU)	457			
Temperature (degC)	5.5			

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): cloudy, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): soap + water decon interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: not recharging, unable to sample

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: DLM Landfill Name: Upper Site N.W.L

Monitoring Well ID: BH07-21

Sample Number(s) include dups.:

Bottles filled (by parameter type): All

Date of Sampling Event: Aug 12 Time: 10:30

Weather: +5 Sunny N wind

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

well in good condition, 5cm of water ponding in casing

Lock (condition, presence, model, manufacturer): good

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 57cm

Static water level (cm) from top of pipe = 126.5 cm

Static water level (cm) (below ground surface) calculated = 134cm

Measured well refusal depth (cm) (measure after sampling)=

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate: 4/min/250ml

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	7.17	7.32	7.61	
Conductivity (uS/cm) MS	.084	.088	.087	
Turbidity (NTU)	00	00	00	
Temperature (degC)	6.48	3.80	3.42	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): cloudy, no odour

* Not able to stabilize, not enough water

Decontamination of sampling equipment

Type of decontamination fluid (s):

Number washes: Number rinses:

Other Relevant Comments: ground surface of well is iced, very slow recovery filling up sample bottles

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: upper site Tier 2

Monitoring Well ID: MW07-22

Sample Number(s) include dups.:

Bottles filled (by parameter type): N/A dry well

Date of Sampling Event: Aug. 12 Time: 14:00

Weather: +7 sunny N wind

Names of Samplers: JB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

dry ground. well in good condition

Lock (condition, presence, model, manufacturer): lock changed to crown

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)= 59cm

Static water level (cm) from top of pipe =

Static water level (cm) (below ground surface) calculated =

Measured well refusal depth (cm) (measure after sampling)= 219.3cm dry

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): water/soap decon interface

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well NO evidence of ice

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: _____ Landfill Name: Upper site Tier 2

Monitoring Well ID: MW07-23

Sample Number(s) include dups.: _____

Bottles filled (by parameter type): All (half Large PCB bottle)

Date of Sampling Event: Aug 12 Time: 14:45

Weather: +7 Sunny

Names of Samplers: JB RN

Description of Well Condition and Surrounding ground conditions (note ponding of water): dry ground. Well in good condition.

Lock (condition, presence, model, manufacturer): No Lock. Added new crown Lock

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface Probe

Well pipe height above ground (cm) (to top of pipe)= 69cm

Static water level (cm) from top of pipe = 236 cm

Static water level (cm) (below ground surface) calculated = 247 cm

Measured well refusal depth (cm) (measure after sampling)= _____

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	8.75	8.71		
Conductivity (~~uS~~/cm) mS	.183	.181		
Turbidity (NTU)	15.5	22		
Temperature (degC)	7.52	7.28		

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): Water/Soap decon

Number washes: 1 Number rinses: 1

Other Relevant Comments: Slow recharge. did soil sample than only retrieved ½ bottle of PCB's. well dry

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: _____ Landfill Name: Upper site Tier 2

Monitoring Well ID: MW08-24

Sample Number(s) include dups.: _____

Bottles filled (by parameter type): VOC's, metals & Mercury only

Date of Sampling Event: Aug 12 Time: 15:00

Weather: +7 Sunny

Names of Samplers: JB, RN

Description of Well Condition and Surrounding ground conditions (note ponding of water): dry ground, well in good condition

Lock (condition, presence, model, manufacturer): damaged, replaced w crown

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 63cm

Static water level (cm) from top of pipe = 147.2

Static water level (cm) (below ground surface) calculated = 169.5

Measured well refusal depth (cm) (measure after sampling)= _____

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: sludge

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	8.98	9.06		notable to
Conductivity (uS/cm)	.065	.065		finalize
Turbidity (NTU)	79.9	100.		very little
Temperature (degC)	8.31°c	7.34°c		recharge

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): yellow/cloudy, no odour, sludge.

Decontamination of sampling equipment

Type of decontamination fluid (s): Water + soap decon interface

Number washes: 1 Number rinses: 1

Other Relevant Comments: VOC's, metals + Mercury only, well ran dry

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: upper site Tier 2

Monitoring Well ID: MW08-25

Sample Number(s) include dups.:

Bottles filled (by parameter type): N/A dry well

Date of Sampling Event: Aug 12 Time: 16:00

Weather: +7 Sunny N wind

Names of Samplers:

Description of Well Condition and Surrounding ground conditions (note ponding of water):

dry ground, Well in good condition

Lock (condition, presence, model, manufacturer): damaged, new crown Lock installed

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 38cm

Static water level (cm) from top of pipe =

Static water level (cm) (below ground surface) calculated =

Measured well refusal depth (cm) (measure after sampling)= 147cm dry well

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): water soap deconn interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well; evidence of ice on bottom

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower NON HAZ

Monitoring Well ID: MW09-26

Sample Number(s) include dups.: Ø

Bottles filled (by parameter type): Partial No PCB's Large bottle.

Date of Sampling Event: Aug 13 Time: 15:30

Weather: +8 sunny

Names of Samplers: JB, JEB

Description of Well Condition and Surrounding ground conditions (note ponding of water):

good, water pondens in casing. ground is moist

Lock (condition, presence, model, manufacturer): replace w crown damaged catch on casing

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= _____ Diameter of well (cm)= _____

*Depth to top of screen (cm)= _____ Length screened section (cm)= _____

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe.

Well pipe height above ground (cm) (to top of pipe)= 45cm

Static water level (cm) from top of pipe = 134.5

Static water level (cm) (below ground surface) calculated = 185.5

Measured well refusal depth (cm) (measure after sampling)= 185.5

Thickness of water column (cm)= _____ Static volume of water in well (mL)= _____

Free product thickness (mm)= _____ Evidence of sludge or siltation: _____

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information: _____

Well purged (Y/N): _____ Recharge Rate: _____

Volume Purged (L) (note multiple purging events if applicable): _____

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH	7.24	7.29		notable to
Conductivity (uS/cm)	1.45	1.48		Stabilize
Turbidity (NTU)	00	00		Very Little Recharge
Temperature (degC)	6.49c	6.03c		

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): Water/soap decon interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: _____

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower Non Haz

Monitoring Well ID: MW09-27

Sample Number(s) include dups.:

Bottles filled (by parameter type): All

Date of Sampling Event: Aug 13 Time: 15:45

Weather: +8 Sunny

Names of Samplers: JB, JEB

Description of Well Condition and Surrounding ground conditions (note ponding of water): good condition, dry ground

Lock (condition, presence, model, manufacturer): new crown Lock

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc): interface probe

Well pipe height above ground (cm) (to top of pipe)= 33cm

Static water level (cm) from top of pipe = 138cm

Static water level (cm) (below ground surface) calculated = 218cm

Measured well refusal depth (cm) (measure after sampling)=

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate: ~~Slow~~

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (Not stabilized)
pH	7.73	7.61	7.52	
Conductivity (uS/cm)	.609	568	560	
Turbidity (NTU)	00	00	00	
Temperature (degC)	6.37	5.01	4.50	

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...): clear, no odour

Decontamination of sampling equipment

Type of decontamination fluid (s): Soap/water decon interface probe

Number washes: 1 Number rinses: 1

Other Relevant Comments: not recharging

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

ANNEX J: Monitoring Well Sampling Log (Complete All Fields)

Site Name: Dye M Landfill Name: Lower NON Haz

Monitoring Well ID: MW09-28

Sample Number(s) include dups.:

Bottles filled (by parameter type):

Date of Sampling Event: Aug 13 Time: 15:55

Weather: +8 Sunny

Names of Samplers: JB, JEB

Description of Well Condition and Surrounding ground conditions (note ponding of water): good dry ground

Lock (condition, presence, model, manufacturer): New crown

Pre-Measured Data (From Water Well Record Log)

*Depth of well installation (cm)= Diameter of well (cm)=

*Depth to top of screen (cm)= Length screened section (cm)=

*note: *depths are from ground surface*

Field Measurements

Measurement method (interface probe, tape, etc):

Well pipe height above ground (cm) (to top of pipe)= 38

Static water level (cm) from top of pipe = Ø

Static water level (cm) (below ground surface) calculated = 103

Measured well refusal depth (cm) (measure after sampling)= 103

Thickness of water column (cm)= Static volume of water in well (mL)=

Free product thickness (mm)= Evidence of sludge or siltation:

Purging Information Summary*

Purging/sampling equipment, sampling technique and equipment calibration information:

Well purged (Y/N): Recharge Rate:

Volume Purged (L) (note multiple purging events if applicable):

Parameter	Initial	Stabilized	Final	Notes (if not stabilized)
pH				
Conductivity (uS/cm)				
Turbidity (NTU)				
Temperature (degC)				

Visual/olfactory observations (incl. colour, odour, presence of free product/sheen/globules, siltation...):

Decontamination of sampling equipment

Type of decontamination fluid (s): Soap & water

Number washes: 1 Number rinses: 1

Other Relevant Comments: dry well evidence of sand on probe

* Complete field notes including full suite of water quality indicator parameters VS time as per EPA low flow sampling procedures should be apended to this summary.

Appendix B5

DYE-M Soil Sampling Field Notes

SITE NAME: _____

RECORD OF SAMPLING

DA

SAMPLER NAME: _____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Upper NWS ~~DM-18~~	DM-18A	30	gravel w sand Refusal at Large Rocks				3	Y
" "	DM-22A	40	gravel w sand refusal at Rocks				3	Y
" "	DM-22B	30	darker soil/sand " Refusal at rock				3	Y
	DM-21A	30	Sand w gravel refusal at Rocks				3	Y
	DM-20A	<30	Sand w gravel Refusal at Rocks				3	Y
	DM-19A	30	Sand w gravel Refusal at Rock				3	Y
	DM-24A	30	Sand w gravel Refusal on Rock				3	Y
	DM-25A	<30	Sand w gravel Refusal at Rock				3	Y
	DM-27A	30	" "				3	Y
	DM-26A	30	" "				3	Y

Anglo

amg

SITE NAME:_____

RECORD OF SOIL SAMPLING

DATE:_____
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Upper NWS	MD-28A + DUP	30	SAND to Rock & gravel Refusal at Large Rocks				3	Y
	MD-29A	30cm					3	Y
	DM-30A	40cm					3	Y
	DM-30b	30cm					3	Y
Upper NWS	DM-23A +dup	30					3	Y
Heli pad	DM-17A	<30					3	Y
Heli pad	DM-16A	<30					3	Y
Hel. pad	DM15A	30					3	Y
Heli pad	DM-14A	30					3	Y
Heli pad	DM-13A	<30					3	Y

Aug 10

Golder Project #1530908 Ph[illegible]

GOLDER AS[illegible]TES

SITE NAME: _____

RECORD OF SOIL SAMPLING

SAMPLER NAME: _____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Helipad	DM-12A	30	sand & gravel refusal at rock				3	Aug 10
Heli pad	DM-11A	<30	Sand & gravel Refusal at Compacted rock					
Upper site pallet Line	DM-55A	<30	Sample in a bolder Field. refusal at Rock & bolders					
	DM-56A	<30	Sample in broken bole Refusal at Rock					
	DM-57A	30	SAnd and gravel Refused at Rocks					
	DM-54A	30	Sand & gravel refusal at rock					
	DM-58A	30	Course sand w gravel refusal at rocks					
	DM-59A	30	PHC odour Sand w gravel Sand w stains Refusal at Rock					Aug 10
	DM-62A	30	Sand w gravel Refusal at rock.					Aug 11
	DM-61A	30	Sand w gravel refusal at large Rock					Aug 11

SITE NAME:_____

RECORD OF SOIL SAMPLING

DATE:_____
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Upper site pallet Line	DM-60A	30	Sand w gravel refusal at Rock				3	Y
upper site west	DM-50*A	<30	Sand w gravel refusal at rock				3	Y
	DM 51*A	<30	Sand w gravel refusal at rock				3	X
	DM 52A	<30	Sand w gravel refusal at Rock				3	Y
	DM 47A	30	Sand w gravel phc odour refusal at compacted Rock				3	Y
	DM 49A	30	Sand w gravel PHC odour refusal at rock				3	Y
+ DUP	DM 49b	30	Sand w gravel PHC odour w Sheen ~~to fo~~ -				3	Y
	DM 48A	30	Sand & gravel ~~phc~~ refusal at rock				3	Y
	DM 46a	<30	Sand & gravel Refusal at compact Rock.				3	Y
upper site west	DM 45a	<30	Sand & gravel refusal at rock				3	Y

Golder Project #1530906 000

GOLDER ASSOCIATES

SITE NAME:_____

RECORD OF S SAMPLING

DA
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Upper Site West	DM-44a	30	Sand gravel Refusal at Rock				3	Y
	DM-43a	30	Sand + gravel Refusal at Rock				3	Y
	DM-42a	30	Moist sand & gravel Refusal at Large Rocks				3	Y
	DM-41a	<30	Sand and gravel refusal at Rock				3	Y
	DM-40a	30	Moist sand & gravel refusal at compact Rock				3	Y
	DM-35a	<30	Moist sand w gravel refusal at Rock				3	Y
	DM 36a	<20	Sand w gravel refusal at compact Rock				3	Y
	DM 37a	30	Sand w gravel refusal at compact rock				3	Y
	DM 31a	<30	Sand w gravel Refusal at compact Rock				3	Y
	DM 32a	30	Sand w gravel Refusal at compact gravel/Rocks				3	Y

aug 11

aug 11

SITE NAME:_____

RECORD OF SOIL SAMPLING

DATE:_____
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)	
Upper site West	DM33-A plus Dup	30	Sample in Bolder field. Sand w Rock refusal at rock				3	Y	aug 11
	DM34A	< 30	in bolder field sand w gravel Refusal at rock.				3	Y	
	DM35A	< 20	Sample in bolder field. sand & gravel Refusal at Rock				3	Y	
Upper site west	DM39A	< 20	Sand w gravel compacted Refusal at Rocks				3	Y	Aug 11
upper site MHWL	MW6-18A	< 20	Sand w gravel wet, water filling in test pit refusal at compact Gravel				3	Y	Aug 12
	MW07-21	< 20	SAMple in Bolderfield Moist sand w gravel refusal at Large Rock				3	Y	
	MW06-20	< 20	moist sand w gravel Refusal at Rock				3	Y	
	MW06-19	30	moist sand w gravel refusal at rock				3	Y	
upper site Tier 2	MW07-22	< 20	Compacted sand & gravel compacted refusal at Rock				3	Y	
	MW07-23	30	sand w gravel refusal at rock				3	Y	Aug 12

SITE NAME: _____

RECORD OF SAMPLING

SAMPLER NAME: _____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
upper site Tier 2	MW08-24	20 cm	SAND w gravel Refusal at Rocks				3	Y aug12
upper Tier2	MW08-25	20 cm	SAND w gravel moist. Refusal at Rocks				3	Y aug12
upper Tier2	MW12-02	20cm	SAND w gravel moist refusal at compacted rocks.				3	Y aug12
upper pallet Line	DM53A + DUP	30cm	SAND w loose gravel. refusal at Rock					

SITE NAME: DYE-M

RECORD OF SOIL SAMPLING

DATE: Aug 13, 2016

SAMPLER NAME: JEB

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
lower site powerhouse landfill	MWOS-08a	<30	brown sand, dry some gravel, small cobbles. - refusal on rock					
lower site powerhouse landfill	MWOS-07a	30	brown sand, dry some gravel, small cobbles - refusal on rock					
lower site powerhouse landfill	MWOS-06a	<30	brown sand, dry small gravel, small cobbles - refusal on rock	hydrocarbon odour				
lower site powerhouse landfill	MWOS-05a	30	dry brown sand small gravel, small cobbles - refusal on rock					
lower site foundation landfill	DM-04a	40	moist brown sand trace gravel refusal on rock					
lower site foundation landfill	DM-04b	30	moist brown sand, trace gravel					
lower site foundation landfill	DM-06a	<30	moist brown sand with gravel, trace organics small cobbles - refusal on rock					
lower site foundation landfill	DM-05a	30	moist brown sand some gravel, small cobbles, trace glass - refusal on rock		~			
lower site crossroads landfill	DM-02a + DUP	<30	dry brown sand some gravel, small cobbles - refusal on rock					
lower site crossroads landfill	DM-03a	30	moist brown sand some gravel, large rock. - refusal on rock					

SITE NAME:_____

RECORD OF SOIL SAMPLING

DATE:_____
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
lower site crossroads landfill	OM-01a	<20	moist brown sand some gravel, small cobble refusal on rock					
lower site Tier II disposal facility	MW05-13a	<30	moist brown sand some gravel, large rock -refusal on rock					
lower site Tier II Disposal facility	MW12-01a	50	-moist brown sand trace gravel (fine sand)					
lower site Tier II Disposal facility	MW12-01b	30	-moist brown sand trace gravel (fine sand)					
lower site Tier II Disposal facility	MW05-15a	50	-moist fine brown sand, trace gravel					
lower site Tier II Disposal facility	MW05-15b	30	-moist fine brown sand, trace gravel					
lower site Tier II Disposal facility	MW05-16a	40	-moist brown sand, some gravel -refusal on rocks					
lower site Tier II Disposal facility	MW05-16b	30	-moist brown sand, some gravel					

SITE NAME: _____

RECORD OF SAMPLING

SAMPLER NAME: _____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
Dye M NWS	DM08a	<30	Compacted sand & gravel refusal at 20cm due to compacted soils.	Aug 13			3	y
"								
"	DM09a	30	Sand and gravel rocky refusal at 30				3	y
"	DM10a	30	gravel w/ sand. Some cobbles				3	y
		30	Rocky refusal at 30					
"	DM07a		silty sand between boulders.				3	y
	DM07b & Duplicate.							
Lower Nor Hwy	MW-09-26a	50	Moist silty sand w/ some gravel				3	y
"	MW09-26b	30					3	y

1 dup
~~1~~ 2 samples

SITE NAME:_____

RECORD OF SOIL SAMPLING

DATE:_____
SAMPLER NAME:_____

LANDFILL NAME	SOIL SAMPLE ID	DEPTH (m)	SOIL DESCRIPTION	GPS Northing	GPS Easting	GPS Elevation	Photographs	Backfilled (Y/N)
lower Non Haz	MW-09-26a	50	Moist sandy gravel	Aug 13			3	Y
"	MW-09-26B	30	↓	Aug 13			3	Y
"	MW-05-17a	<30	Sand and gravel w/ some cobbles Rocky refusal at 20cm	Aug 13			3	Y
"	MW-05-09a	30	Sand w/ gravel Rocky Refusal @ 30	Aug 13			3	Y
"	MW-09-28a	30	sand w/ gravel and cobbles Rocky Refusal	Aug 13			3	Y

APPENDIX C

Laboratory Data

Appendix C1

Certificate Of Analysis –
Paracel Laboratories Ltd.,
Aug. 23, 2016; Order #1634255 (Part 1)

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Golder Associates Ltd. (Ottawa)

1931 Robertson Rd.
Ottawa, ON K2H 5B7
Attn: Alyssa Troke

Client PO:
Project: 1530908-2000
Custody: 106890

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016

Order #: 1634255

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634255-01	DM - 40 A
1634255-02	DM - 41 A
1634255-03	DM - 42 A
1634255-04	DM - 43 A
1634255-05	DM - 44 A
1634255-06	DM - 45 A
1634255-07	DM - 46 A
1634255-08	DM - 47 A
1634255-09	DM - 49 A
1634255-10	DM - 49 B
1634255-11	DM - 50 A
1634255-12	DM - 52 A
1634255-13	DM - 48 A
1634255-14	DM - 60 A
1634255-15	DM - 61 A
1634255-16	DM - 62 A
1634255-17	DM - 51 A
1634255-18	DM - 13 A
1634255-19	DM - 14 A
1634255-20	DM - 16 A
1634255-21	DM - 17 A
1634255-22	DM - 19 A
1634255-23	DM - 20 A
1634255-24	DM - 21 A
1634255-25	DM - 22 A
1634255-26	DM - 22 B
1634255-27	DM - 23 A
1634255-28	DM - 24 A
1634255-29	DM - 25 A
1634255-30	DM - 26 A

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

1634255-31	DM - 27 A
1634255-32	DM - 28 A
1634255-33	DM - 29 A
1634255-34	DM - 30 A
1634255-35	DM - 30 B
1634255-36	DM - 02 A
1634255-37	DM - 04 A
1634255-38	DM - 04 B
1634255-39	DM - 05 A
1634255-40	DM - 06 A
1634255-41	MW05 - 08 A
1634255-42	MW05 - 06 A
1634255-43	MW05 - 07 A
1634255-44	MW05 - 05 A
1634255-45	MW05 - 09 A
1634255-46	MW05 - 12 A
1634255-47	MW05 - 13 A
1634255-48	MW05 - 15 A
1634255-49	MW05 - 15 B
1634255-50	MW05 - 16 A
1634255-51	MW05 - 16 B

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
CCME-SQG: Metals by ICP-OES	based on MOE E3470, ICP-OES	19-Aug-16	19-Aug-16
Mercury by CVAA	EPA 7471B - CVAA, digestion	19-Aug-16	19-Aug-16
PCBs, total	SW846 8082A - GC-ECD	18-Aug-16	20-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	22-Aug-16	21-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	21-Aug-16
Solids, %	Gravimetric, calculation	22-Aug-16	22-Aug-16

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 40 A	DM - 41 A	DM - 42 A	DM - 43 A
	Sample Date:	11-Aug-16	11-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-01	1634255-02	1634255-03	1634255-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.5	96.9	94.1	93.8
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	334	319	426	221
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	1.1	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	153	135	150	122
Cobalt	1.0 ug/g dry	18.2	10.8	16.9	14.9
Copper	1.0 ug/g dry	91.7	64.9	60.1	54.7
Lead	1.0 ug/g dry	12.3	17.1	8.1	7.0
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	2.9	2.4	1.7	1.7
Nickel	1.0 ug/g dry	79.1	39.4	53.5	44.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	119	107	126	91.7
Zinc	1.0 ug/g dry	113	111	110	70.9
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	54	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	295	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	107%	103%	96.0%	106%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 44 A	DM - 45 A	DM - 46 A	DM - 47 A
	Sample Date:	11-Aug-16	11-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-05	1634255-06	1634255-07	1634255-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.5	88.9	89.8	93.6
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	421	439	216	338
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	161	187	147	173
Cobalt	1.0 ug/g dry	14.7	37.1	11.6	16.9
Copper	1.0 ug/g dry	79.8	157	112	87.1
Lead	1.0 ug/g dry	8.5	12.6	16.7	18.3
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	1.9	1.8	6.0	2.5
Nickel	1.0 ug/g dry	52.7	129	49.4	71.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	138	143	141	125
Zinc	1.0 ug/g dry	125	166	109	123
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	100
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	91	234
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	15	30
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	0.45	<0.05
Decachlorobiphenyl	Surrogate	109%	89.6%	98.0%	100%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 49 A	DM - 49 B	DM - 50 A	DM - 52 A
	Sample Date:	11-Aug-16	11-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-09	1634255-10	1634255-11	1634255-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	88.6	86.4	94.1	93.1
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	213	244	245	44.9
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	172	195	186	43.6
Cobalt	1.0 ug/g dry	16.0	17.2	14.4	34.3
Copper	1.0 ug/g dry	100	111	82.6	70.0
Lead	1.0 ug/g dry	11.8	13.9	16.9	7.9
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	3.9	4.4	2.9	<1.0
Nickel	1.0 ug/g dry	70.7	75.7	68.0	209
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	110	123	97.7	34.8
Zinc	1.0 ug/g dry	108	120	80.9	44.6
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	75
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	21
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	79.5%	87.9%	108%	87.6%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 48 A	DM - 60 A	DM - 61 A	DM - 62 A
	Sample Date:	11-Aug-16	11-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-13	1634255-14	1634255-15	1634255-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	90.8	94.8	94.4	95.3
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	11.9	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	277	156	153	96.6
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	301	60.0	57.6	50.3
Cobalt	1.0 ug/g dry	27.1	20.7	20.0	18.7
Copper	1.0 ug/g dry	96.6	30.9	39.6	42.7
Lead	1.0 ug/g dry	11.3	8.8	7.0	10.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	2.7	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	223	113	122	101
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	144	69.0	52.6	53.4
Zinc	1.0 ug/g dry	131	56.0	48.0	54.4
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	91.1%	98.1%	97.6%	91.6%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 51 A	DM - 13 A	DM - 14 A	DM - 16 A
	Sample Date:	11-Aug-16	10-Aug-16	10-Aug-16	10-Aug-16
	Sample ID:	1634255-17	1634255-18	1634255-19	1634255-20
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	94.5	96.5	97.3	96.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	329	70.4	87.6	65.9
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	112	45.0	61.8	38.7
Cobalt	1.0 ug/g dry	12.3	10.7	13.0	11.6
Copper	1.0 ug/g dry	52.2	47.7	36.3	38.6
Lead	1.0 ug/g dry	23.4	22.3	13.9	8.7
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	2.3	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	56.0	54.6	67.4	43.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	81.7	43.1	50.2	40.6
Zinc	1.0 ug/g dry	84.8	80.2	66.9	66.5
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	209	92	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	87	41	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	0.32	1.14	<0.05
Decachlorobiphenyl	Surrogate	100%	103%	104%	99.3%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	DM - 17 A	DM - 19 A	DM - 20 A	DM - 21 A
	Sample Date:	10-Aug-16	10-Aug-16	10-Aug-16	10-Aug-16
	Sample ID:	1634255-21	1634255-22	1634255-23	1634255-24
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	94.6	94.2	90.3	92.5
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	48.0	26.4	30.8	81.4
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	36.5	14.1	13.9	14.8
Cobalt	1.0 ug/g dry	11.6	4.7	6.6	9.6
Copper	1.0 ug/g dry	42.9	12.7	19.2	18.8
Lead	1.0 ug/g dry	22.0	6.1	31.3	14.7
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	64.5	16.5	20.8	21.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	31.3	17.9	21.4	39.9
Zinc	1.0 ug/g dry	59.0	29.0	47.3	86.7
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	81	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	25	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	0.13	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	104%	90.2%	111%	99.5%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	DM - 22 A	DM - 22 B	DM - 23 A	DM - 24 A
	Sample Date:	10-Aug-16	10-Aug-16	10-Aug-16	10-Aug-16
	Sample ID:	1634255-25	1634255-26	1634255-27	1634255-28
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	93.4	95.0	94.5	92.2
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	64.1	56.4	34.5	122
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	18.8	20.7	29.7	58.9
Cobalt	1.0 ug/g dry	14.3	12.3	8.5	13.5
Copper	1.0 ug/g dry	47.5	30.6	14.2	21.8
Lead	1.0 ug/g dry	14.2	10.3	6.9	9.7
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	21.4	34.9	35.9	45.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	54.7	45.9	29.9	49.7
Zinc	1.0 ug/g dry	57.2	40.0	41.4	64.8
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	94.2%	93.2%	96.4%	90.7%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 25 A	DM - 26 A	DM - 27 A	DM - 28 A
	Sample Date:	10-Aug-16	10-Aug-16	10-Aug-16	10-Aug-16
	Sample ID:	1634255-29	1634255-30	1634255-31	1634255-32
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.6	95.2	93.1	97.8
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	118	100	85.8	63.0
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	64.9	81.7	18.6	23.4
Cobalt	1.0 ug/g dry	13.3	12.4	8.0	8.5
Copper	1.0 ug/g dry	35.3	32.2	12.6	15.6
Lead	1.0 ug/g dry	9.3	8.1	7.3	5.4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	52.2	53.0	17.0	30.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	48.5	42.9	34.8	29.6
Zinc	1.0 ug/g dry	66.9	53.1	49.3	40.1
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	99.5%	100%	104%	104%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	DM - 29 A	DM - 30 A	DM - 30 B	DM - 02 A
	Sample Date:	10-Aug-16	10-Aug-16	10-Aug-16	13-Aug-16
	Sample ID:	1634255-33	1634255-34	1634255-35	1634255-36
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	96.8	94.5	94.9	95.5
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	42.9	43.7	36.3	107
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	22.7	32.6	26.7	56.4
Cobalt	1.0 ug/g dry	8.2	9.3	7.6	8.2
Copper	1.0 ug/g dry	16.8	28.0	20.7	31.8
Lead	1.0 ug/g dry	6.7	8.3	7.2	6.7
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	38.4	29.5	24.3	32.8
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	26.3	35.4	29.7	39.4
Zinc	1.0 ug/g dry	31.5	49.7	40.1	35.4
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	23
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	44
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	31
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	97.6%	100%	97.7%	97.3%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	DM - 04 A	DM - 04 B	DM - 05 A	DM - 06 A
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634255-37	1634255-38	1634255-39	1634255-40
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	91.0	91.2	91.3	92.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	127	115	112	88.6
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	1.3	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	66.8	57.0	63.1	51.6
Cobalt	1.0 ug/g dry	10.2	9.1	9.1	7.1
Copper	1.0 ug/g dry	30.7	26.7	35.2	24.1
Lead	1.0 ug/g dry	6.5	5.6	131	5.4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	37.3	33.1	44.5	27.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	42.8	39.6	40.3	33.7
Zinc	1.0 ug/g dry	40.5	36.3	44.6	33.1
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	15	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	431	25
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	201	36
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	92.6%	91.0%	89.6%	96.5%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	MW05 - 08 A	MW05 - 06 A	MW05 - 07 A	MW05 - 05 A
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634255-41	1634255-42	1634255-43	1634255-44
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.2	94.7	96.3	95.4
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	99.3	94.9	108	100
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	49.3	49.6	56.6	48.1
Cobalt	1.0 ug/g dry	7.9	7.0	8.1	6.7
Copper	1.0 ug/g dry	24.7	22.1	26.1	21.4
Lead	1.0 ug/g dry	9.2	8.8	5.9	4.4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	27.9	25.6	29.3	24.7
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	33.9	31.0	34.7	29.6
Zinc	1.0 ug/g dry	34.8	31.0	33.5	27.5
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	458	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	100	243	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	54	42	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	0.06	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	96.0%	97.7%	105%	110%

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

	Client ID:	MW05 - 09 A	MW05 - 12 A	MW05 - 13 A	MW05 - 15 A
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634255-45	1634255-46	1634255-47	1634255-48
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.9	93.0	90.4	88.3
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	113	158	93.4	148
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	72.9	82.0	47.1	71.0
Cobalt	1.0 ug/g dry	8.9	10.7	6.9	11.3
Copper	1.0 ug/g dry	39.7	33.4	18.9	36.6
Lead	1.0 ug/g dry	17.2	7.2	3.7	6.8
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	6.8	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	33.8	39.3	24.8	38.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	50.7	48.5	32.1	50.0
Zinc	1.0 ug/g dry	54.1	46.8	26.9	45.4
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	59	<8	41	<8
F4 PHCs (C34-C50)	6 ug/g dry	37	<6	33	<6
PCBs					
PCBs, total	0.05 ug/g dry	0.07	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	98.3%	95.2%	106%	90.8%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW05 - 15 B	MW05 - 16 A	MW05 - 16 B	-
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	-
	Sample ID:	1634255-49	1634255-50	1634255-51	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	85.9	91.3	88.7	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Barium	1.0 ug/g dry	198	132	171	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	1.1	<1.0	1.0	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	91.3	68.8	88.1	-
Cobalt	1.0 ug/g dry	13.0	9.3	11.5	-
Copper	1.0 ug/g dry	45.9	29.7	40.4	-
Lead	1.0 ug/g dry	7.4	6.2	6.4	-
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	1.0 ug/g dry	44.1	33.7	41.7	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	56.6	44.7	54.0	-
Zinc	1.0 ug/g dry	50.6	40.2	47.9	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	59	<8	34	-
F4 PHCs (C34-C50)	6 ug/g dry	34	<6	26	-
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Decachlorobiphenyl	Surrogate	102%	99.4%	109%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Tin	ND	5.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.102*		*ug/g*		*102*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	105	8	ug/g dry	75			32.9	30	QR-04
F4 PHCs (C34-C50)	23	6	ug/g dry	21			8.9	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND				30	
Arsenic	ND	1.0	ug/g dry	ND				30	
Barium	347	10.0	ug/g dry	334			3.8	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	ND	1.0	ug/g dry	ND			0.0	30	
Cadmium	ND	0.5	ug/g dry	ND				30	
Chromium	168	10.0	ug/g dry	153			9.2	30	
Cobalt	17.5	1.0	ug/g dry	18.2			3.7	30	
Copper	89.2	1.0	ug/g dry	91.7			2.8	30	
Lead	12.2	1.0	ug/g dry	12.3			0.7	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	30	
Molybdenum	3.27	1.0	ug/g dry	2.91			11.8	30	
Nickel	76.0	1.0	ug/g dry	79.1			4.0	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND				30	
Tin	ND	5.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	117	1.0	ug/g dry	119			1.4	30	
Zinc	111	1.0	ug/g dry	113			1.8	30	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	*0.106*		*ug/g dry*		*98.5*	*60-140*			
Physical Characteristics									
% Solids	92.2	0.1	% by Wt.	92.5			0.3	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	91	4	ug/g	ND	93.3	60-140			
F3 PHCs (C16-C34)	240	8	ug/g	ND	119	60-140			
F4 PHCs (C34-C50)	165	6	ug/g	ND	123	60-140			
Metals									
Antimony	291		ug/L	ND	116	70-130			
Arsenic	254		ug/L	ND	102	70-130			
Barium	1510		ug/L	1320	75.9	70-130			
Beryllium	196		ug/L	ND	78.4	70-130			
Boron	234		ug/L	12.2	88.6	70-130			
Cadmium	415		ug/L	ND	166	70-130			
Chromium	952		ug/L	774	71.3	70-130			
Cobalt	551		ug/L	364	74.9	70-130			
Copper	2000		ug/L	1830	67.3	70-130			QM-07
Lead	437		ug/L	245	76.6	70-130			
Mercury	1.40	0.1	ug/g	ND	93.4	70-130			
Molybdenum	264		ug/L	58.1	82.2	70-130			
Nickel	1050		ug/L	864	73.1	70-130			
Selenium	214		ug/L	ND	85.7	70-130			
Silver	187		ug/L	1.25	74.3	70-130			
Thallium	161		ug/L	6.30	61.7	70-130			QM-07
Tin	253		ug/L	50.0	81.1	70-130			
Uranium	399		ug/L	ND	160	70-130			
Vanadium	1020		ug/L	811	82.8	70-130			
Zinc	2440		ug/L	2250	75.7	70-130			
PCBs									
PCBs, total	0.524	0.05	ug/g	ND	121	60-140			
Surrogate: Decachlorobiphenyl	*0.103*		*ug/g*		*94.9*	*60-140*			

Qualifier Notes:

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(Lab Use Only)
№ 106890

Page 1 of __

Client Name: Golder Associates
Contact Name: Alyssa Troke
Address: 1931 Robertson Road, Ottawa, ON, K2H 5B7
Telephone: 613-592-9600

Project Reference: 1530908-2000
Quote # 16-010
PO #
Email Address: alyssa_troke@golder.com, dptenderleith@golder.com

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010	Dew Line Monitoring					
1	DM-40A	S		2	Aug 11/16									X		60	mL	250	mL	
2	DM-41A	S		2										X						
3	DM-42A	S		2										X						
4	DM-43A	S		2										X						
5	DM-44A	S		2										X						
6	DM-45A	S		2										X						
7	DM-46A	S		2										X						
8	DM-47A	S		2										X						
9	DM-49A	S		2										X						
10	DM-49B	S		2										X						

Comments:

Method of Delivery: Walking

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Alyssa Troke		SUNNEPORN DOKMAI	Rachel Subject
Relinquished By (Print): Alyssa Troke	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18/16 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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№ 106891

Page 2 of __

Client Name: Golder Associates	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: Alyssa Trake	Quote # 16-010	
Address: 1931 Robertson Road Ottawa	PO #	Date Required:
Telephone: 613-592-9600	Email Address: atrake@golder.com dplendaleith@golder.com	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010				-250mL	
1	DM-50*A	S		2	Aug. 11/16									X		-60mL+			
2	DM-52A	S		2										X					
3	DM-48A	S		2										X					
4	DM-60A	S		2										X					
5	DM-61A	S		2										X					
6	DM-62A	S		2										X					
7	DM-51*A	S		2										X					
8	DM-13A	S		2	Aug. 10/16									X					
9	DM-14A	S		2	Aug. 10/16									X					
10	DM-16A	S		2	Aug. 10/16									X					

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUMPORN DOKMAI	Verified By: Rachel Sibbett
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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Chain of Custody
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Page 3 of __

Client Name: Golder Associates	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: Alyssa Troke	Quote # 16-010	
Address: 1931 Robertson Road Ottawa, ON	PO #	Date Required:
Telephone: 613-592-9600	Email Address: atroke@golder.com dplenderleith@golder.com	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: (S) Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see quote 16-010						
1	DM-17A	S		2	Aug. 10/16									X		60ml+250ml				✓
2	DM-19A	↓		2	↓									X		↓				✓
3	DM-20A			2										X						✓
4	DM-21A			2										X						✓
5	DM-22A			2										X						✓
6	DM-22B			2										X						✓
7	DM-23A			2										X						✓
8	DM-24A			2										X						✓
9	DM-25A			2										X						✓
10	DM-26A	↓		2	↓									X		↓				✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Troke	Received by Driver/Depot:	Received at Lab: SUNSTORM DOR MAY	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Troke	Date/Time: Aug 17/16 4:50pm	Date/Time: AUG 18 2016 10:58	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [ ] By: N/A

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Chain of Custody
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№ 106893

Page 4 of __

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: See page 1	Quote #	
Address:	PO #	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	See Quote 16-010						
1	DM-27A	S		2	Aug 10/16									X		- 60mL + 250mL -				✓
2	DM-28A	S		2										X						✓
3	DM-29A	S		2										X						✓
4	DM-30A	S		2										X						✓
5	DM-30B	S		2										X						✓
6	DM-02A	S		2	Aug 13									X						✓
7	DM-04A	S		2										X						✓
8	DM-04B	S		2										X						✓
9	DM-05A	S		2										X						✓
10	DM-06A	S		2										X						✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: OTTEPORN DOMM	Verified By: Rachel Sibbett
Relinquished By (Print): Aug 17/16 Alyssa Trake	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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№ 26766

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See page 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO # ~~16-0~~	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: See Quote 16-010										
1	~~DUP~~ MW05-08A	S		2	Aug. 13/16		X				-60ml+ 250ml-						✓
2	MW05-06A	S		2	Aug. 13/16		X										✓
3	MW05-07A	S		2	Aug. 13/16		X										✓
4	MW05-05A	S		2	Aug. 13/16		X										✓
5	MW05-09A	S		2	↓		X										✓
6	MW05-12A	S		2			X										✓
7	MW05-13A	S		2			X										✓
8	MW05-15A	S		2			X										✓
9	MW05-15B	S		2	↓		X										✓
10	MW05-16A	S		2			X				↓						✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trotte	Received by Driver/Depot:	Received at Lab: OUNDEPORN DOU MAY	Verified By: Rachel Sibbett
Relinquished By (Print): Alyssa Trotte	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 18.9 °C	pH Verified [X] By: N/A

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Client Name: GAL	Project Reference: 1530908-2000	TAT: [ ] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name:	Quote # 16-010	
Address: see page 1	PO #	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: See Quote 16-010										
1	MW05-16B	S		2	Aug. 13/16		X				- 60ml + 25ml						
2	MW06-18A	S		2	Aug. 12/16		X										
3	MW06-19A	S		2	Aug. 12		X										
4	MW06-20A	S		2	Aug. 12		X										
5	MW07-22A	S		2			X										
6	MW07-21A	S		2			X										
7	MW07-23A	S		2			X										
8	MW08-24A	S		2			X										
9	MW08-25A	S		2			X										
10	MW09-26A	S		2	Aug. 13												

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUNNEEPORN DOUMAS	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:20pm	Date/Time: AUG 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.4 °C	pH Verified [X] By: N/A

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Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: see pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality:_____ [ ] Other:_____

Matrix Type: (S) Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: see quote 16-010										
1	MW09-26B	S		2	Aug. 13/16		X					- 60 mL + 250 mL -					
2	MW09-27A						X										
3	MW09-27B						X										
4	MW09-28A						X										
5	MW12-01A						X										
6	MW12-02A				Aug. 12/16		X										
7	DM-01A				Aug. 13		X										
8	DM-03A						X										
9	DM-07A						X										
10	DM-07B						X										

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Alyssa Trake		SUNREPORN DOUMA	Rachel Sibyect
Relinquished By (Print): Alyssa Trake	Date/Time:	Date/Time: AUG 18 2016 10:58	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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Page 8 of ___

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	see Quote 16-010										
1	DM-08 A	S		2	Aug. 13/16		X					60ml+	250ml-				✓
2	DM-09 A	S		2	↓		X						↓				✓
3	DM-10 A	S		2			X										✓
4	DM-53 A	S		2	Aug. 12		X										✓
5	DM-12A				Aug. 10		X										✓
6	DM-15A				Aug. 10		X										✓
7	DM-18A				Aug. 10		X										✓
8	DM-31A				Aug. 11		X										✓
9	DM-32A				Aug. 11		X										✓
10	DM-33A	✓		✓	Aug. 11		✓		*				✓				✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SWEEPORT DOWNS	Verified By: Rachel Sibiet
Relinquished By (Print): Alyssa Trake	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18 2016 10:59	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 20.7 °C	Temperature: 10.4 °C	pH Verified [X] By: N/A

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№ 26770

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address:	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: see Quote 16-010										
1	DM-11A	S		2	Aug. 10		X					60ml +	250ml -				✓
2	DM-34A				Aug. 11		X										✓
3	DM-35A						X										✓
4	DM-36A						X										✓
5	DM-37A						X										✓
6	DM-38A						X										✓
7	DM-39A						X										✓
8	DM-54A				Aug. 10		X										✓
9	~~DM-54~~ DM-55A						X										✓
10	DM-56A						X										✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUMEERN DOM MAJ	Verified By: Rachel Subect
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:26pm	Date/Time: Aug 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: RM

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Chain of Custody
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№ 107896

Page 10 of __

Client Name: GAL
Contact Name: see pg. 1
Address:
Telephone:

Project Reference: 1530908-2000
Quote # 16-010
PO #
Email Address: see pg. 1

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☒ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010						
1	DM-57A	S		2	Aug 10/16									X			60ml+250ml			
2	DM-58A	S		2	↓									X			↓			
3	DM-59A	S		2										X			↓			
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUNNEPORN DOKMAI
Relinquished By (Print): Alyssa Trake	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18, 2016 10:59
Date/Time: Aug. 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C

Verified By: Rachel Subject
Date/Time: Aug 18/16 1:32
pH Verified ☒ By: NA

Appendix C2

Certificate Of Analysis –
Paracel Laboratories Ltd.,
Aug. 23, 2016; Order #1634255 (Part 2)

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Certificate of Analysis

Golder Associates Ltd. (Ottawa)

1931 Robertson Rd.
Ottawa, ON K2H 5B7
Attn: Alyssa Troke

Client PO:
Project: 1530908-2000
Custody: 106890

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016

Order #: 1634255

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634255-52	MW06 - 18 A
1634255-53	MW06 - 19 A
1634255-54	MW06 - 20 A
1634255-55	MW07 - 22 A
1634255-56	MW07 - 21 A
1634255-57	MW07 - 23 A
1634255-58	MW08 - 24 A
1634255-59	MW08 - 25 A
1634255-60	MW09 - 26 A
1634255-61	MW09 - 26 B
1634255-62	MW09 - 27 A
1634255-63	MW09 - 27 B
1634255-64	MW09 - 28 A
1634255-65	MW12 - 01 A
1634255-66	MW12 - 02 A
1634255-67	DM - 01 A
1634255-68	DM - 03 A
1634255-69	DM - 07 A
1634255-70	DM - 07 B
1634255-71	DM - 08 A
1634255-72	DM - 09 A
1634255-73	DM - 10 A
1634255-74	DM - 53 A
1634255-75	DM - 12 A
1634255-76	DM - 15 A
1634255-77	DM - 18 A
1634255-78	DM - 31 A
1634255-79	DM - 32 A
1634255-80	DM - 33 A
1634255-81	DM - 11 A

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

1634255-82	DM - 34 A
1634255-83	DM - 35 A
1634255-84	DM - 36 A
1634255-85	DM - 37 A
1634255-86	DM - 38 A
1634255-87	DM - 39 A
1634255-88	DM - 54 A
1634255-89	DM - 55 A
1634255-90	DM - 56 A
1634255-91	DM - 57 A
1634255-92	DM - 58 A
1634255-93	DM - 59 A

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 23-Aug-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
CCME-SQG: Metals by ICP-OES	based on MOE E3470, ICP-OES	19-Aug-16	19-Aug-16
Mercury by CVAA	EPA 7471B - CVAA, digestion	22-Aug-16	22-Aug-16
PCBs, total	SW846 8082A - GC-ECD	18-Aug-16	20-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	22-Aug-16	22-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Aug-16	22-Aug-16
Solids, %	Gravimetric, calculation	22-Aug-16	22-Aug-16

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW06 - 18 A	MW06 - 19 A	MW06 - 20 A	MW07 - 22 A
	Sample Date:	12-Aug-16	12-Aug-16	12-Aug-16	12-Aug-16
	Sample ID:	1634255-52	1634255-53	1634255-54	1634255-55
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.7	90.1	90.9	94.8
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	76.1	78.2	109	259
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	34.1	40.4	42.5	147
Cobalt	1.0 ug/g dry	11.9	15.0	18.1	18.5
Copper	1.0 ug/g dry	34.5	23.7	54.2	99.4
Lead	1.0 ug/g dry	15.1	9.9	10.8	13.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	4.8
Nickel	1.0 ug/g dry	47.8	81.8	72.6	97.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	36.3	43.5	55.9	117
Zinc	1.0 ug/g dry	48.2	36.4	67.1	102
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	36	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	23	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	0.06	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	108%	90.9%	104%	91.6%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW07 - 21 A	MW07 - 23 A	MW08 - 24 A	MW08 - 25 A
	Sample Date:	12-Aug-16	12-Aug-16	12-Aug-16	12-Aug-16
	Sample ID:	1634255-56	1634255-57	1634255-58	1634255-59
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	94.3	95.5	94.5	91.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	17.3	<1.0	<1.0
Barium	1.0 ug/g dry	78.1	74.9	85.3	245
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	2.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	22.8	63.2	57.6	260
Cobalt	1.0 ug/g dry	10.2	15.1	10.9	27.9
Copper	1.0 ug/g dry	21.8	52.5	30.1	58.6
Lead	1.0 ug/g dry	6.5	6.2	10.1	42.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	49.3	125	38.9	99.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	30.5	38.1	39.9	88.1
Zinc	1.0 ug/g dry	32.5	27.9	37.7	111
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	96.0%	106%	92.2%	109%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW09 - 26 A	MW09 - 26 B	MW09 - 27 A	MW09 - 27 B
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634255-60	1634255-61	1634255-62	1634255-63
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	90.2	87.5	92.0	91.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	107	115	123	123
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	60.2	59.4	75.6	81.9
Cobalt	1.0 ug/g dry	7.8	8.4	9.7	9.7
Copper	1.0 ug/g dry	21.1	23.5	32.4	45.3
Lead	1.0 ug/g dry	5.3	5.5	9.8	11.4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	2.8
Nickel	1.0 ug/g dry	27.7	30.0	34.9	39.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	35.8	38.8	45.4	54.2
Zinc	1.0 ug/g dry	33.0	34.5	44.6	51.3
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	25
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	13
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	95.1%	81.7%	86.3%	89.5%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW09 - 28 A	MW12 - 01 A	MW12 - 02 A	DM - 01 A
	Sample Date:	13-Aug-16	13-Aug-16	12-Aug-16	13-Aug-16
	Sample ID:	1634255-64	1634255-65	1634255-66	1634255-67
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.4	88.3	92.8	92.5
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	124	130	51.1	122
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	89.9	64.0	70.4	70.3
Cobalt	1.0 ug/g dry	11.0	8.4	12.2	8.6
Copper	1.0 ug/g dry	44.1	27.1	20.5	30.7
Lead	1.0 ug/g dry	16.9	5.1	29.3	9.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	4.3	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	37.8	29.6	33.3	32.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	57.7	39.6	49.4	39.5
Zinc	1.0 ug/g dry	56.6	36.4	63.4	37.9
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	78
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	17
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	99.9%	101%	102%	94.1%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 03 A	DM - 07 A	DM - 07 B	DM - 08 A
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634255-68	1634255-69	1634255-70	1634255-71
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	91.6	91.6	89.8	95.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	99.7	124	120	102
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	52.3	69.5	61.3	56.3
Cobalt	1.0 ug/g dry	7.7	10.1	9.5	8.9
Copper	1.0 ug/g dry	28.1	26.0	25.6	25.6
Lead	1.0 ug/g dry	5.6	5.6	5.1	10.8
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	28.8	33.9	33.1	28.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	31.8	39.5	39.1	39.0
Zinc	1.0 ug/g dry	29.5	36.6	34.9	43.3
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	101%	91.2%	101%	101%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 09 A	DM - 10 A	DM - 53 A	DM - 12 A
	Sample Date:	13-Aug-16	13-Aug-16	12-Aug-16	10-Aug-16
	Sample ID:	1634255-72	1634255-73	1634255-74	1634255-75
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	94.7	97.7	92.7	95.5
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	122	109	115	101
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	63.9	64.7	82.6	76.5
Cobalt	1.0 ug/g dry	9.6	10.0	10.4	13.0
Copper	1.0 ug/g dry	27.2	28.7	37.3	35.2
Lead	1.0 ug/g dry	5.2	6.3	11.7	17.4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	31.9	31.5	46.0	79.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	38.8	39.4	57.5	53.3
Zinc	1.0 ug/g dry	36.1	41.1	87.6	61.8
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	46
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	10
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	1.17
Decachlorobiphenyl	Surrogate	96.1%	87.1%	107%	93.9%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 15 A	DM - 18 A	DM - 31 A	DM - 32 A
	Sample Date:	10-Aug-16	10-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-76	1634255-77	1634255-78	1634255-79
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	96.5	92.9	98.0	93.4
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	75.8	51.4	326	294
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	56.9	40.1	149	172
Cobalt	1.0 ug/g dry	12.4	10.9	11.9	11.8
Copper	1.0 ug/g dry	35.9	33.1	64.7	85.3
Lead	1.0 ug/g dry	10.7	14.7	11.2	11.1
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	66.4	43.7	35.0	39.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	44.5	42.5	128	126
Zinc	1.0 ug/g dry	51.6	52.6	124	105
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	87.4%	88.3%	88.3%	90.2%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 33 A	DM - 11 A	DM - 34 A	DM - 35 A
	Sample Date:	11-Aug-16	10-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-80	1634255-81	1634255-82	1634255-83
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	96.1	95.1	97.8	90.7
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	86.9	97.7	77.4	75.7
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	46.8	75.1	46.5	48.0
Cobalt	1.0 ug/g dry	11.6	16.8	12.0	14.2
Copper	1.0 ug/g dry	16.0	59.6	21.3	29.4
Lead	1.0 ug/g dry	4.0	14.7	8.5	14.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	57.2	77.7	63.8	75.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	33.3	55.9	43.2	47.7
Zinc	1.0 ug/g dry	31.9	57.8	44.8	55.6
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	87.6%	92.3%	90.3%	97.2%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 36 A	DM - 37 A	DM - 38 A	DM - 39 A
	Sample Date:	11-Aug-16	11-Aug-16	11-Aug-16	11-Aug-16
	Sample ID:	1634255-84	1634255-85	1634255-86	1634255-87
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	93.9	96.4	94.7	94.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	272	323	159	318
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	2.4	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	139	122	81.9	133
Cobalt	1.0 ug/g dry	13.6	12.0	13.0	11.5
Copper	1.0 ug/g dry	76.1	63.9	89.9	73.5
Lead	1.0 ug/g dry	13.0	8.4	58.2	23.3
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	50.7	38.0	47.1	36.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	105	118	73.7	124
Zinc	1.0 ug/g dry	91.4	108	129	136
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	28	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	35	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	90.5%	95.2%	95.1%	97.0%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 54 A	DM - 55 A	DM - 56 A	DM - 57 A
	Sample Date:	10-Aug-16	10-Aug-16	10-Aug-16	10-Aug-16
	Sample ID:	1634255-88	1634255-89	1634255-90	1634255-91
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.2	90.3	95.1	93.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	144	103	104	127
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	73.5	56.9	56.0	68.7
Cobalt	1.0 ug/g dry	18.5	15.6	14.1	16.8
Copper	1.0 ug/g dry	47.0	33.8	30.8	38.0
Lead	1.0 ug/g dry	23.7	37.6	14.7	11.9
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	75.0	73.6	74.2	90.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Tin	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	78.6	60.0	52.7	66.2
Zinc	1.0 ug/g dry	78.1	65.7	50.7	62.4
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	97.4%	85.2%	101%	92.5%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 23-Aug-2016

Order Date: 17-Aug-2016

Project Description: 1530908-2000

	Client ID:	DM - 58 A	DM - 59 A	-	-
	Sample Date:	10-Aug-16	10-Aug-16	-	-
	Sample ID:	1634255-92	1634255-93	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	98.1	91.9	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	<1.0	<1.0	-	-
Barium	1.0 ug/g dry	64.3	108	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	<1.0	<1.0	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	46.9	58.7	-	-
Cobalt	1.0 ug/g dry	14.1	18.1	-	-
Copper	1.0 ug/g dry	29.9	41.5	-	-
Lead	1.0 ug/g dry	15.8	10.5	-	-
Mercury	0.1 ug/g dry	<0.1	<0.1	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	67.5	99.2	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	<0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Tin	5.0 ug/g dry	<5.0	<5.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	1.0 ug/g dry	44.6	56.8	-	-
Zinc	1.0 ug/g dry	391	58.7	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	903	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	30	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	<0.05	-	-
Decachlorobiphenyl	Surrogate	94.7%	91.7%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Tin	ND	5.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.102*		*ug/g*		*102*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	ND				30	
Barium	104	1.0	ug/g dry	108			4.1	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	ND	1.0	ug/g dry	ND			0.0	30	
Cadmium	ND	0.5	ug/g dry	ND				30	
Chromium	54.1	10.0	ug/g dry	56.6			4.5	30	
Cobalt	7.66	1.0	ug/g dry	8.14			6.0	30	
Copper	25.0	1.0	ug/g dry	26.1			4.5	30	
Lead	4.77	1.0	ug/g dry	5.85			20.3	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	30	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	29.4	1.0	ug/g dry	29.3			0.2	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Tin	ND	5.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	33.2	1.0	ug/g dry	34.7			4.5	30	
Zinc	30.5	1.0	ug/g dry	33.5			9.3	30	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	*0.106*		*ug/g dry*		*98.5*	*60-140*			
Physical Characteristics									
% Solids	92.2	0.1	% by Wt.	92.5			0.3	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	200	7	ug/g		99.8	80-120			
F2 PHCs (C10-C16)	90	4	ug/g	ND	95.6	60-140			
F3 PHCs (C16-C34)	245	8	ug/g	59	95.8	60-140			
F4 PHCs (C34-C50)	192	6	ug/g	37	120	60-140			
Metals									
Antimony	242		ug/L	2.31	96.0	70-130			
Arsenic	221		ug/L	ND	88.4	70-130			
Barium	2310		ug/L	2160	62.1	70-130			QM-07
Beryllium	199		ug/L	ND	79.5	70-130			
Boron	233		ug/L	14.6	87.5	70-130			
Cadmium	268		ug/L	ND	107	70-130			
Chromium	1210		ug/L	1130	29.1	70-130			QM-07
Cobalt	352		ug/L	163	75.7	70-130			
Copper	721		ug/L	523	79.2	70-130			
Lead	311		ug/L	117	77.7	70-130			
Mercury	1.28	0.1	ug/g	ND	85.4	70-130			
Molybdenum	208		ug/L	3.97	81.6	70-130			
Nickel	763		ug/L	586	70.9	70-130			
Selenium	214		ug/L	2.57	84.5	70-130			
Silver	163		ug/L	ND	65.3	70-130			QM-07
Thallium	161		ug/L	6.30	61.7	70-130			QM-07
Tin	204		ug/L	18.2	74.5	70-130			
Uranium	276		ug/L	ND	110	70-130			
Vanadium	873		ug/L	694	71.5	70-130			
Zinc	812		ug/L	670	56.7	70-130			QM-07
PCBs									
PCBs, total	0.524	0.05	ug/g	ND	121	60-140			
Surrogate: Decachlorobiphenyl	*0.103*		*ug/g*		*94.9*	*60-140*			

Qualifier Notes:

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Page 1 of __

Client Name: Golder Associates
Contact Name: Alyssa Troke
Address: 1931 Robertson Road, Ottawa, ON, K2H 5B7
Telephone: 613-592-9600

Project Reference: 1530908-2000
Quote # 16-010
PO #
Email Address: alyssa_troke@golder.com, dptenderleith@golder.com

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010	Dew Line Monitoring					
1	DM-40A	S		2	Aug 11/16									X		60	mL	250	mL	
2	DM-41A	S		2										X						
3	DM-42A	S		2										X						
4	DM-43A	S		2										X						
5	DM-44A	S		2										X						
6	DM-45A	S		2										X						
7	DM-46A	S		2										X						
8	DM-47A	S		2										X						
9	DM-49A	S		2										X						
10	DM-49B	S		2										X						

Comments:

Method of Delivery: Walking

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Alyssa Troke		SUNNEPORN DOKMAI	Rachel Subject
Relinquished By (Print): Alyssa Troke	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18/16 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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Page 2 of __

Client Name: Golder Associates	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: Alyssa Trake	Quote # 16-010	
Address: 1931 Robertson Road Ottawa	PO #	Date Required:
Telephone: 613-592-9600	Email Address: atrake@golder.com dplendaleith@golder.com	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010				-250mL	
1	DM-50*A	S		2	Aug. 11/16									X		-60mL+			
2	DM-52A	S		2										X					
3	DM-48A	S		2										X					
4	DM-60A	S		2										X					
5	DM-61A	S		2										X					
6	DM-62A	S		2										X					
7	DM-51*A	S		2										X					
8	DM-13A	S		2	Aug. 10/16									X					
9	DM-14A	S		2	Aug. 10/16									X					
10	DM-16A	S		2	Aug. 10/16									X					

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUMPORN DOKMAI	Verified By: Rachel Sibbett
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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Page 3 of __

Client Name: Golder Associates	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: Alyssa Troke	Quote # 16-010	
Address: 1931 Robertson Road Ottawa, ON	PO #	Date Required:
Telephone: 613-592-9600	Email Address: atroke@golder.com dplenderleith@golder.com	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: (S) Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see quote 16-010						
1	DM-17A	S		2	Aug. 10/16									X		60ml+250ml				✓
2	DM-19A	↓		2	↓									X		↓				✓
3	DM-20A			2										X						✓
4	DM-21A			2										X						✓
5	DM-22A			2										X						✓
6	DM-22B			2										X						✓
7	DM-23A			2										X						✓
8	DM-24A			2										X						✓
9	DM-25A			2										X						✓
10	DM-26A	↓		2	↓									X		↓				✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Troke	Received by Driver/Depot:	Received at Lab: SUNDERLAND DOR MAY	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Troke	Date/Time: Aug 17/16 4:50pm	Date/Time: AUG 18 2016 10:58	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [ ] By: N/A

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Page 4 of __

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: See page 1	Quote #	
Address:	PO #	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	See Quote 16-010						
1	DM-27A	S		2	Aug 10/16									X		- 60mL + 250mL -				✓
2	DM-28A	S		2										X						✓
3	DM-29A	S		2										X						✓
4	DM-30A	S		2										X						✓
5	DM-30B	S		2										X						✓
6	DM-02A	S		2	Aug 13									X						✓
7	DM-04A	S		2										X						✓
8	DM-04B	S		2										X						✓
9	DM-05A	S		2										X						✓
10	DM-06A	S		2										X						✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: OTTEPORN DOMM	Verified By: Rachel Sibbett
Relinquished By (Print): Aug 17/16 Alyssa Trake	Date/Time: Aug 17/16 4:25pm	Date/Time: Aug 18 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See page 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO # ~~16-0~~	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: See Quote 16-010										
1	~~DUP~~ MW05-08A	S		2	Aug. 13/16		X				-60ml+ 250ml-						✓
2	MW05-06A	S		2	Aug. 13/16		X										✓
3	MW05-07A	S		2	Aug. 13/16		X										✓
4	MW05-05A	S		2	Aug. 13/16		X										✓
5	MW05-09A	S		2	↓		X										✓
6	MW05-12A	S		2			X										✓
7	MW05-13A	S		2			X										✓
8	MW05-15A	S		2			X										✓
9	MW05-15B	S		2	↓		X										✓
10	MW05-16A	S		2			X				↓						✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trotte	Received by Driver/Depot:	Received at Lab: OUNDEPORN DOU MAY	Verified By: Rachel Sibbett
Relinquished By (Print): Alyssa Trotte	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 18.9 °C	pH Verified [X] By: N/A

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Client Name: GAL	Project Reference: 1530908-2000	TAT: [ ] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name:	Quote # 16-010	
Address: see page 1	PO #	Date Required:
Telephone:	Email Address: see page 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: See Quote 16-010										
1	MW05-16B	S		2	Aug. 13/16		X				- 60ml + 25ml						
2	MW06-18A	S		2	Aug. 12/16		X										
3	MW06-19A	S		2	Aug. 12		X										
4	MW06-20A	S		2	Aug. 12		X										
5	MW07-22A	S		2			X										
6	MW07-21A	S		2			X										
7	MW07-23A	S		2			X										
8	MW08-24A	S		2			X										
9	MW08-25A	S		2			X										
10	MW09-26A	S		2	Aug. 13												

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUNNEEPORN DOUMAS	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:20pm	Date/Time: AUG 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.4 °C	pH Verified [X] By: N/A

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Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: see pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality:_____ [ ] Other:_____

Matrix Type: (S) Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: see quote 16-010										
1	MW09-26B	S		2	Aug. 13/16		X					- 60 mL + 250 mL -					
2	MW09-27A						X										
3	MW09-27B						X										
4	MW09-28A						X										
5	MW12-01A						X										
6	MW12-02A				Aug. 12/16		X										
7	DM-01A				Aug. 13		X										
8	DM-03A						X										
9	DM-07A						X										
10	DM-07B						X										

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Alyssa Trake		SUNREPORN DOUMA	Rachel Sibyect
Relinquished By (Print): Alyssa Trake	Date/Time:	Date/Time: AUG 18 2016 10:58	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: N/A

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№ 26769

Page 8 of ___

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	see Quote 16-010										
1	DM-08 A	S		2	Aug. 13/16		X					60ml+	250ml-				✓
2	DM-09 A	S		2	↓		X						↓				✓
3	DM-10 A	S		2			X										✓
4	DM-53 A	S		2	Aug. 12		X										✓
5	DM-12A				Aug. 10		X										✓
6	DM-15A				Aug. 10		X										✓
7	DM-18A				Aug. 10		X										✓
8	DM-31A				Aug. 11		X										✓
9	DM-32A				Aug. 11		X										✓
10	DM-33A	✓		✓	Aug. 11		✓		*				✓				✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SWEEPORT DOWNS	Verified By: Rachel Sibiet
Relinquished By (Print): Alyssa Trake	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18 2016 10:59	Date/Time: Aug 18/16 1:32
Date/Time: Aug. 17/16 4:00	Temperature: 20.7 °C	Temperature: 10.4 °C	pH Verified [X] By: N/A

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№ 26770

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: See pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address:	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: see Quote 16-010										
1	DM-11A	S		2	Aug. 10		X					60ml +	250ml -				✓
2	DM-34A				Aug. 11		X										✓
3	DM-35A						X										✓
4	DM-36A						X										✓
5	DM-37A						X										✓
6	DM-38A						X										✓
7	DM-39A						X										✓
8	DM-54A				Aug. 10		X										✓
9	~~DM-54~~ DM-55A						X										✓
10	DM-56A						X										✓

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUMEERN DOM MAJ	Verified By: Rachel Subect
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:26pm	Date/Time: Aug 18, 2016 10:52	Date/Time: Aug 18/16 1:32
Date/Time: Aug 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C	pH Verified [X] By: RM

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Chain of Custody
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№ 107896

Page 10 of __

Client Name: GAL
Contact Name: see pg. 1
Address:
Telephone:

Project Reference: 1530908-2000
Quote # 16-010
PO #
Email Address: see pg. 1

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☒ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634255

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010						
1	DM-57A	S		2	Aug 10/16									X			60ml+250ml			
2	DM-58A	S		2	↓									X			↓			
3	DM-59A	S		2										X			↓			
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUNNEPORN DOKMAI
Relinquished By (Print): Alyssa Trake	Date/Time: 08/17/16 4:26pm	Date/Time: AUG 18, 2016 10:59
Date/Time: Aug. 17/16 4:00	Temperature: 22.7 °C	Temperature: 10.9 °C

Verified By: Rachel Subject
Date/Time: Aug 18/16 1:32
pH Verified ☒ By: NA

Appendix C3

Certificate Of Analysis –
Paracel Laboratories Ltd.,
Sept. 2, 2016; Order #1634305

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1-800-749-1947
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Certificate of Analysis

Golder Associates Ltd. (Ottawa)

1931 Robertson Rd.
Ottawa, ON K2H 5B7
Attn: Alyssa Troke

Client PO:
Project: 1530908-2000
Custody: 102358

Report Date: 2-Sep-2016
Order Date: 17-Aug-2016

Revised Report

Order #: 1634305

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634305-01	MW06-19
1634305-02	MW07-21
1634305-03	MW08-24
1634305-04	MW07-23
1634305-05	MW09-27
1634305-06	MW05-15
1634305-07	MW09-26
1634305-08	MW12-01
1634305-09	MW05-13

Approved By:

Tim McCooeye
Senior Advisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 02-Sep-2016
Order Date: 17-Aug-2016
Project Description: 1530908-2000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 245.1 - Cold Vapour AA	19-Aug-16	19-Aug-16
Metals, ICP-MS	EPA 200.8 - ICP-MS	22-Aug-16	23-Aug-16
PCBs, total	EPA 608 - GC-ECD	22-Aug-16	23-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16	18-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	20-Aug-16

Certificate of Analysis

Report Date: 02-Sep-2016

Client: Golder Associates Ltd. (Ottawa)

Order Date: 17-Aug-2016

Client PO:

Project Description: 1530908-2000

	Client ID:	MW06-19	MW07-21	MW08-24	MW07-23
	Sample Date:	12-Aug-16	12-Aug-16	12-Aug-16	12-Aug-16
	Sample ID:	1634305-01	1634305-02	1634305-03	1634305-04
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	0.001 mg/L	<0.001	<0.001	0.007	<0.001
Cobalt	0.0005 mg/L	<0.0005	<0.0005	0.0023	<0.0005
Copper	0.0005 mg/L	<0.0005	0.0006	0.0166	<0.0005
Lead	0.0001 mg/L	<0.0001	0.0003	0.0011	<0.0001
Nickel	0.001 mg/L	<0.001	<0.001	0.040	<0.001
Zinc	0.005 mg/L	<0.005	0.020	0.143	0.407
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025	<0.025	<0.025	<0.025
F2 PHCs (C10-C16)	0.100 mg/L	<0.100	<0.100	-	<0.100
F3 PHCs (C16-C34)	0.100 mg/L	<0.100	<0.100	-	<0.100
F4 PHCs (C34-C50)	0.100 mg/L	<0.100	<0.100	-	<0.100
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	<0.00005	-	<0.00010 [1]
Decachlorobiphenyl	Surrogate	82.8%	69.3%	-	80.8% [1]

Certificate of Analysis

Report Date: 02-Sep-2016

Client: Golder Associates Ltd. (Ottawa)

Order Date: 17-Aug-2016

Client PO:

Project Description: 1530908-2000

	Client ID:	MW09-27	MW05-15	MW09-26	MW12-01
	Sample Date:	13-Aug-16	13-Aug-16	13-Aug-16	13-Aug-16
	Sample ID:	1634305-05	1634305-06	1634305-07	1634305-08
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001 mg/L	<0.0001	<0.0001	0.0002	<0.0001
Chromium	0.001 mg/L	0.005	<0.001	0.010	<0.001
Cobalt	0.0005 mg/L	<0.0005	<0.0005	0.0029	0.0006
Copper	0.0005 mg/L	0.0044	<0.0005	0.0027	<0.0005
Lead	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.001 mg/L	0.021	0.007	0.184	0.040
Zinc	0.005 mg/L	0.528	2.52	4.69	<0.005
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025	<0.025	<0.025	<0.025
F2 PHCs (C10-C16)	0.100 mg/L	<0.100	<0.100	<0.100	<0.100
F3 PHCs (C16-C34)	0.100 mg/L	<0.100	<0.100	<0.100	<0.100
F4 PHCs (C34-C50)	0.100 mg/L	<0.100	<0.100	<0.100	<0.100
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	<0.00030 [1]	-	<0.00010 [1]
Decachlorobiphenyl	Surrogate	91.4%	91.9% [1]	-	88.9% [1]

	Client ID:	MW05-13	-	-	-
	Sample Date:	13-Aug-16	-	-	-
	Sample ID:	1634305-09	-	-	-
	MDL/Units	Water	-	-	-
Metals					
Arsenic	0.001 mg/L	<0.001	-	-	-
Cadmium	0.0001 mg/L	<0.0001	-	-	-
Chromium	0.001 mg/L	<0.001	-	-	-
Cobalt	0.0005 mg/L	0.0006	-	-	-
Copper	0.0005 mg/L	0.0010	-	-	-
Lead	0.0001 mg/L	<0.0001	-	-	-
Nickel	0.001 mg/L	0.015	-	-	-
Zinc	0.005 mg/L	2.38	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L						
F2 PHCs (C10-C16)	ND	0.100	mg/L						
F3 PHCs (C16-C34)	ND	0.100	mg/L						
F4 PHCs (C34-C50)	ND	0.100	mg/L						
Metals									
Mercury	ND	0.0001	mg/L						
Arsenic	ND	0.001	mg/L						
Cadmium	ND	0.0001	mg/L						
Chromium	ND	0.001	mg/L						
Cobalt	ND	0.0005	mg/L						
Copper	ND	0.0005	mg/L						
Lead	ND	0.0001	mg/L						
Nickel	ND	0.001	mg/L						
Zinc	ND	0.005	mg/L						
PCBs									
PCBs, total	ND	0.00005	mg/L						
Surrogate: Decachlorobiphenyl	*.00019*		*mg/L*		*77.8*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L	ND				30	
Metals									
Mercury	ND	0.0001	mg/L	ND			0.0	20	
Arsenic	ND	0.001	mg/L	ND			0.0	20	
Cadmium	ND	0.0001	mg/L	ND			0.0	20	
Chromium	ND	0.001	mg/L	ND			0.0	20	
Cobalt	ND	0.0005	mg/L	ND			0.0	20	
Copper	ND	0.0005	mg/L	ND				20	
Lead	ND	0.0001	mg/L	ND			0.0	20	
Nickel	ND	0.001	mg/L	ND				20	
Zinc	ND	0.005	mg/L	ND				20	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1.88	0.025	mg/L		93.9	68-117			
F2 PHCs (C10-C16)	1.67	0.100	mg/L		93.0	60-140			
F3 PHCs (C16-C34)	3.16	0.100	mg/L		85.0	60-140			
F4 PHCs (C34-C50)	2.12	0.100	mg/L		85.3	60-140			
Metals									
Mercury	0.00248	0.0001	mg/L	ND	82.7	70-130			
Arsenic	50.6		ug/L		101	80-120			
Cadmium	47.3		ug/L		94.6	80-120			
Chromium	49.1		ug/L		98.1	80-120			
Cobalt	48.5		ug/L		97.0	80-120			
Copper	47.4		ug/L		94.7	80-120			
Lead	45.6		ug/L		91.2	80-120			
Nickel	47.7		ug/L		95.5	80-120			
Zinc	48		ug/L		96.7	80-120			
PCBs									
PCBs, total	0.00111	0.00005	mg/L		111	60-140			
Surrogate: Decachlorobiphenyl	*0.00021*		*mg/L*		*86.3*	*60-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Insufficient volume - PCB Bottle
Applies to samples: MW07-23, MW05-15, MW12-01

Sample Qualifiers :

1 : Elevated Reporting Limits due to limited sample volume.

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1, all results reports as mg/L. Project number corrected.

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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№ 102358

Page 10 of 11

Client Name: GAL	Project Reference: 1530908-2000	TAT: [X] Regular [ ] 3 Day
Contact Name: see pg. 1 Alyssa.	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) (GW) Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634305

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	see Quote 16-010	
1	MW06-19	GW		6	Aug. 12	12:15								X	
2	MW07-21	"		6	"	10:30								X	
3	~~MW08-23~~ MW08-24	"		4/5	"	15:20								X	- No PHCs or PCB analysis
(4)	MW07-23 *PCB ½ full	"		6	"	~~13~~ 12:30								X	- Include/analyze for F1 & analyze hydrides
(5)	MW09-27	"		6	Aug. 13	15:45								X	
(6)	MW05-15 *PCB ½ full	"		6	"	14:00								X	- Analyze PCBs if possible
(7)	MW09-26	"		5	"	15:30								X	- No PCB bottle
(8)	MW12-01	"		6	"	13:30								X	- Analyze PCBs if possible
9	MW05-13	↓		3	Aug. 13	—								X	- Only metals + 2 vials
10															

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Alyssa Trake	Received by Driver/Depot:	Received at Lab: SUMETPORN PON MAY	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Trake	Date/Time: Aug 17/16 4:26pm	Date/Time: AUG 19, 2016 10:53	Date/Time: Aug 18/16 1:04
Date/Time: Aug 17/16 4:00	Temperature: 22.1 °C	Temperature: 10.9 °C	pH Verified [ ] By: RS.

Appendix C4

Certificate Of Analysis –
AGAT Laboratories Ltd.,
Sept. 15, 2016; Order #16Z128005

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1530908-2000

AGAT WORK ORDER: 16Z128005

SOIL ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Sep 15, 2016

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Member of: Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

CCME Metals Scan (Soil) (incl. Hg)

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-09-15

		SAMPLE DESCRIPTION:		DM-23A dup	DM-27A dup	DM-49B dup	DM-53A dup	DM-02A dup	DM-07B dup	DM-33A dup
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		8/10/2016	8/10/2016	8/11/2016	8/12/2016	8/13/2016	8/13/2016	8/11/2016
Parameter	Unit	G / S	RDL	7787622	7787625	7787627	7787637	7787639	7787642	7791175
Arsenic	mg/kg		1	<1	<1	3	1	2	1	<1
Cadmium	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	mg/kg		0.5	8.9	9.7	14.7	11.1	8.2	11.2	14.9
Chromium	mg/kg		1	31	21	221	93	59	65	55
Copper	mg/kg		1	14	17	116	41	32	29	22
Lead	mg/kg		1	7	7	12	14	5	5	3
Mercury	mg/kg		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nickel	mg/kg		1	43	21	72	55	38	41	74
Zinc	mg/kg		1	51	71	168	109	42	49	53

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Results relate only to the items tested and to all the items tested

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

PCBs (Total) - Soil

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-09-15

		SAMPLE DESCRIPTION:		DM-23A dup	DM-27A dup	DM-49B dup	DM-53A dup	DM-02A dup	DM-07B dup	DM-33A dup
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		8/10/2016	8/10/2016	8/11/2016	8/12/2016	8/13/2016	8/13/2016	8/11/2016
Parameter	Unit	G / S	RDL	7787622	7787625	7787627	7787637	7787639	7787642	7791175
PCBs	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits								
Decachlorobiphenyl	%	60-130		120	120	120	108	104	100	120

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7787622-7791175 Results are based on the dry weight of soil extracted.

Certified By:

Results relate only to the items tested and to all the items tested

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Petroleum Hydrocarbons F1 - F4 (C6 - C50) in Soil

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-09-15

		SAMPLE DESCRIPTION:		DM-23A dup	DM-27A dup	DM-49B dup	DM-53A dup	DM-02A dup	DM-07B dup	DM-33A dup
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		8/10/2016	8/10/2016	8/11/2016	8/12/2016	8/13/2016	8/13/2016	8/11/2016
Parameter	Unit	G / S	RDL	7787622	7787625	7787627	7787637	7787639	7787642	7791175
C6 - C10 (F1)	mg/kg		5	<5	<5	<5	<5	<5	<5	<5
C>10 - C16 (F2)	mg/kg		10	<10	<10	<10	<10	<10	<10	<10
C>16 - C34 (F3)	mg/kg		50	<50	<50	<50	<50	<50	<50	<50
C>34 - C50 (F4)	mg/kg		50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	mg/kg		50	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	7.2	6.5	10.2	7.5	2.5	9.6	2.4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7787622-7791175 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.
The soil sample was prepared in the lab using the Methanol extraction technique. The sample was not field preserved with methanol and an Encore was not provided for analysis.

Certified By:

Results relate only to the items tested and to all the items tested

AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

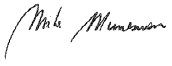
SAMPLED BY:

Soil Analysis

RPT Date: Sep 15, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
CCME Metals Scan (Soil) (incl. Hg)															
Arsenic	7788883		5	5	0.0%	< 1	108%	70%	130%	105%	80%	120%	104%	70%	130%
Cadmium	7788883		<0.5	<0.5	NA	< 0.5	108%	70%	130%	106%	80%	120%	105%	70%	130%
Cobalt	7788883		11.0	10.7	2.8%	< 0.5	95%	70%	130%	105%	80%	120%	99%	70%	130%
Chromium	7788883		20	20	0.0%	< 1	95%	70%	130%	99%	80%	120%	99%	70%	130%
Copper	7788883		30	31	3.3%	< 1	96%	70%	130%	106%	80%	120%	100%	70%	130%
Lead	7788883		20	19	5.1%	< 1	100%	70%	130%	101%	80%	120%	104%	70%	130%
Mercury	7788883		<0.10	<0.10	NA	< 0.10	111%	70%	130%	101%	80%	120%	102%	70%	130%
Nickel	7788883		24	24	0.0%	< 1	97%	70%	130%	109%	80%	120%	101%	70%	130%
Zinc	7788883		73	74	1.4%	< 1	100%	70%	130%	105%	80%	120%	98%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:



AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Trace Organics Analysis

RPT Date: Sep 15, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
PCBs (Total) - Soil															
PCBs	7787639	7787639	< 0.05	< 0.05	NA	< 0.05	108%	60%	140%	97%	60%	140%	113%	60%	140%
PCBs (Total) - Water															
PCBs		TW	<0.05	<0.05	NA	<0.05	108%	60%	140%	117%	60%	140%	87%	60%	140%
Petroleum Hydrocarbon F1 - F4 in Water															
C6 - C10 (F1)	7771856		< 25	< 25	NA	< 25	102%	70%	130%	110%	70%	130%	129%	70%	130%
C>10 - C16 (F2)		TW	< 100	< 100	NA	< 100	102%	70%	130%	71%	70%	130%	70%	70%	130%
C>16 - C34 (F3)		TW	< 100	< 100	NA	< 100	107%	70%	130%	97%	70%	130%	71%	70%	130%
C>34 - C50 (F4)		TW	< 100	< 100	NA	< 100	100%	70%	130%	98%	70%	130%	102%	70%	130%
Petroleum Hydrocarbons F1 - F4 (C6 - C50) in Soil															
C6 - C10 (F1)	7772413		< 5	< 5	NA	< 5	85%	60%	130%	103%	60%	130%	103%	60%	130%
C>10 - C16 (F2)	7785901		< 10	< 10	NA	< 10	102%	70%	130%	96%	70%	130%	70%	70%	130%
C>16 - C34 (F3)	7785901		< 50	< 50	NA	< 50	103%	70%	130%	97%	70%	130%	72%	70%	130%
C>34 - C50 (F4)	7785901		< 50	< 50	NA	< 50	98%	70%	130%	97%	70%	130%	83%	70%	130%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

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AGAT Laboratories

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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Water Analysis

RPT Date: Sep 15, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
CCME Metals - (Water) - (incl. Hg)															
Arsenic	7787630	7787630	< 0.001	<0.001	NA	< 0.001	100%	90%	110%	100%	90%	110%	100%	70%	130%
Cadmium	7787630	7787630	< 0.0001	< 0.0001	NA	< 0.0001	96%	90%	110%	98%	90%	110%	105%	70%	130%
Chromium	7787630	7787630	0.003	0.003	NA	< 0.001	99%	90%	110%	99%	90%	110%	97%	70%	130%
Cobalt	7787630	7787630	0.0008	0.0008	NA	< 0.0005	91%	90%	110%	95%	90%	110%	90%	70%	130%
Copper	7787630	7787630	< 0.005	< 0.005	NA	< 0.005	99%	90%	110%	100%	90%	110%	96%	70%	130%
Lead	7787630	7787630	< 0.0001	< 0.0001	NA	< 0.0001	93%	90%	110%	97%	90%	110%	99%	70%	130%
Mercury	7797950		<0.0001	<0.0001	NA	< 0.0001	102%	90%	110%	102%	90%	110%	100%	80%	120%
Nickel	7787630	7787630	0.046	0.046	0.0%	< 0.001	102%	90%	110%	106%	90%	110%	100%	70%	130%
Zinc	7787630	7787630	< 0.005	<0.005	NA	< 0.005	97%	90%	110%	101%	90%	110%	99%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

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AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
PCBs	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
C6 - C10 (F1)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
C>10 - C16 (F2)	VOL-91-5010	MOE PHC-E3421	GC/FID
C>16 - C34 (F3)	VOL-91-5010	MOE PHC-E3421	GC/FID
C>34 - C50 (F4)	VOL -91- 5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
C6 - C10 (F1)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
C>10 - C16 (F2)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
C>16 - C34 (F3)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
C>34 - C50 (F4)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
Gravimetric Heavy Hydrocarbons	VOL - 5012	CCME Tier 1 Method	GRAVIMETRIC ANALYSIS
Moisture Content	VOL-91-5009	CCME Tier 1 Method	Balance
Water Analysis			
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Results relate only to the items tested and to all the items tested

AGAT Laboratories

SR14

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 1621128005

Cooler Quantity: 1

Arrival Temperatures: 3.4 | 4.0 | 4.1

4.6 | 4.4 | 3.9

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: on ice

Report Information:

Company: Golder Associates
Contact: Alyssa Troke
Address: 1931 Robertson Road
Ottawa, ON
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atroke@golder.com
2. Email: dplenderleith@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region ____ *Indicate One*

☐ Regulation 558
☒ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other

Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on Certificate of Analysis ☐ Yes ☑ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 1530908-2000
Site Location:
Sampled By:
AGAT Quote #: 69566 PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metals Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Hg ☐ pH ☐ SAR ☐ Total N	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	69566					
~~Dup 2~~	~~Aug 10~~			~~S~~																								
DM-23A dup	Aug 10		2	S																				X				
DM-27A dup	Aug 10		2	S																				X				
DM-49B dup	Aug 11		2	S																				X				
DM-33A dup	Aug 11		2	S	-OK to analyze from Pameel John																			X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Troke	Aug 18/16	10:00	Robert Letourneau	18 Aug 16	11h00
Robert Letourneau	18 Aug 16	16h30		16/8/19	9:25

Page 1 of 2

Nº: T 028855

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only
Work Order #: 16728005
Cooler Quantity: 1
Arrival Temperatures: 3.4 | 4.0 | 4.1
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes: on ice

Report Information:
Company: Golder Associates
Contact: Alyssa Trake
Address: 1931 Robertson Rd
Ottawa
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atrake@golder.com
2. Email: dplenderleith@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One) ☐ Coarse ☐ Fine

☐ Sewer Use
☐ Sanitary ☐ Storm
Region (Indicate One)

☐ Regulation 558
☒ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Turnaround Time (TAT) Required:
Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:
Project: 1530908 - 2000
Site Location:
Sampled By:
AGAT Quote #: 69566 PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Invoice Information: Bill To Same: Yes ☐ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend
B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metals Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Hg ☐ pH ☐ SAR ☐ Total N	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ ND_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	see Quote 69566
MW06-19 dup	Aug 12		5	GW		N															X
DM53-A dup	Aug 12		2	S																	X
DM02A dup	Aug 13		2	S																	X
DM07B dup	Aug 13		2	S																	X
MW12-01 dup	Aug 13		5	GW																	X

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Trake / Alyssa Trake	Aug. 18/16	10:00		18 Aug-16	1400
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
GO to Pendator	18 Aug-16	16h30		16/8/19	9 25
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 2 of 2
N°: T 028856

Document ID: Div-78-1511.011

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Appendix C5

Certificate Of Analysis –
AGAT Laboratories Ltd.,
Nov. 2, 2016; Order #16Z128005

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1530908-2000

AGAT WORK ORDER: 16Z128005

SOIL ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Nov 02, 2016

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Member of: Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

AGAT Laboratories

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CANADA L4Z 1Y2
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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

PCBs (Total) - Water

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-11-02

SAMPLE DESCRIPTION:				MW06-19 dup	MW 12-01 dup
SAMPLE TYPE:				Water	Water
DATE SAMPLED:				2016-08-12	2016-08-13
Parameter	Unit	G / S	RDL	7787630	7787644
PCBs	mg/L		0.00005	<0.00005	<0.00005
Surrogate	Unit	Acceptable Limits			
Decachlorobiphenyl	%	60-130		115	117

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Petroleum Hydrocarbon F1 - F4 in Water

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-11-02

		SAMPLE DESCRIPTION:		MW06-19 dup	MW 12-01 dup
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2016-08-12	2016-08-13
Parameter	Unit	G / S	RDL	7787630	7787644
C6 - C10 (F1)	mg/L		0.025	<0.025	<0.025
C>10 - C16 (F2)	mg/L		0.1	<0.1	<0.1
C>16 - C34 (F3)	mg/L		0.1	<0.1	<0.1
C>34 - C50 (F4)	mg/L		0.1	<0.1	<0.1
Gravimetric Heavy Hydrocarbons	mg/L		0.5	NA	NA

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7787630-7787644 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

CCME Metals - (Water) - (incl. Hg)

DATE RECEIVED: 2016-08-18

DATE REPORTED: 2016-11-02

		SAMPLE DESCRIPTION:		MW06-19 dup	MW 12-01 dup
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2016-08-12	2016-08-13
Parameter	Unit	G / S	RDL	7787630	7787644
Arsenic	mg/L		0.001	<0.001	<0.001
Cadmium	mg/L		0.0001	<0.0001	<0.0001
Chromium	mg/L		0.001	0.003	0.003
Cobalt	mg/L		0.0005	0.0008	<0.0005
Copper	mg/L		0.005	<0.005	<0.005
Lead	mg/L		0.0001	<0.0001	0.0002
Mercury	mg/L		0.0001	<0.0001	<0.0001
Nickel	mg/L		0.001	0.046	0.057
Zinc	mg/L		0.005	<0.005	<0.005

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Results relate only to the items tested and to all the items tested

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CANADA L4Z 1Y2
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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Soil Analysis

RPT Date: Nov 02, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
CCME Metals Scan (Soil) (incl. Hg)															
Arsenic	7788883		5	5	0.0%	< 1	108%	70%	130%	105%	80%	120%	104%	70%	130%
Cadmium	7788883		<0.5	<0.5	NA	< 0.5	108%	70%	130%	106%	80%	120%	105%	70%	130%
Cobalt	7788883		11.0	10.7	2.8%	< 0.5	95%	70%	130%	105%	80%	120%	99%	70%	130%
Chromium	7788883		20	20	0.0%	< 1	95%	70%	130%	99%	80%	120%	99%	70%	130%
Copper	7788883		30	31	3.3%	< 1	96%	70%	130%	106%	80%	120%	100%	70%	130%
Lead	7788883		20	19	5.1%	< 1	100%	70%	130%	101%	80%	120%	104%	70%	130%
Mercury	7788883		<0.10	<0.10	NA	< 0.10	111%	70%	130%	101%	80%	120%	102%	70%	130%
Nickel	7788883		24	24	0.0%	< 1	97%	70%	130%	109%	80%	120%	101%	70%	130%
Zinc	7788883		73	74	1.4%	< 1	100%	70%	130%	105%	80%	120%	98%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 02, 2016

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
PCBs (Total) - Soil															
PCBs	7787639	7787639	< 0.05	< 0.05	NA	< 0.05	108%	60%	140%	97%	60%	140%	113%	60%	140%
PCBs (Total) - Water															
PCBs		TW	<0.05	<0.05	NA	<0.05	108%	60%	140%	117%	60%	140%	87%	60%	140%
Petroleum Hydrocarbon F1 - F4 in Water															
C6 - C10 (F1)	7771856		< 25	< 25	NA	< 25	102%	70%	130%	110%	70%	130%	129%	70%	130%
C>10 - C16 (F2)		TW	< 100	< 100	NA	< 100	102%	70%	130%	71%	70%	130%	70%	70%	130%
C>16 - C34 (F3)		TW	< 100	< 100	NA	< 100	107%	70%	130%	97%	70%	130%	71%	70%	130%
C>34 - C50 (F4)		TW	< 100	< 100	NA	< 100	100%	70%	130%	98%	70%	130%	102%	70%	130%
Petroleum Hydrocarbons F1 - F4 (C6 - C50) in Soil															
C6 - C10 (F1)	7772413		< 5	< 5	NA	< 5	85%	60%	130%	103%	60%	130%	103%	60%	130%
C>10 - C16 (F2)	7785901		< 10	< 10	NA	< 10	102%	70%	130%	96%	70%	130%	70%	70%	130%
C>16 - C34 (F3)	7785901		< 50	< 50	NA	< 50	103%	70%	130%	97%	70%	130%	72%	70%	130%
C>34 - C50 (F4)	7785901		< 50	< 50	NA	< 50	98%	70%	130%	97%	70%	130%	83%	70%	130%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

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AGAT Laboratories

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TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

Water Analysis

RPT Date: Nov 02, 2016			DUPLICATE				REFERENCE MATERIAL				METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
CCME Metals - (Water) - (incl. Hg)															
Arsenic	7895656	7787630	<0.001	<0.001	NA	< 0.001	100%	90%	110%	96%	90%	110%	104%	70%	130%
Cadmium	7895656	7787630	<0.0001	<0.0001	NA	< 0.0001	100%	90%	110%	101%	90%	110%	112%	70%	130%
Chromium	7895656	7787630	0.004	0.004	NA	< 0.001	100%	90%	110%	104%	90%	110%	109%	70%	130%
Cobalt	7895656	7787630	<0.0005	<0.0005	NA	< 0.0005	97%	90%	110%	95%	90%	110%	98%	70%	130%
Copper	7895656	7787630	0.010	0.010	NA	< 0.005	96%	90%	110%	95%	90%	110%	92%	70%	130%
Lead	7895656	7787630	0.0009	0.0008	11.8%	< 0.0001	98%	90%	110%	96%	90%	110%	96%	70%	130%
Mercury	7797950		<0.0001	<0.0001	NA	< 0.0001	102%	90%	110%	102%	90%	110%	100%	80%	120%
Nickel	7895656	7787630	<0.001	<0.001	NA	< 0.001	104%	90%	110%	105%	90%	110%	106%	70%	130%
Zinc	7895656	7787630	0.044	0.044	1.6%	< 0.005	102%	90%	110%	96%	90%	110%	96%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

CCME Metals - (Water) - (incl. Hg)															
Arsenic	7895656	<0.001	<0.001	NA	< 0.001	100%	90%	110%	96%	90%	110%	104%	70%	130%
Cadmium	7895656	<0.0001	<0.0001	NA	< 0.0001	100%	90%	110%	101%	90%	110%	112%	70%	130%
Chromium	7895656	0.004	0.004	NA	< 0.001	100%	90%	110%	104%	90%	110%	109%	70%	130%
Cobalt	7895656	<0.0005	<0.0005	NA	< 0.0005	97%	90%	110%	95%	90%	110%	98%	70%	130%
Copper	7895656	0.010	0.010	NA	< 0.005	96%	90%	110%	95%	90%	110%	92%	70%	130%
Lead	7895656	0.0009	0.0008	11.8%	< 0.0001	98%	90%	110%	96%	90%	110%	96%	70%	130%
Mercury	7897771	< 0.0001	< 0.0001	NA	< 0.0001	101%	90%	110%	102%	90%	110%	96%	80%	120%
Nickel	7895656	<0.001	<0.001	NA	< 0.001	104%	90%	110%	105%	90%	110%	106%	70%	130%
Zinc	7895656	0.044	0.044	0.0%	< 0.005	102%	90%	110%	96%	90%	110%	96%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 16Z128005

PROJECT: 1530908-2000

ATTENTION TO: Alyssa Troke

SAMPLING SITE:DEW Line

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
PCBs	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
C6 - C10 (F1)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
C>10 - C16 (F2)	VOL-91-5010	MOE PHC-E3421	GC/FID
C>16 - C34 (F3)	VOL-91-5010	MOE PHC-E3421	GC/FID
C>34 - C50 (F4)	VOL -91- 5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
C6 - C10 (F1)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
C>10 - C16 (F2)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
C>16 - C34 (F3)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
C>34 - C50 (F4)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
Gravimetric Heavy Hydrocarbons	VOL - 5012	CCME Tier 1 Method	GRAVIMETRIC ANALYSIS
Moisture Content	VOL-91-5009	CCME Tier 1 Method	Balance
Water Analysis			
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Results relate only to the items tested and to all the items tested

AGAT Laboratories

SR14

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 1621128005

Cooler Quantity: 1

Arrival Temperatures: 3.4 | 4.0 | 4.1

4.6 | 4.4 | 3.9

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: on ice

Report Information:

Company: Golder Associates
Contact: Alyssa Troke
Address: 1931 Robertson Road
Ottawa, ON
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atroke@golder.com
2. Email: dplenderleith@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region ____ *Indicate One*

☐ Regulation 558
☒ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other

Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on Certificate of Analysis ☐ Yes ☑ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 1530908-2000
Site Location:
Sampled By:
AGAT Quote #: 69566 PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metals Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Hg ☐ pH ☐ SAR ☐ Total N	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	69566					
~~Dup 2~~	~~Aug 10~~			~~S~~																								
DM-23A dup	Aug 10		2	S																				X				
DM-27A dup	Aug 10		2	S																				X				
DM-49B dup	Aug 11		2	S																				X				
DM-33A dup	Aug 11		2	S	-OK to analyze from Pameel John																			X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Troke	Aug 18/16	10:00	Robert Letourneau	18 Aug 16	11h00
Robert Letourneau	18 Aug 16	16h30		16/8/19	9:25

Page 1 of 2

Nº: T 028855

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only
Work Order #: 16728005
Cooler Quantity: 1
Arrival Temperatures: 3.4 | 4.0 | 4.1
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes: on ice

Report Information:
Company: Golder Associates
Contact: Alyssa Trake
Address: 1931 Robertson Rd
Ottawa
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atrake@golder.com
2. Email: dplenderleith@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One) ☐ Coarse ☐ Fine

☐ Sewer Use
☐ Sanitary ☐ Storm
Region (Indicate One)

☐ Regulation 558
☒ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Turnaround Time (TAT) Required:
Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:
Project: 1530908 - 2000
Site Location:
Sampled By:
AGAT Quote #: 69566 PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Invoice Information: Bill To Same: Yes ☐ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend
B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metals Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Hg ☐ pH ☐ SAR ☐ Total N	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ ND_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	see Quote 69566
MW06-19 dup	Aug 12		5	GW		N															X
DM53-A dup	Aug 12		2	S																	X
DM02A dup	Aug 13		2	S																	X
DM07B dup	Aug 13		2	S																	X
MW12-01 dup	Aug 13		5	GW																	X

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Trake / Alyssa Trake	Aug. 18/16	10:00		18 Aug-16	1400
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
GO to Pendator	18 Aug-16	16h30		16/8/19	9 25
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 2 of 2
N°: T 028856

Document ID: Div-78-1511.011

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Appendix C6

Certificate Of Analysis –
Paracel Laboratories Ltd.,
Sept. 2, 2016; Order #1635445

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Certificate of Analysis

Golder Associates Ltd. (Ottawa)

1931 Robertson Rd.
Ottawa, ON K2H 5B7
Attn: Alyssa Troke

Client PO:
Project: 1530908-2000
Custody: 20409/102554

Report Date: 2-Sep-2016
Order Date: 26-Aug-2016

Order #: 1635445

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1635445-01	MW-6
1635445-02	MW-16
1635445-03	MW-12
1635445-04	MW-13
1635445-05	MW-15
1635445-06	MW-14
1635445-07	MW-9
1635445-08	MW-10
1635445-09	Probe Blank
1635445-10	MW-7
1635445-11	Field Blank
1635445-12	Trip Blank

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 02-Sep-2016
Order Date: 26-Aug-2016
Project Description: 1530908-2000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 245.1 - Cold Vapour AA	30-Aug-16	30-Aug-16
Metals, ICP-MS	EPA 200.8 - ICP-MS	1-Sep-16	2-Sep-16
PCBs, total	EPA 608 - GC-ECD	30-Aug-16	30-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	26-Aug-16	29-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	29-Aug-16	30-Aug-16

Certificate of Analysis

Report Date: 02-Sep-2016

Client: Golder Associates Ltd. (Ottawa)

Order Date: 26-Aug-2016

Client PO:

Project Description: 1530908-2000

	Client ID:	MW-6	MW-16	MW-12	MW-13
	Sample Date:	19-Aug-16	20-Aug-16	20-Aug-16	20-Aug-16
	Sample ID:	1635445-01	1635445-02	1635445-03	1635445-04
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001 mg/L	<0.0001	<0.0001	0.0003	<0.0001
Chromium	0.001 mg/L	<0.001	<0.001	<0.001	0.001
Cobalt	0.0005 mg/L	0.0045	0.0128	0.0244	0.0120
Copper	0.0005 mg/L	0.0064	0.0031	0.0082	0.0141
Lead	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.001 mg/L	0.053	0.033	0.097	0.069
Zinc	0.005 mg/L	0.008	0.759	0.037	0.012
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025 [2]	<0.025 [2]	<0.025 [2]	<0.025 [2]
F2 PHCs (C10-C16)	0.100 mg/L	<0.100 [2]	<0.216 [1] [2]	<0.100 [2]	-
F3 PHCs (C16-C34)	0.100 mg/L	<0.100 [2]	<0.216 [1] [2]	<0.100 [2]	-
F4 PHCs (C34-C50)	0.100 mg/L	<0.100 [2]	<0.216 [1] [2]	<0.100 [2]	-
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	-	<0.00005	-
Decachlorobiphenyl	Surrogate	85.5%	-	88.8%	-

Certificate of Analysis

Report Date: 02-Sep-2016

Client: Golder Associates Ltd. (Ottawa)

Order Date: 26-Aug-2016

Client PO:

Project Description: 1530908-2000

	Client ID:	MW-15	MW-14	MW-9	MW-10
	Sample Date:	20-Aug-16	20-Aug-16	20-Aug-16	20-Aug-16
	Sample ID:	1635445-05	1635445-06	1635445-07	1635445-08
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001 mg/L	0.0003	0.0001	0.0002	0.0007
Chromium	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cobalt	0.0005 mg/L	0.0094	0.0133	0.0243	0.0673
Copper	0.0005 mg/L	0.0056	0.0078	0.0079	0.0613
Lead	0.0001 mg/L	<0.0001	<0.0001	<0.0001	0.0003
Nickel	0.001 mg/L	0.036	0.042	0.102	0.256
Zinc	0.005 mg/L	0.024	0.025	0.043	0.119
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025 [2]	<0.025 [2]	<0.025 [2]	<0.025 [2]
F2 PHCs (C10-C16)	0.100 mg/L	<0.100 [2]	<0.100 [2]	<0.100 [2]	<0.100 [2]
F3 PHCs (C16-C34)	0.100 mg/L	<0.100 [2]	<0.100 [2]	<0.100 [2]	<0.100 [2]
F4 PHCs (C34-C50)	0.100 mg/L	<0.100 [2]	<0.100 [2]	<0.100 [2]	<0.100 [2]
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	<0.00005	<0.00005	<0.00005
Decachlorobiphenyl	Surrogate	90.7%	90.2%	97.1%	77.8%

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 02-Sep-2016

Order Date: 26-Aug-2016

Project Description: 1530908-2000

	Client ID:	Probe Blank	MW-7	Field Blank	Trip Blank
	Sample Date:	19-Aug-16	19-Aug-16	19-Aug-16	08-Aug-16
	Sample ID:	1635445-09	1635445-10	1635445-11	1635445-12
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001 mg/L	<0.0001	0.0003	<0.0001	<0.0001
Chromium	0.001 mg/L	<0.001	<0.001	<0.001	<0.001
Cobalt	0.0005 mg/L	<0.0005	0.0308	<0.0005	<0.0005
Copper	0.0005 mg/L	<0.0005	0.0097	<0.0005	<0.0005
Lead	0.0001 mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.001 mg/L	<0.001	0.201	<0.001	<0.001
Zinc	0.005 mg/L	0.006	0.059	<0.005	<0.005
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	<0.025 [2]	<0.025 [2]	<0.025 [2]	<0.025 [2]
F2 PHCs (C10-C16)	0.100 mg/L	<0.100 [2]	<0.100 [2]	-	<0.100 [2]
F3 PHCs (C16-C34)	0.100 mg/L	<0.100 [2]	<0.100 [2]	-	<0.100 [2]
F4 PHCs (C34-C50)	0.100 mg/L	<0.100 [2]	<0.100 [2]	-	<0.100 [2]
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	<0.00005	<0.00005	<0.00005 [2]
Decachlorobiphenyl	Surrogate	74.8%	90.5%	93.1%	83.4% [2]

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L						
F2 PHCs (C10-C16)	ND	0.100	mg/L						
F3 PHCs (C16-C34)	ND	0.100	mg/L						
F4 PHCs (C34-C50)	ND	0.100	mg/L						
Metals									
Mercury	ND	0.0001	mg/L						
Arsenic	ND	0.001	mg/L						
Cadmium	ND	0.0001	mg/L						
Chromium	ND	0.001	mg/L						
Cobalt	ND	0.0005	mg/L						
Copper	ND	0.0005	mg/L						
Lead	ND	0.0001	mg/L						
Nickel	ND	0.001	mg/L						
Zinc	ND	0.005	mg/L						
PCBs									
PCBs, total	ND	0.00005	mg/L						
Surrogate: Decachlorobiphenyl	*.00019*		*mg/L*		*77.9*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L	ND				30	
Metals									
Mercury	ND	0.0001	mg/L	ND				20	
Arsenic	ND	0.001	mg/L	ND				20	
Cadmium	ND	0.0001	mg/L	ND				20	
Chromium	ND	0.001	mg/L	ND			0.0	20	
Cobalt	0.00083	0.0005	mg/L	0.00083			0.1	20	
Copper	0.00055	0.0005	mg/L	0.00062			12.0	20	
Lead	ND	0.0001	mg/L	ND				20	
Nickel	ND	0.001	mg/L	ND			0.0	20	
Zinc	ND	0.005	mg/L	ND			0.0	20	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1.93	0.025	mg/L		96.4	68-117			
F2 PHCs (C10-C16)	1.98	0.100	mg/L		110	60-140			
F3 PHCs (C16-C34)	4.07	0.100	mg/L		109	60-140			
F4 PHCs (C34-C50)	2.58	0.100	mg/L		104	60-140			
Metals									
Mercury	0.00292	0.0001	mg/L	ND	97.2	70-130			
Arsenic	44.0		ug/L		88.1	80-120			
Cadmium	47.0		ug/L		93.9	80-120			
Chromium	47.4		ug/L		94.7	80-120			
Cobalt	47.0		ug/L		94.0	80-120			
Copper	47.0		ug/L		94.0	80-120			
Lead	44.7		ug/L		89.4	80-120			
Nickel	46.4		ug/L		92.8	80-120			
Zinc	46		ug/L		91.9	80-120			
PCBs									
PCBs, total	0.00112	0.00005	mg/L		112	60-140			
Surrogate: Decachlorobiphenyl	*.00022*		*mg/L*		*89.3*	*60-140*			

Qualifier Notes:

Login Qualifiers :

Sample - One or more parameter received past hold time -
Applies to samples: MW-6, MW-7, Trip

Sample - Insufficient volume - low volume PHCs - if analysis possible run as per client
Applies to samples: MW-16

Sample Qualifiers :

1 : Elevated Reporting Limits due to limited sample volume.

2 : Holding time had been exceeded upon receipt of the sample at the laboratory.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 20409

Page 1 of 15

Client Name: GAL	Project Reference: 1530908-2000	TAT: [✓] Regular [ ] 3 Day
Contact Name: see pg. 1	Quote # 16-010	[ ] 2 Day [ ] 1 Day
Address:	PO #	Date Required:
Telephone:	Email Address: see pg. 1	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table ___ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1635440-Soil, 1635448-water

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	see quote 16-010	Required Analyses
✓1	F2-3a	S		2	Aug 21/16		X	60mL + 250mL
2	MW-6	W		6	Aug 19/16	15:45	X	
3	MW-16	W		5	Aug 20/16	11:00	X	no PCBs, analyse PHCs if poss. b/c
4	MW-12	W		6	Aug 20/16	16:00	X	no PCBs
5	MW-13	W		4	Aug 20/16	10:00	X	no PCBs or PHCs
6	MW-15	W		6	Aug 20/16	12:00	X	
7	MW-14	W		6	Aug 20/16	13:00	X	
8	MW-9	W		6	Aug 20/16	17:00	X	
9	MW-10	W		6	Aug 20/16	14:00	X	
10	Probe Blank	W		6	Aug 19/16	17:00	X	

Comments: MW-16: analyse PHCs if possible (low volume)
MW-13: no PCB or PHC

Method of Delivery: Paracel

Relinquished By (Sign): Alyssa Tudo	Received by Driver/Depot: T. LOUISE	Received at Lab: SUNNYBORN DOR MAL	Verified By: Rachel Subject
Relinquished By (Print): Alyssa Tudo	Date/Time: 26/08/16 12:00 PM	Date/Time: Aug 26/16 01:51	Date/Time: Aug 26/16 3:54
Date/Time: Aug 26/16 10:00	Temperature: ___ °C	Temperature: 9.3 °C	pH Verified [✓] By: RS

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Chain of Custody
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№ 102554

Page 5 of 5

Client Name: GAL
Contact Name: see page 1
Address:
Telephone:

Project Reference: 1530908
Quote # 16-010
PO #
Email Address: see page 1

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Criteria: [ ] O. Reg. 153/04 (As Amended) Table _ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number:
1635440-Soil
1635445-water.

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	See quote 16-010						
1	MW-7	W		6	Aug 19/16	14:50								X						
2	Field Blank	W		5	Aug 19/16	17:15								X	no PHC analysis					
3	Trip Blank	W		6	Aug 8/16									X						
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Paracel

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Alyssa Tuske	A. Louise	SUNNYBORN DOR MA	Rachel Subject
Relinquished By (Print): Alyssa Tuske	Date/Time: Aug 26/16 12:00 PM	Date/Time: Aug 26 2016 01:51	Date/Time: Aug 26/16 3:54
Date/Time: Aug 26/16 10:00	Temperature: ____ °C	Temperature: 19.3 °C	pH Verified [ ] By: RS

Appendix C7

Certificate Of Analysis –
Paracel Laboratories Ltd.,
Sept. 2, 2016; Order #1634163

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Certificate of Analysis

Golder Associates Ltd. (Ottawa)

1931 Robertson Rd.
Ottawa, ON K2H 5B7
Attn: Alyssa Troke

Client PO:
Project: 1530908-2000
Custody: 26765

Report Date: 2-Sep-2016
Order Date: 16-Aug-2016

Revised Report

Order #: 1634163

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634163-01	MW98-02
1634163-02	Fox 4 - Rinsate

Approved By:

Tim McCooeye
Senior Advisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Golder Associates Ltd. (Ottawa)
Client PO:

Report Date: 02-Sep-2016
Order Date: 16-Aug-2016
Project Description: 1530908-2000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 245.1 - Cold Vapour AA	17-Aug-16	17-Aug-16
Metals, ICP-MS	EPA 200.8 - ICP-MS	18-Aug-16	19-Aug-16
PCBs, total	EPA 608 - GC-ECD	18-Aug-16	18-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	16-Aug-16	18-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	19-Aug-16

Certificate of Analysis

Client: Golder Associates Ltd. (Ottawa)

Client PO:

Report Date: 02-Sep-2016

Order Date: 16-Aug-2016

Project Description: 1530908-2000

	Client ID:	MW98-02	Fox 4 - Rinsate	-	-
	Sample Date:	04-Aug-16	05-Aug-16	-	-
	Sample ID:	1634163-01	1634163-02	-	-
	MDL/Units	Water	Water	-	-
Metals					
Mercury	0.0001 mg/L	<0.0001	<0.0001	-	-
Arsenic	0.001 mg/L	0.004	<0.001	-	-
Cadmium	0.0001 mg/L	<0.0001	<0.0001	-	-
Chromium	0.001 mg/L	<0.001	<0.001	-	-
Cobalt	0.0005 mg/L	0.0030	<0.0005	-	-
Copper	0.0005 mg/L	0.0006	<0.0005	-	-
Lead	0.0001 mg/L	0.0001	<0.0001	-	-
Nickel	0.001 mg/L	0.006	<0.001	-	-
Zinc	0.005 mg/L	0.090	<0.005	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	0.025 mg/L	0.395 [1]	<0.025 [1]	-	-
F2 PHCs (C10-C16)	0.100 mg/L	<0.100 [1]	<0.100 [1]	-	-
F3 PHCs (C16-C34)	0.100 mg/L	<0.100 [1]	<0.100 [1]	-	-
F4 PHCs (C34-C50)	0.100 mg/L	<0.100 [1]	<0.100 [1]	-	-
PCBs					
PCBs, total	0.00005 mg/L	<0.00005	<0.00005	-	-
Decachlorobiphenyl	Surrogate	54.8% [4]	72.4%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L						
F2 PHCs (C10-C16)	ND	0.100	mg/L						
F3 PHCs (C16-C34)	ND	0.100	mg/L						
F4 PHCs (C34-C50)	ND	0.100	mg/L						
Metals									
Mercury	ND	0.0001	mg/L						
Arsenic	ND	0.001	mg/L						
Cadmium	ND	0.0001	mg/L						
Chromium	ND	0.001	mg/L						
Cobalt	ND	0.0005	mg/L						
Copper	ND	0.0005	mg/L						
Lead	ND	0.0001	mg/L						
Nickel	ND	0.001	mg/L						
Zinc	ND	0.005	mg/L						
PCBs									
PCBs, total	ND	0.00005	mg/L						
Surrogate: Decachlorobiphenyl	*.00020.*		*mg/L*		*80.6*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L	ND				30	
Metals									
Mercury	ND	0.0001	mg/L	ND				20	
Arsenic	ND	0.001	mg/L	0.0013			0.0	20	
Cadmium	ND	0.0001	mg/L	ND			0.0	20	
Chromium	ND	0.001	mg/L	ND			0.0	20	
Cobalt	ND	0.0005	mg/L	ND			0.0	20	
Copper	ND	0.0005	mg/L	ND				20	
Lead	ND	0.0001	mg/L	ND			0.0	20	
Nickel	ND	0.001	mg/L	ND				20	
Zinc	ND	0.005	mg/L	ND			0.0	20	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1.83	0.025	mg/L		91.3	68-117			
F2 PHCs (C10-C16)	1.67	0.100	mg/L		93.0	60-140			
F3 PHCs (C16-C34)	3.16	0.100	mg/L		85.0	60-140			
F4 PHCs (C34-C50)	2.12	0.100	mg/L		85.3	60-140			
Metals									
Mercury	0.00309	0.0001	mg/L	ND	103	70-130			
Arsenic	39.0		ug/L	1.3	75.3	80-120			QM-07
Cadmium	49.2		ug/L	0.01	98.4	80-120			
Chromium	49.9		ug/L	0.1	99.6	80-120			
Cobalt	49.0		ug/L	0.02	98.1	80-120			
Copper	48.0		ug/L	ND	96.0	80-120			
Lead	47.5		ug/L	0.08	94.8	80-120			
Nickel	49.2		ug/L	ND	98.5	80-120			
Zinc	52		ug/L	0.2	103	80-120			
PCBs									
PCBs, total	0.00110	0.00005	mg/L		110	60-140			
Surrogate: Decachlorobiphenyl	*0.00021*		*mg/L*		*87.2*	*60-140*			

Qualifier Notes:

Login Qualifiers :

Sample - One or more parameter received past hold time - CCME F1-F4 past hold time
Applies to samples: MW98-02, Fox 4 - Rinsate

Sample Qualifiers :

1 : Holding time had been exceeded upon receipt of the sample at the laboratory.

4 : The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1, all results reported as mg/L.

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(Lab Use Only)
№ 26765

Page 2 of 2

Client Name: Golder Associates
Contact Name: see page 1
Address:
Telephone:

Project Reference: 1530908-2000
Quote #: ~~15-304~~ Golder Dew Lines Monitoring
PO #:
Email Address: alyssa_troke@golder.com
dplenderleith@golder.com

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [X] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

Matrix Type: (S) Soil/Sed. (GW) (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634162-Soil
1634163-water

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: see Quote
1	MW98-02	GW		6	Aug 4	1700	X
2	Fox 4 - Rinsate	GW		6	Aug 5	—	X
3							
4							
5							
6							
7							
8							
9							
10							

Comments: Samples not preserved, not field filtered. SC.
Proceed regardless of hold time per Alyssa. SC.

Method of Delivery:

Relinquished By (Sign): Joanne Woodhouse
Relinquished By (Print): Joanne Woodhouse
Date/Time: Aug 16/2016 1030am

Received by Driver/Depot:
Date/Time: 08/16/16 11:30
Temperature: 8.8 °C

Received at Lab: SUNREPORN DOR MAT
Date/Time: AUG 16 2016 03:10
Temperature: 8.8 °C

Verified By: Rachel Subject
Date/Time: Aug 16/18 5:00
pH Verified [ ] By: RS

Appendix C8

Historical Soil Water Chemistry Data

DYE-M -Lower Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic mean						43	38	12	1.0	10	84	94	1.0	0.50	0.0002				N/A
Baseline Data - Arithmetic mean						**28**	**38**	**12**	**1.0**	**10**	**47**	**72**	**1.0**	**0.10**	**0.050**	**10**	**4**	**15**	**25**
Baseline Data - Standard Deviation						8.2	8.5	2.8	0.00	0.0	10	16	0.57	0.0	0.012	0.0	4.8	13	13
Baseline Data mean + 3xStandard Deviation						52	64	20	1.0	10	79	120	2.7	0.10	0.086	10	18	55	65
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																**TPH Sum will appear when F1, F2 and F3 fractions are entered.**			
Upgradient																			
	BMW #05-16 surface																		
14-8455	BMW 05-16	2014	Year 1	Phase I	5-10	24	**44**	9.8	<1.0	<10	**51**	**86**	**1.0**	<0.010	<0.010	<10	<10	<10	15
MW 05-16 (0-15)	BMW 05-16	2015	Year 2	Phase I	0-15	**34.6**	**41.5**	**12.4**	<0.5	5.5	**51**	**88.1**	**1.6**	<0.1	<0.05	<7	<4	<8	10
MW05-16b	BMW 05-16	2016	Year 3	Phase I	0-15	**40.4**	**41.7**	11.5	<0.5	6.4	**47.9**	**88.1**	<1.0	<0.1	<0.05	<7	<4	**34**	**40**
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	BMW #05-16 depth																		
14-8457	BMW 05-16	2014	Year 1	Phase I	45-50	**33**	**52**	11	<1.0	<10	**69**	**95**	**1.7**	<0.010	<0.010	<10	<10	<10	15
MW 05-16 (40-50)	BMW 05-16	2015	Year 2	Phase I	40-50	**33.1**	**41.3**	**13.2**	<0.5	5.4	**52**	**90.7**	**1.4**	<0.1	<0.05	<7	<4	<8	10
MW05-16a	BMW 05-16	2016	Year 3	Phase I	30-40	**29.7**	33.7	9.3	<0.5	6.2	40.2	68.8	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Lower Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	MW #05-13 surface																		
14-8464	MW 05-13	2014	Year 1	Phase I	5-10	14	26	5.4	<1.0	<10	30	49	0.9	<0.010	<0.010	<10	<10	<10	15
MW 05-13 (0-15)	MW 05-13	2015	Year 2	Phase I	0-15	21.8	33.7	8.9	<0.5	3.7	35.9	60.4	**1.3**	<0.1	<0.05	<7	<4	<8	10
MW05-13a	MW 05-13	2016	Year 3	Phase I	0-15	18.9	24.8	6.9	<0.5	3.7	26.9	47.1	<1.0	<0.1	<0.05	<7	<4	**41**	**47**
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #05-13 depth																		
14-8465	MW 05-13	2014	Year 1	Phase I	45-50	15	30	6.6	<1.0	<10	36	54	0.9	<0.010	<0.010	<10	<10	<10	15
MW 05-13 (20-30)	MW 05-13	2015	Year 2	Phase I	20-30	20.8	30.7	8.6	<0.5	3.5	33.6	56.3	<1	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	MW 05-13	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Lower Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW #05-15 surface																		
14-8458	MW 05-15	2014	Year 1	Phase I	5-10	25	**44**	10	<1.0	<10	**55**	**91**	**1.5**	<0.010	<0.010	<10	<10	<10	15
MW05-15 (0-15) (Dup A	MW 05-15	2015	Year 2	Phase I	0-15	**39**	**48**	**13.9**	<0.5	5	**61**	**93**	**1**	<0.1	<0.05	<6	<4	<8	9
MW05-15b	MW05-15	2016	Year 3	Phase I	0-15	**45.9**	**44.1**	**13**	<0.5	7.4	**50.6**	**91.3**	<1.0	<0.1	<0.05	<7	<4	**59**	**65**
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #05-15 depth																		
14-8460/61	MW 05-15	2014	Year 1	Phase I	45-50	25	**41**	9.1	<1.0	<10	**49**	**76**	**1.7**	<0.010	<0.010	<10	<10	<10	15
MW05-15 (30-40)	MW 05-15	2015	Year 2	Phase I	30-40	**34.1**	**42.5**	**13.2**	<0.5	5.2	**53.3**	**88.9**	**1.6**	<0.1	<0.05	<7	<4	<8	10
MW05-15a	MW 05-15	2016	Year 3	Phase I	40-50	**36.6**	**38.5**	11.3	<0.5	6.8	45.4	71	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Lower Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW #12-01 surface																		
14-8462	MW 12-01	2014	Year 1	Phase I	5-10	14	24	5.7	<1.0	<10	33	51	0.8	<0.010	<0.010	<10	<10	<10	15
MW 12-01 (0-15)	MW 12-01	2015	Year 2	Phase I	0-15	**27.7**	32.8	9.6	<0.5	4.4	42	69	**1.5**	<0.1	<0.05	<7	<4	<8	10
MW12-01a	MW12-01	2016	Year 3	Phase I	0-15	27.1	29.6	8.4	<0.5	5.1	36.4	64	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #12-01 depth																		
14-8463	MW 12-01	2014	Year 1	Phase I	40-45	25	**39**	8.1	<1.0	<10	47	69	**1.2**	<0.010	<0.010	<10	<10	<10	15
MW 12-01 (20-30)	MW 12-01	2015	Year 2	Phase I	20-30	27.5	32.3	10	<0.5	4.7	42	70.5	**1**	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	MW 12-01	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M Lower Site Tier II Disposal Facility- BASELINE & BACKGROUND Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
Baseline Data																				
Upgradient:																				
07-30876	BMW 05-16	2007	0-10	23	33	12	<1.0	<10	44	67	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
07-30878	BMW 05-16	2007	25-35	23	34	12	<1.0	<10	44	68	<1.0	<0.10	<0.0030	39			<10	29	<9.0	
08-9762	BMW 05-16	2008	0-10	26	39	13	<1.0	<10	50	77	<1.0	<0.10	<0.0030	25			<10	4.1	16	
08-9764	BMW 05-16	2008	30-40	33	47	14	<1.0	<10	58	85	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
09-21556	BMW 05-16	2009	0-10	31	37	12	<1.0	<10	69	71	<1.0	<0.10	<0.0030	32			<10	7.2	20	
09-21558/59	BMW 05-16	2009	30-40	27	38	13	<1.0	<10	50	77	1.1	<0.10	<0.0030	37			<10	5.5	26	
11-13070	BMW05-16	2011	0-10	20	43	11	<1.0	<10	40	63	<1.0	<0.10	<0.050	24			<10	<30	19	
11-13072*	BMW05-16	2011	30-40	31	50	16	<1.0	<10	53	89	1.2	<0.10	<0.050	10			<10	<30	<9.0	
12-44878	BMW05-16	2012	0-10	29	39	10	<1.0	<10	48	77	1.1	<0.10	<0.050	23			<10	13	<9.0	
12-44880	BMW05-16	2012	20-30	28	37	9.1	<1.0	<10	46	71	1.2	<0.10	<0.050	19			<10	9	<9.0	
13-25276	BMW 05-16	2013	0-10	28	42	11	<1.0	<10	52	85	1.6	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25278	BMW 05-16	2013	30-40	31	44	12	<1.0	<10	54	84	1.5	<0.10	<0.050	12			<10	<4.0	<9.0	
Downgradient:																				
07-30872	MW 05-13	2007	0-10	17	30	9.5	<1.0	<10	34	53	<1.0	<0.10	<0.0030	34			<10	5.5	23	
07-30874	MW 05-13	2007	25-35	16	24	8.3	<1.0	<10	32	46	<1.0	<0.10	<0.0030	19			<10	<4.0	12	
07-30864	MW 05-14	2007	0-10	17	25	9.5	<1.0	<10	36	51	<1.0	<0.10	<0.0030	17			<10	<4.0	10	
07-30866	MW 05-14	2007	25-35	18	25	9.1	<1.0	<10	36	54	<1.0	<0.10	<0.0030	19			<10	<4.0	12	
07-30868	MW 05-15	2007	0-10	32	41	15	<1.0	<10	55	81	<1.0	<0.10	<0.0030	25			<10	5.5	14	
07-30870/71	MW 05-15	2007	25-35	36	46	17	<1.0	<10	58	98	<1.0	<0.10	<0.0030	20			<10	<4.0	13	
08-9758*/59	MW 05-13	2008	0-10	23	37	12	<1.0	<10	45	66	<1.0	<0.10	<0.0030	43			<10	<4.0	36	
08-9760	MW 05-13	2008	30-40	23	39	12	<1.0	<10	45	66	<1.0	<0.10	<0.0030	33			<10	<4.0	26	
08-9754	MW 05-14	2008	0-10	19	27	9.6	<1.0	<10	38	55	<1.0	<0.10	<0.0030	35			<10	<4.0	28	
08-9756	MW 05-14	2008	30-40	29	35	11	<1.0	<10	51	68	<1.0	<0.10	<0.0030	53			<10	<4.0	46	
08-9750/51	MW 05-15	2008	0-10	36	44	14	<1.0	<10	61	82	<1.0	<0.10	<0.0030	31			<10	<4.0	24	
08-9752	MW 05-15	2008	30-40	29	38	14	<1.0	<10	56	79	<1.0	<0.10	<0.0030	27			<10	<4.0	20	
09-21552	MW 05-13	2009	0-10	19	29	9.2	<1.0	<10	35	53	<1.0	<0.10	<0.0030	52			<10	7.3	40	
09-21554	MW 05-13	2009	30-40	25	36	10	<1.0	<10	41	60	<1.0	<0.10	<0.0030	47			<10	7.5	34	
09-21548	MW 05-15	2009	0-10	36	45	16	<1.0	<10	59	91	1.5	<0.10	<0.0030	20			<10	<4.0	13	
09-21550	MW 05-15	2009	30-40	26	35	11	<1.0	<10	44	68	1.1	<0.10	<0.0030	56			<10	5.1	46	
11-13066*	MW05-13	2011	0-10	18	24	9.2	<1.0	<10	32	46	<1.0	<0.10	<0.050	55			<10	<30	50	
11-13068/69*	MW05-13	2011	30-40	21	33	10	<1.0	<10	37	58	<1.0	<0.10	<0.050	22			<10	<30	17	
11-13062	MW05-15	2011	0-10	40	50	18	<1.0	<10	58	94	1.7	<0.10	<0.050	18			<10	8.6	<9.0	
11-13064	MW05-15	2011	30-40	41	49	18	<1.0	<10	58	92	1.7	<0.10	<0.050	14			<10	4.4	<9.0	
12-44870	MW05-13	2012	0-10	20	32	8.1	<1.0	<10	34	53	0.98	<0.10	<0.050	16			<10	6.2	<9.0	
12-44872	MW05-13	2012	20-30	22	39	8.5	<1.0	<10	36	62	1.1	<0.10	<0.050	16			<10	6.8	<9.0	
12-44874	MW05-15	2012	0-10	35	49	13	<1.0	<10	56	94	2.0	<0.10	<0.050	14			<10	4.9	<9.0	
12-44876/77	MW05-15	2012	20-30	55	63	16	<1.0	<10	71	110	2.5	<0.10	<0.050	15			<10	5.6	<9.0	
12-44902	MW12-01	2012	0-10	28	36	8.9	<1.0	<10	43	65	1.3	<0.10	<0.050	12			<10	<4.0	<9.0	
12-44904	MW12-01	2012	20-30	38	47	12	<1.0	<10	57	85	1.8	<0.10	<0.050	14			<10	4.7	<9.0	
13-25280/81	MW 05-13	2013	0-10	23	34	8.5	<1.0	<10	39	59	1.1	<0.10	<0.050	24			<10	7.9	11	
13-25282	MW 05-13	2013	30-40	20	31	8	<1.0	<10	33	53	1.8	<0.10	<0.050	36			<10	8.3	23	
13-25288	MW 05-15	2013	0-10	38	49	13	<1.0	<10	56	90	1.9	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25290/91	MW 05-15	2013	30-40	39	51	14	<1.0	<10	60	95	1.9	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25284	MW 12-01	2013	0-10	21	28	7.3	<1.0	<10	34	50	1.2	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25286	MW 12-01	2013	30-40	27	37	10	<1.0	<10	48	72	1.5	<0.10	<0.050	11.5			<10	<4.0	<9.0	
	N value			44	44	44	44	44	44	44	44	44	44	44			44	44	44	
	Baseline Detection Limits			3	5	5	1	10	15	20	1	0.1	0.05	10			10	4	9	
	Arithmetic Mean			28	38	12	0.5	5	47	72	1.00	0.05	0.013	25			5	5	15	
	Arithmetic Mean Corrected for Detection Limits			28	38	12	1	10	47	72	1.00	0.1	0.05	25			10	4	15	
	Standard Deviation			8.2	8.5	2.8	0	0	10	16	0.57	0	0.012	13			0	5	13	
	Minimum			16	24	7.3	0	0	32	46	0.98	0	0	9.5			0	4.1	10	
	Maximum			55	63	18	0	0	71	110	2.5	0	0	56.1			0	29	50	
	95% Confidence Limit			2.4	2.5				3.1	4.8	0.17		0.004	4.0				1.4	3.9	

*F2 fraction TPH results for some Baseline samples from 2011 were reported with elevated detection limits due to interferences. These samples have been removed from the baseline average calculation.

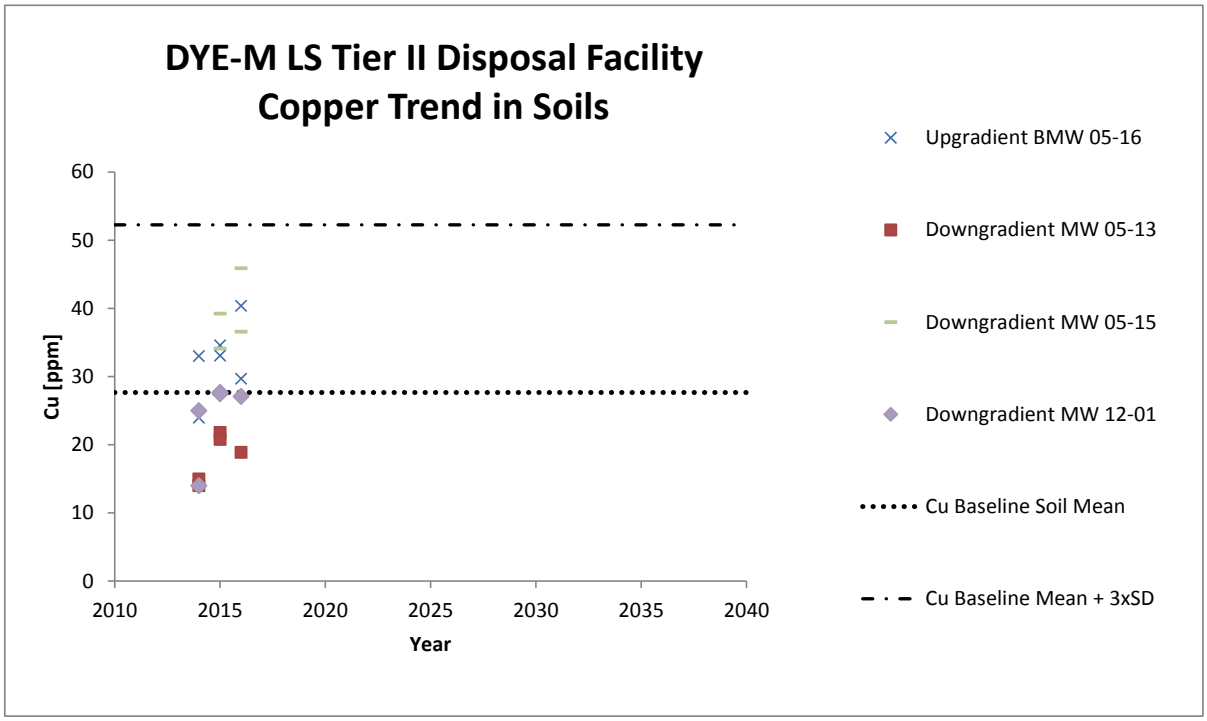
DYE-M Lower Site Tier II Disposal Facility- BASELINE & BACKGROUND Soil Analytical Data

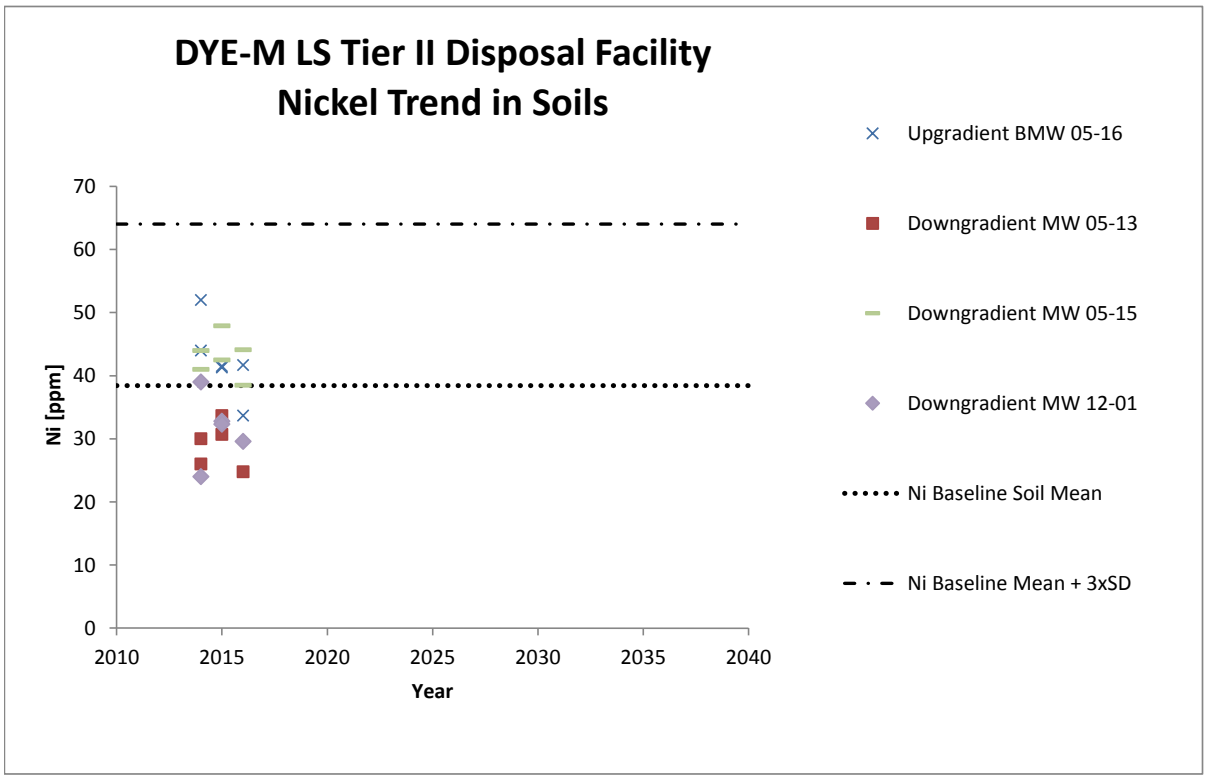
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
Background Data																				
89-G300	Along the beach, 1 km NW of ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004							
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024							
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002							
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001							
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002							
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002							
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0									
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0									
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0									
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0									
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0									
00-25526	West of glacier - background	2000		93	36	13	1.5	37	113	136	<1.0									
00-25527	West of glacier - background	2000		74	29	13	1.3	13	145	151	<1.0									
00-25528	West of glacier - background	2000		77	28	14	1.8	10	213	177	<1.0									
	N value			14	14	14	14	14	14	14	14	6	6							
	Background Detection Limits			3	5	5	1	10	15	20	1	0.5	0.0002							
	Arithmetic Mean			43	38	12	0.72	9.9	84	94	0.58	0.25	0.0047							
	Arithmetic Mean Corrected for Detection Limits			43	38	12	1	10	84	94	1	0.5	0.0002							
	Standard Deviation			30	19	5.1	0.45	9.1	53	55	0.53	0	0.0096							
	Minimum			7.8	18	2.5	0.5	5	28	10	0.15	0.25	0.00005							
	Maximum			93	89	23	1.8	37	213	177	2.4	0.25	0.024							
	95% Confidence Limit			16	10	0	0	0	0	0	0.28		0.0077							

DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

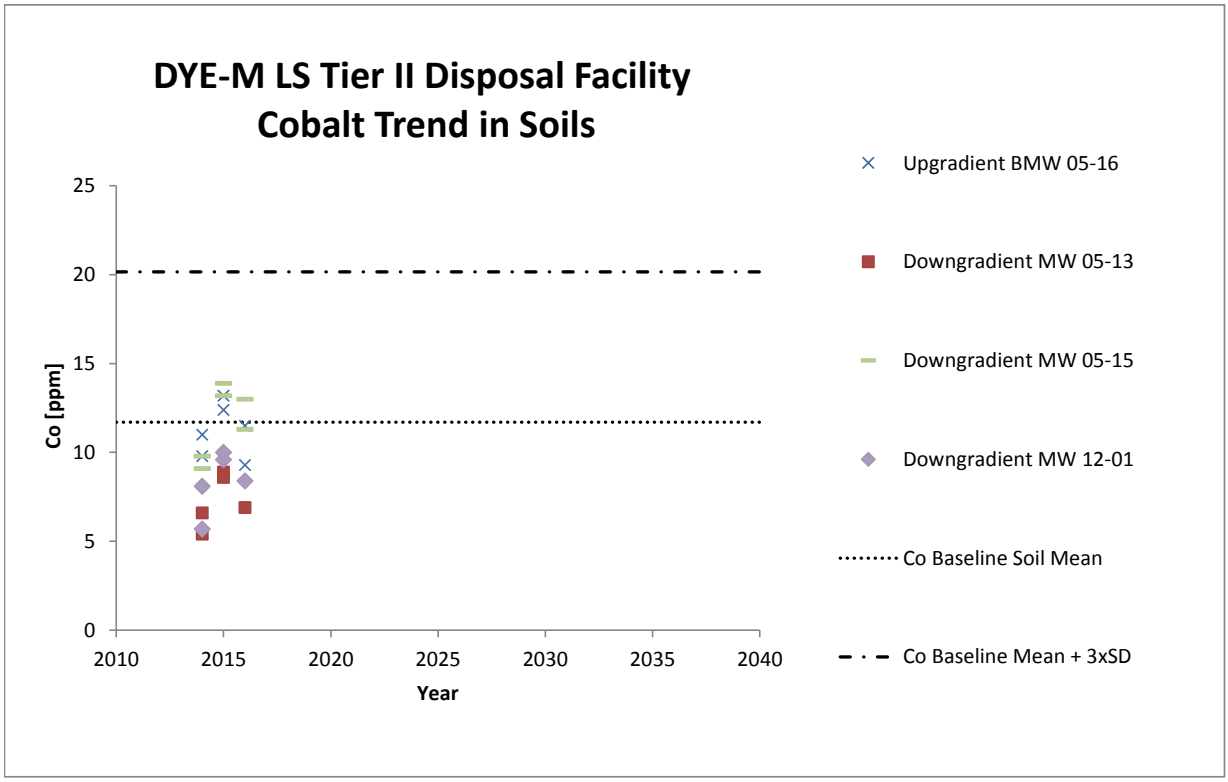
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

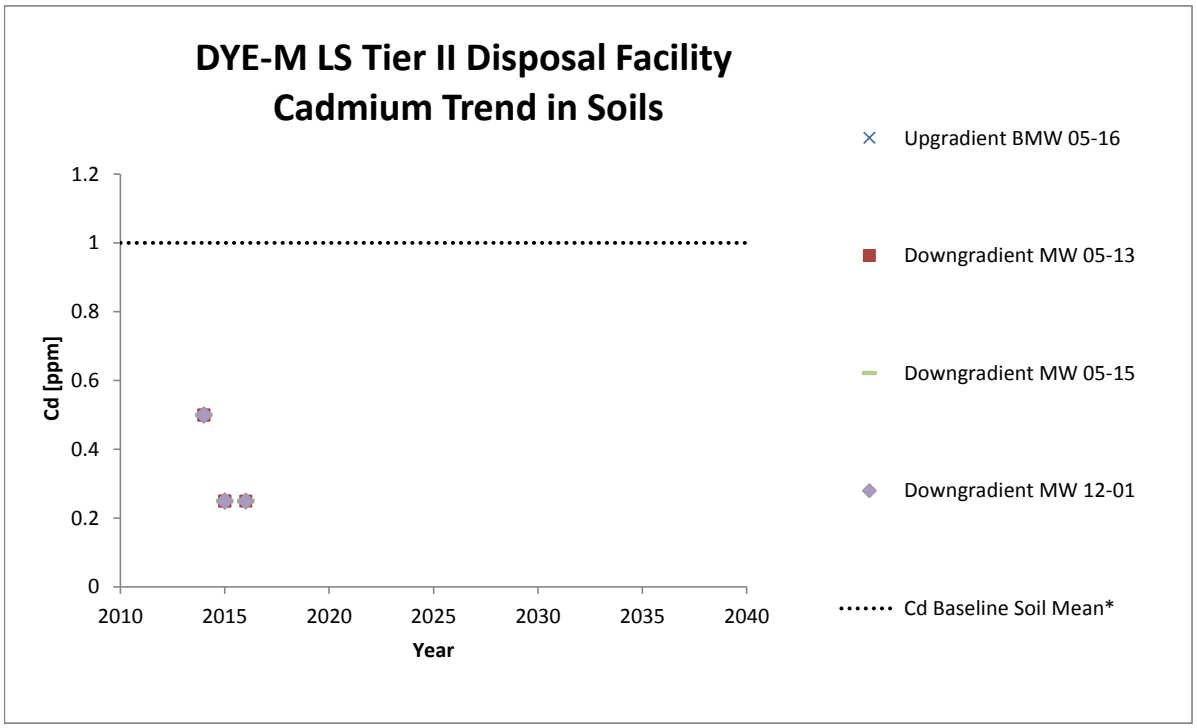
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





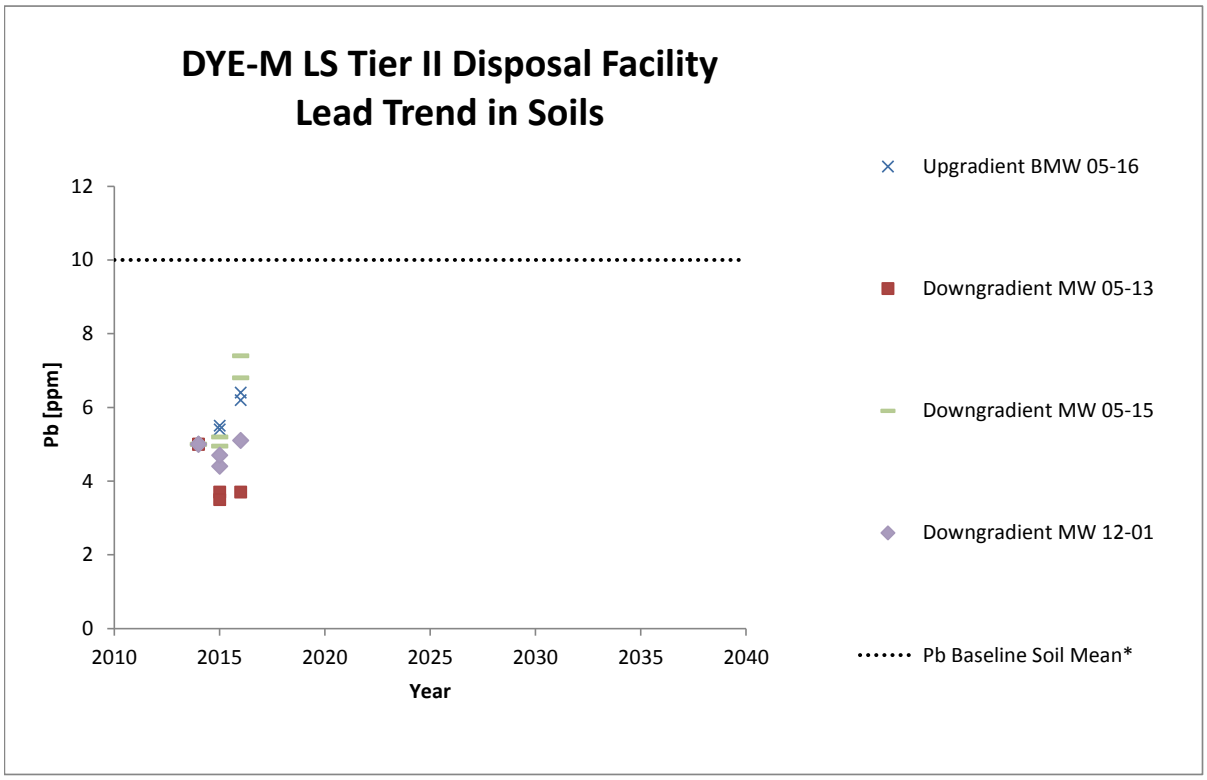
DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



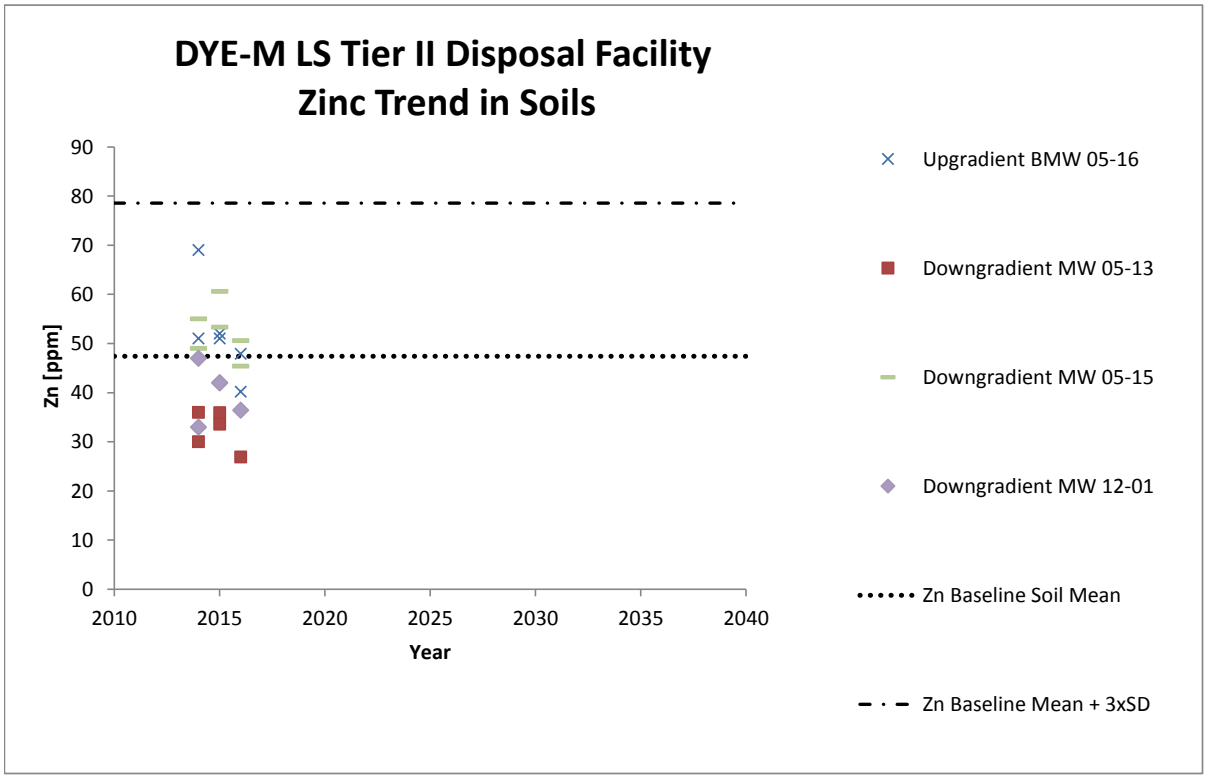


*Cd Baseline Mean is equal to the baseline detection limit.
Cd Baseline SD = 0

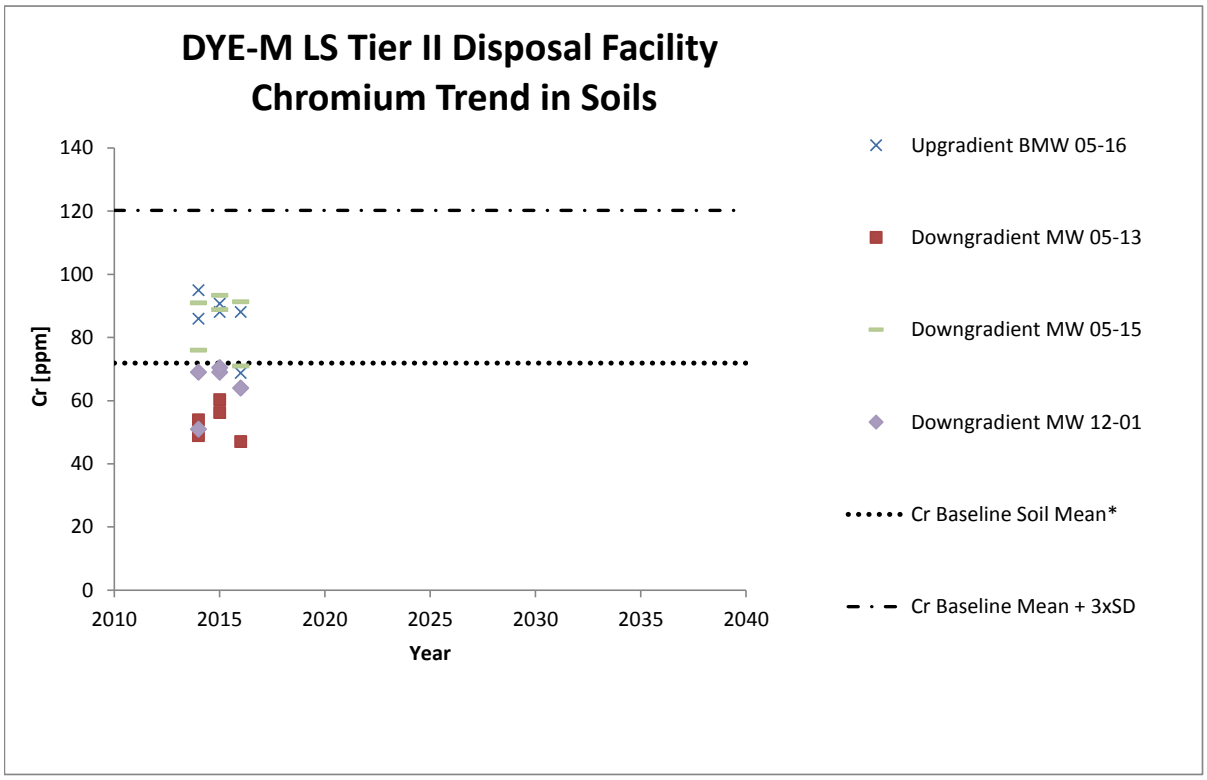
DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



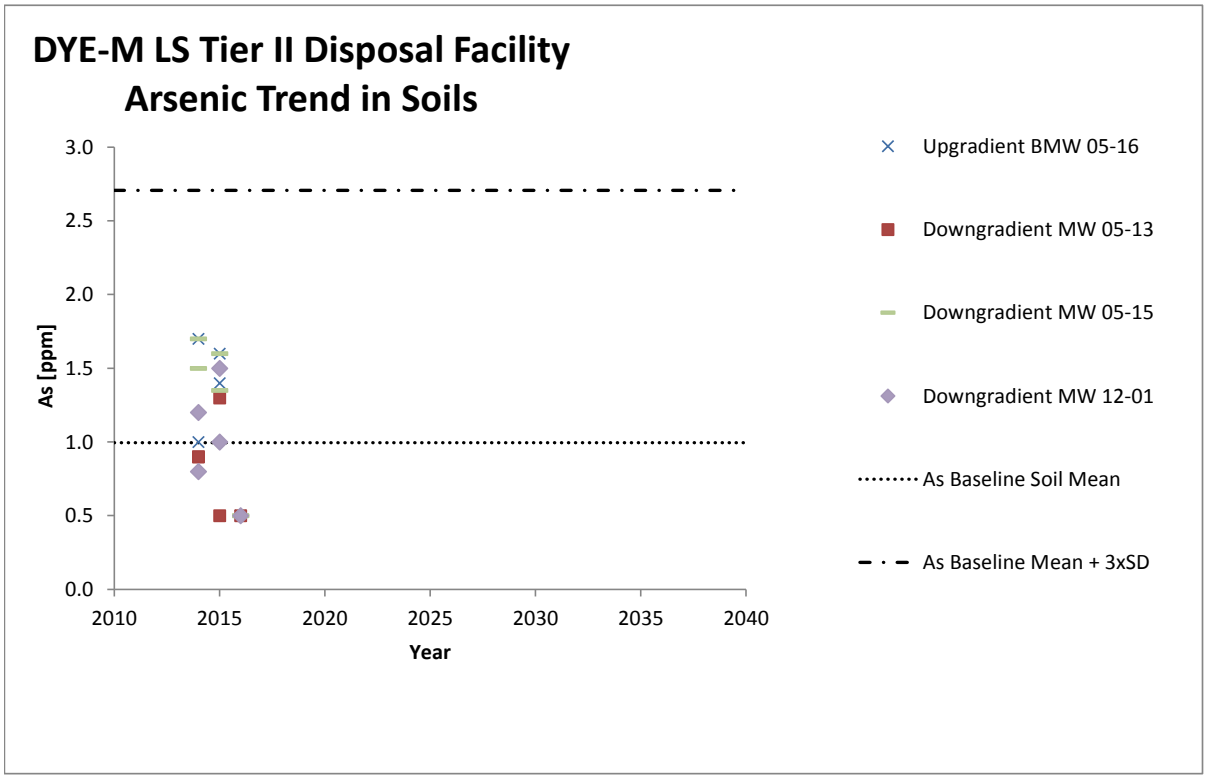
*Pb Baseline Mean is equal to the baseline detection limit.
Pb Baseline SD = 0



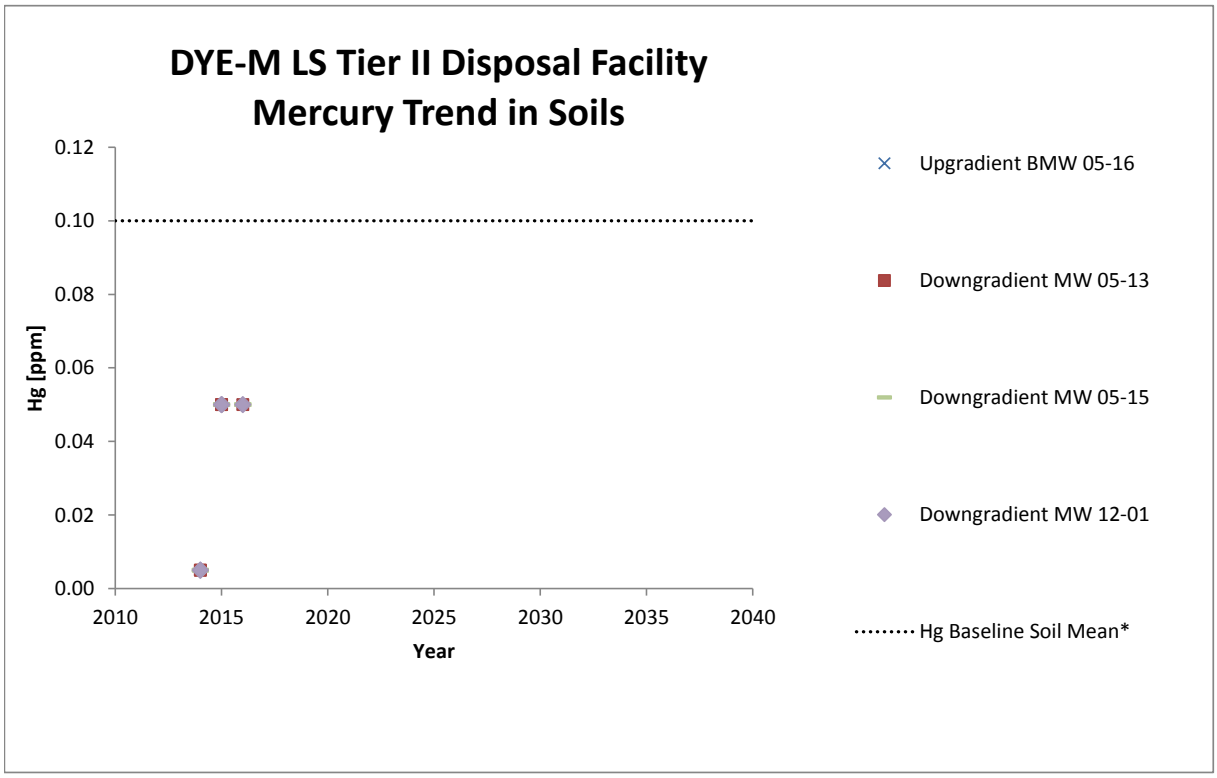
DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



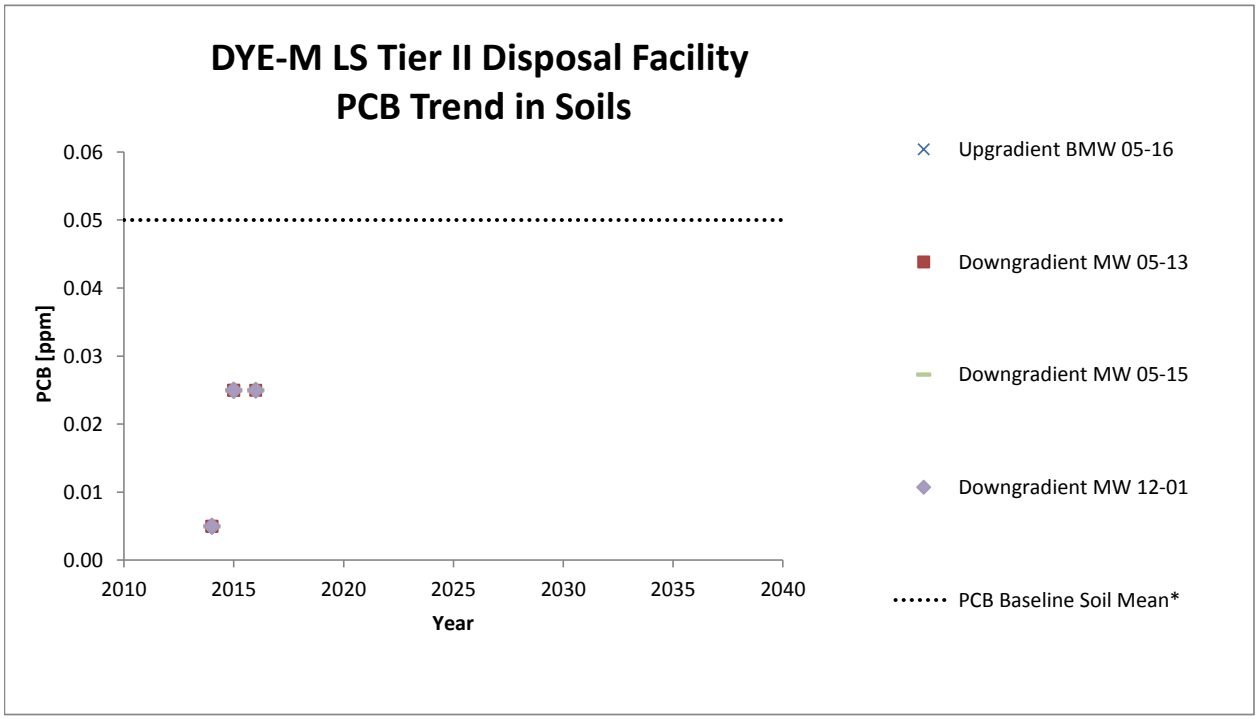
*Cr Baseline Mean is equal to the baseline detection limit.



DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

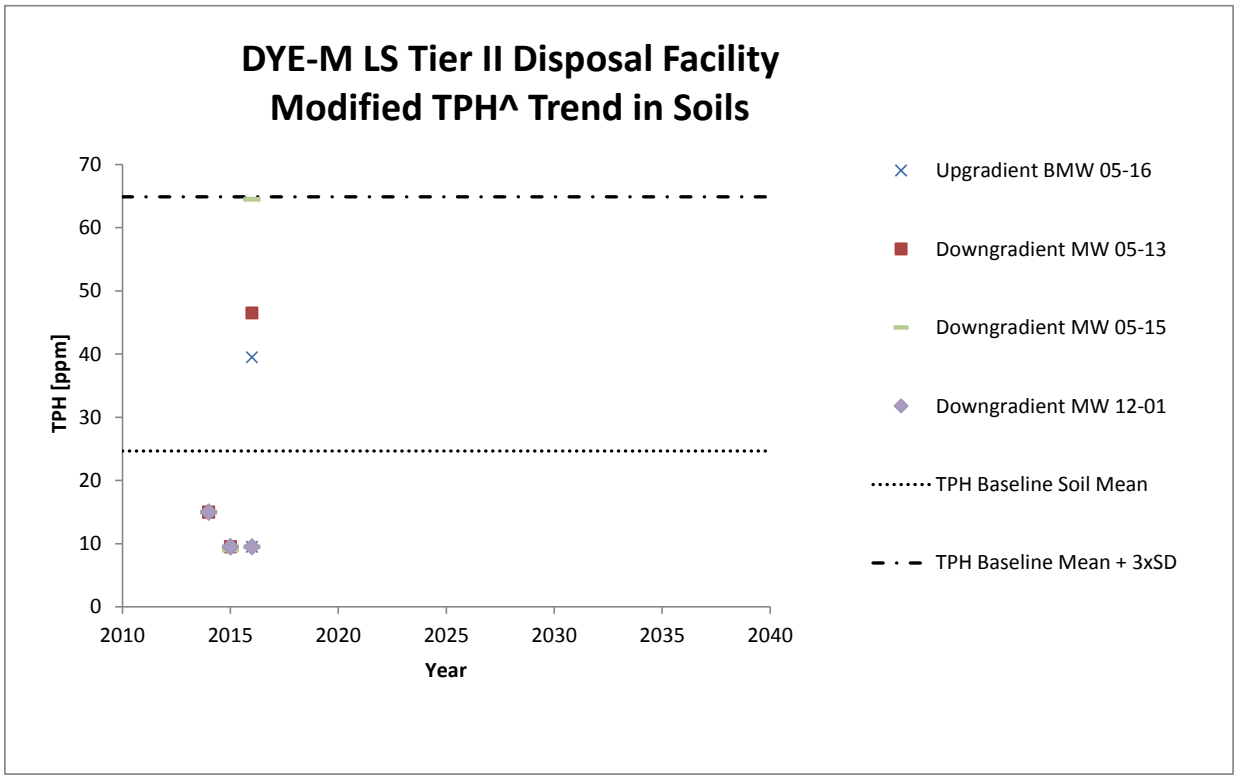


*Hg Baseline Mean is equal to the baseline detection limit.



*PCB Baseline Mean is equal to the baseline detection limit.
*PCB SD=0

DYE-M Lower Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M LS Tier II Disposal Facility - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Baseline Data																		
Upgradient:																		
07-30674	BMW05-16	2007			0.024	0.0730	0.004	<0.0010	<0.010	0.9	0.103	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9734	BMW05-16	2008			0.180	0.3100	0.041	<0.0010	0.013	1.4	0.540	0.004	<0.00040	0.000040	<0.050	<0.50	<1.0	0.8
11-12205	BMW05-16	2011			<0.0050	0.0102	<0.0030	<0.0010	<0.010	10	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34983	BMW05-16	2012			<0.0050	0.0070	<0.0030	<0.0010	<0.0050	14	0.120	0.002	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13- All wells were dry in 2013		2013																
Downgradient:																		
07-30670/71	MW05-13	2007			0.016	0.048	0.004	<0.0010	<0.010	0.93	0.051	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
07-30673	MW05-14	2007			0.043	0.23	0.011	<0.0010	<0.010	2.6	0.30	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
07-30672	MW05-15	2007			0.100	0.14	0.0240	<0.0010	<0.010	0.9	0.190	0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9733	MW05-13	2008			0.090	0.23	0.021	<0.0010	0.021	0.4	0.410	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9732	MW05-14	2008			0.020	0.19	0.0050	<0.0010	<0.010	3.6	0.350	<0.0030	<0.00040	0.00002	<0.050	<0.50	<1.0	0.8
08-9731	MW05-15	2008			0.065	0.36	0.020	<0.0010	<0.010	0.48	0.800	<0.0030	<0.00040	0.00070	<0.050	<0.50	<1.0	0.8
09-21563	MW05-13	2009			0.028	0.06	0.0065	<0.0010	<0.010	2.5	0.088	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
09-21562	MW05-15	2009			0.120	0.29	0.035	0.0014	0.015	0.58	0.530	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12204	MW05-13	2011			<0.0050	<0.0050	<0.0030	<0.0010	<0.010	2.3	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12203	MW05-15	2011			<0.0050	<0.0050	<0.0030	<0.0010	<0.010	6.6	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34979	MW05-13	2012			<0.0050	0.006	<0.0030	<0.0010	<0.0050	1.4	0.170	0.0020	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34980/81	MW05-15	2012			<0.0050	0.011	<0.0030	<0.0010	<0.0050	4.8	0.190	0.005	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34982	MW12-01	2012			<0.0050	0.0110	<0.0030	<0.0010	<0.0050	0.05	0.370	0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13- All wells were dry in 2013		2013																
	N value				17	17	17	17	17	17	17	17	17	17	17	17	17	17
	Arithmetic Mean				**0.07**	**0.19**	**0.017**	**0.001**	**0.008**	**3.1**	**0.30**	**0.002**	**0.0002**	**0.0004**	**0.025**	**0.25**	**0.50**	**0.25**
	Arithmetic Mean Corrected for Detection Limits				**0.07**	**0.19**	**0.017**	**0.001**	**0.010**	**3.1**	**0.30**	**0.003**	**0.0004**	**0.003**	**0.050**	**0.50**	**1.0**	**0.50**
	Standard Deviation				0.054	0.11	0.013	0.0003	0.006	3.8	0.21	0.0009	0.0	0.0	0.0	0.0	0.0	0.0
	Arithmetic Mean + 3xStandard Deviation				0.23	0.52	0.057	0.0019	0.027	15	0.94	0.0058	0.0004	0.0049	0.050	0.50	1.0	0.25
	Detection Limit				0.005	0.005	0.003	0.001	0.010	0.010	0.005	0.003	0.0004	0.003	0.050	0.50	1.0	1.0
Monitoring Data																		
Upgradient - BMW 05-16																		
Not sampled - well dry/ frozen at depth	BMW 05-16	2014	Year 1	Phase I														#N/A
MW05-16	BMW 05-16	2015	Year 2	Phase I	0.0013	0.002	<0.0005	<0.0001	0.002	**4.96**	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	0.1
Not sampled - well dry	BMW 05-16	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

Modified TPH TOTAL will appear when F1, F2, F3 fraction results are entered.

DYE-M LS Tier II Disposal Facility - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Downgradient - MW 05-13																		
Not sampled - well dry/ frozen at depth	MW 05-13	2014	Year 1	Phase I														#N/A
MW05-13 (Dup Avg)	MW 05-13	2015	Year 2	Phase I	0.001	0.0025	<0.001	0.001	0.001	2.9	0.002	<0.001	<0.0001	<0.0001	<0.025	<0.1	<0.1	0.1
MW05-13	MW 05-13	2016	Year 3	Phase I	0.001	0.015	0.0006	<0.0001	<0.0001	2.38	<0.001	<0.001			<0.025			#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 05-15																		
Not sampled - well dry/ frozen at depth	MW 05-15	2014	Year 1	Phase I														#N/A
MW05-15	MW 05-15	2015	Year 2	Phase I	0.0017	0.01	0.0012	0.0001	0.0022	**18.7**	<0.001	<0.001	<0.0001		<0.025	<0.1	<0.1	0.1
MW05-15	MW 05-15	2016	Year 3	Phase I	<0.0005	0.007	<0.0005	<0.0001	<0.0001	2.52	<0.001	<0.001	<0.0001	<0.00030	<0.025	<0.100	<0.100	0.1
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 12-01 (replaces MW-14)																		
14-8185*	MW12-01	2014	Year 1	Phase I	<0.0010	0.013	0.00037	<0.000090	<0.00050	<0.0030	<0.00050	<0.0010	<0.00010		<0.025	<0.10	<0.25	0.2
MW12-01	MW12-01	2015	Year 2	Phase I	0.0005	0.02	0.0018	<0.0001	<0.0001	0.018	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	0.1
MW12-01 (Dup Avg)	MW12-01	2016	Year 3	Phase I	<0.003	0.05	0.0006	<0.0001	0.0002	<0.005	0.002	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	0.1
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

N/S - Sample or measurements not taken

blue highlight indicates dissolved metals. Total metal results are not highlighted.

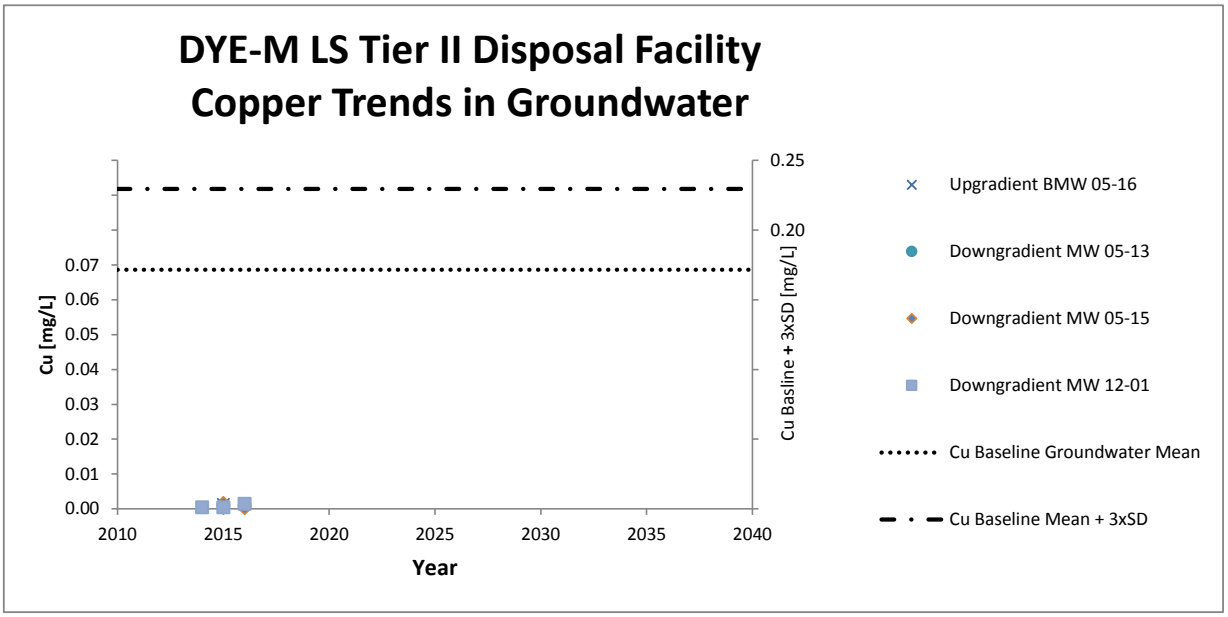
Dissolved metal results have not been included in the Baseline Arithmetic Mean

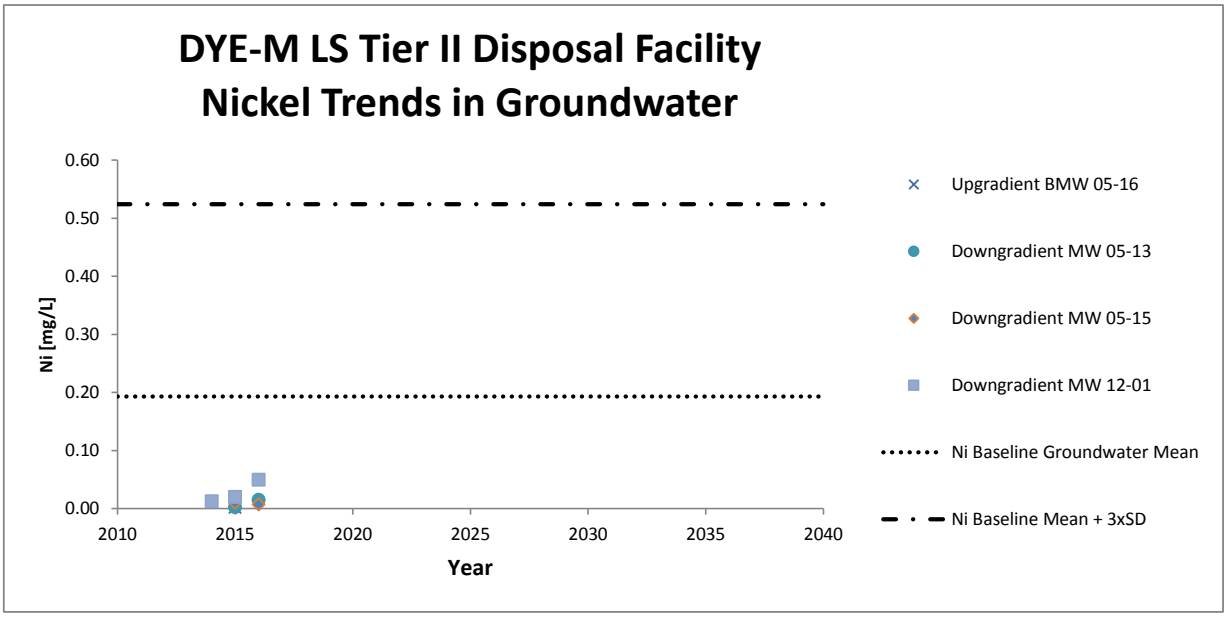
* insufficient volume to analyze for PCBs in 2014

MW-14 baseline well was damaged in 2009, replaced in 2012 by MW 12-01

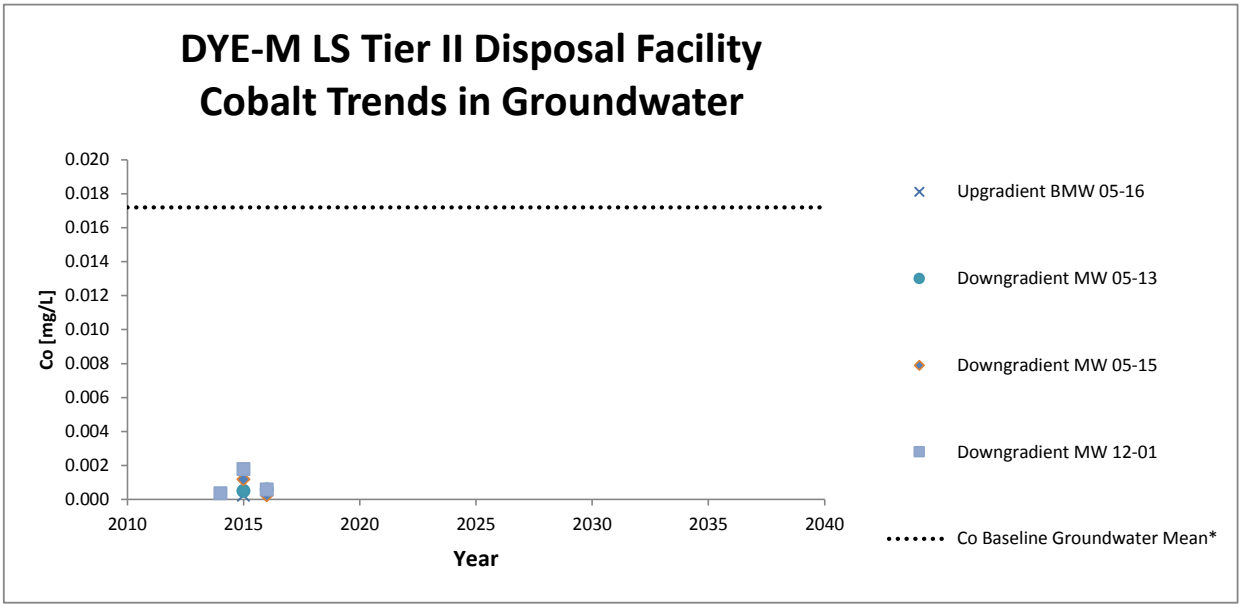
DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

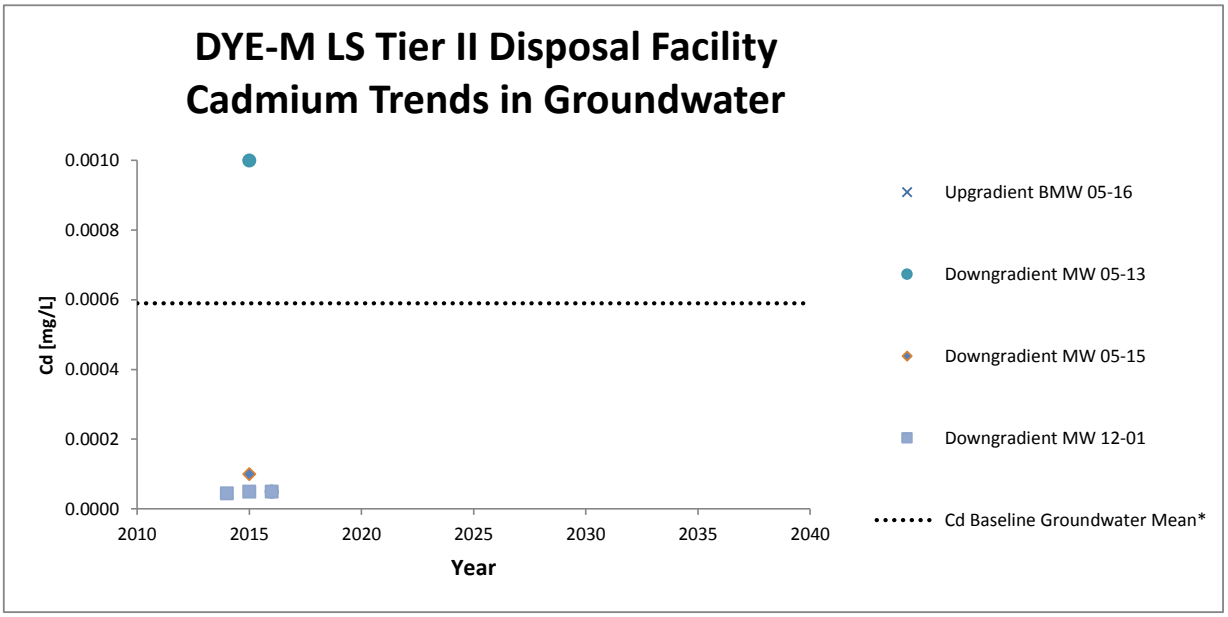




DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

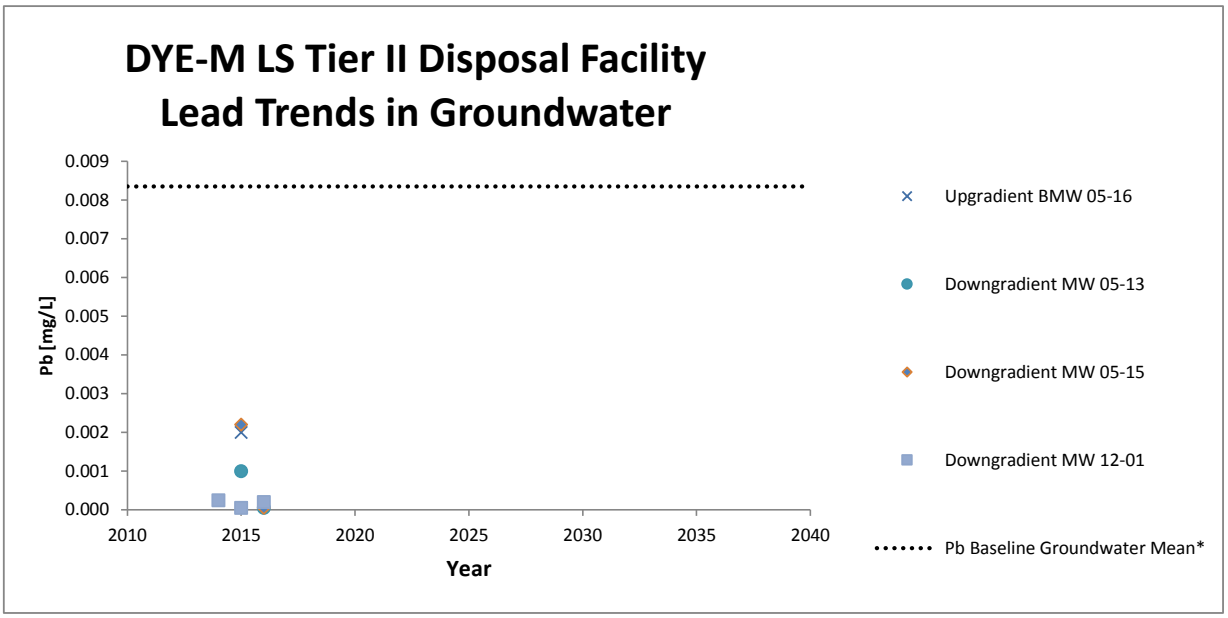


*Co Baseline Mean is equal to the baseline detection limit.
*Co Baseline Mean + 3xSD = 0

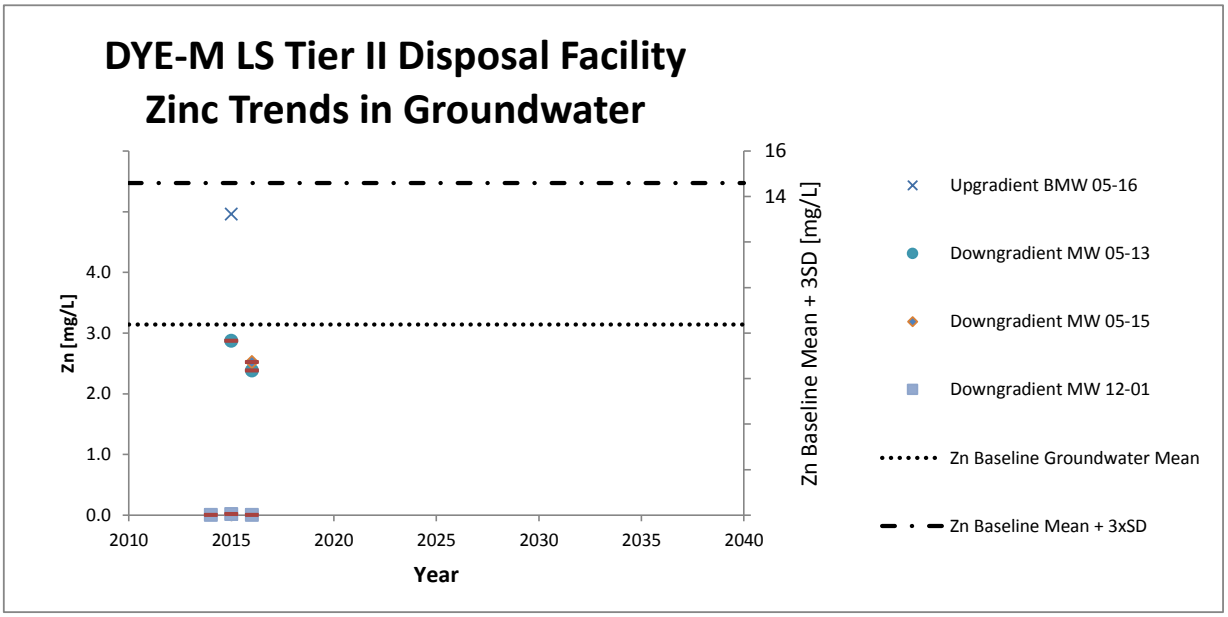


*Cd Baseline Mean is equal to the baseline detection limit.
*Cd Baseline Mean SD = 0

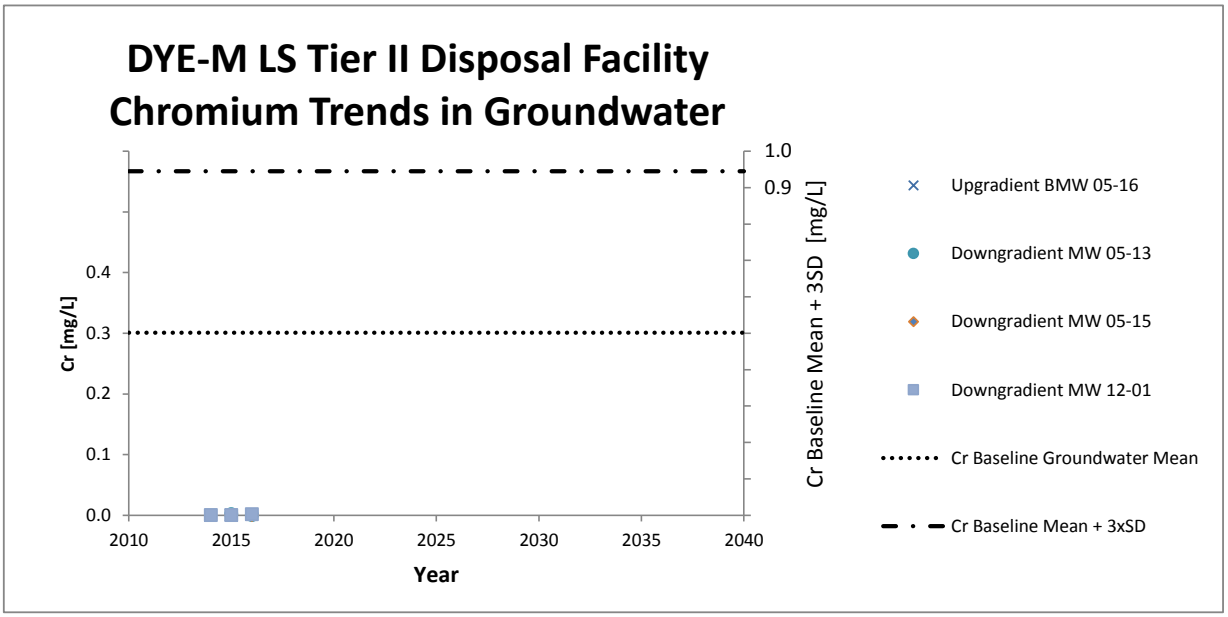
DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

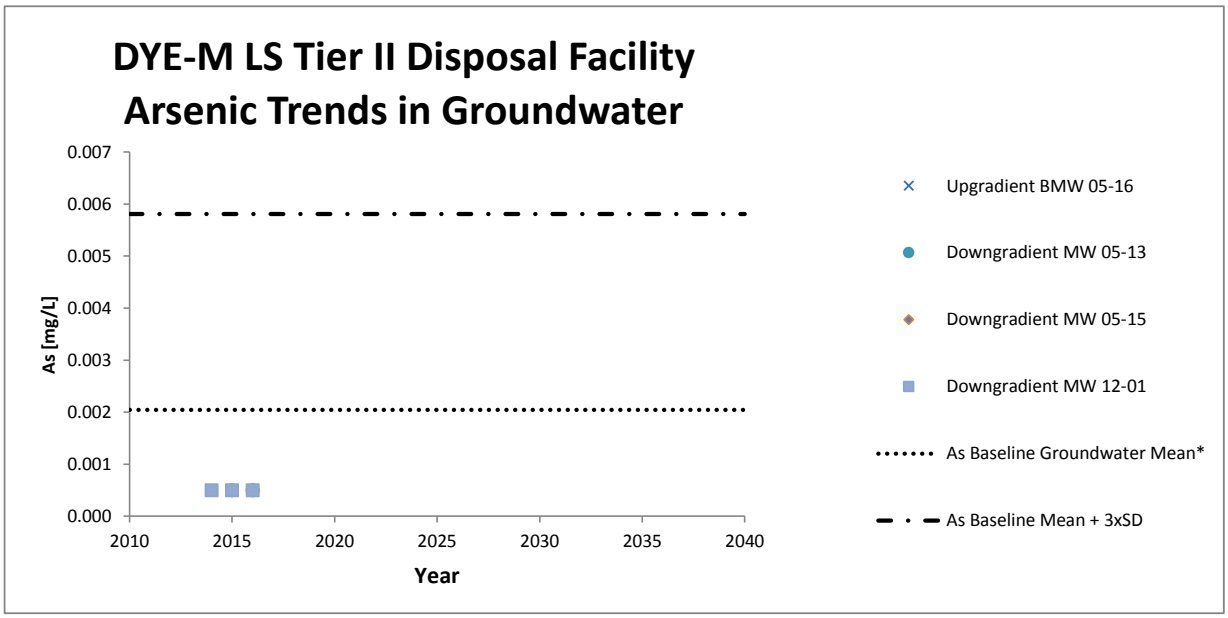


*Pb Baseline Mean is equal to the baseline detection limit.
*Pb Baseline SD=0



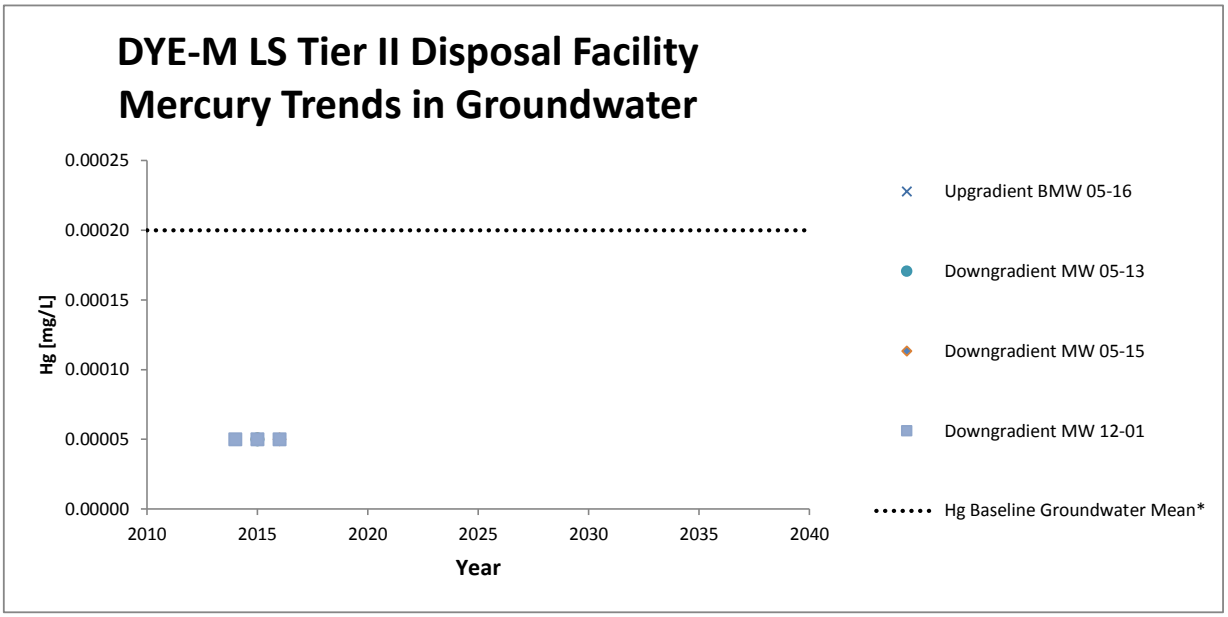
DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



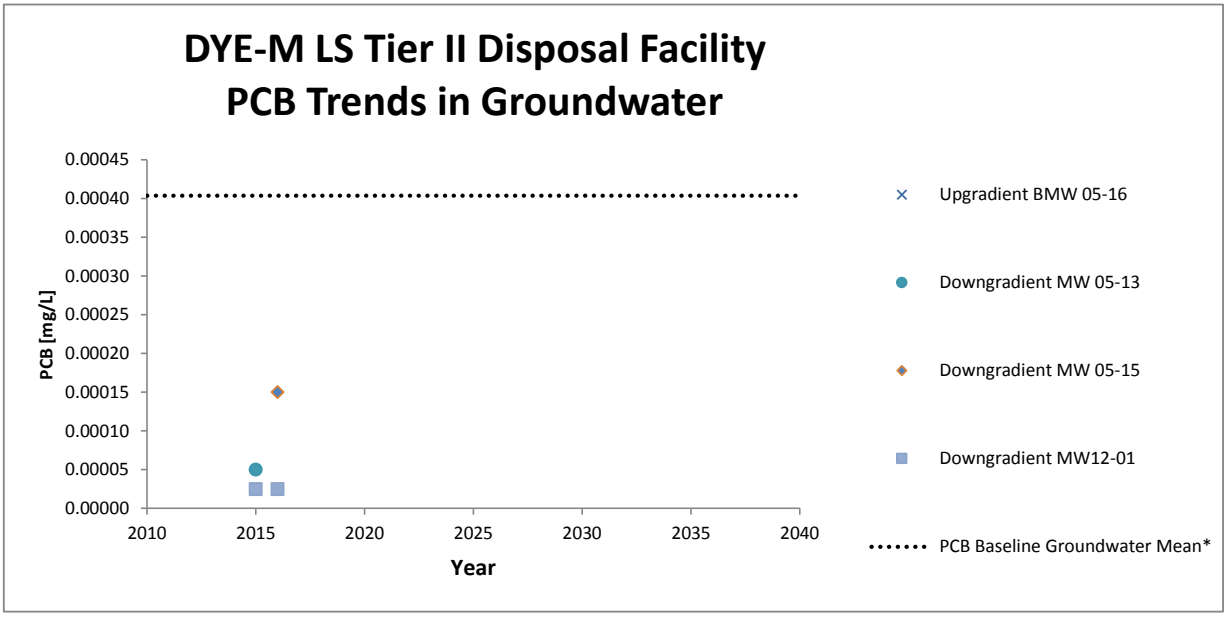


*As Baseline Mean is equal to the baseline detection limit.

DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

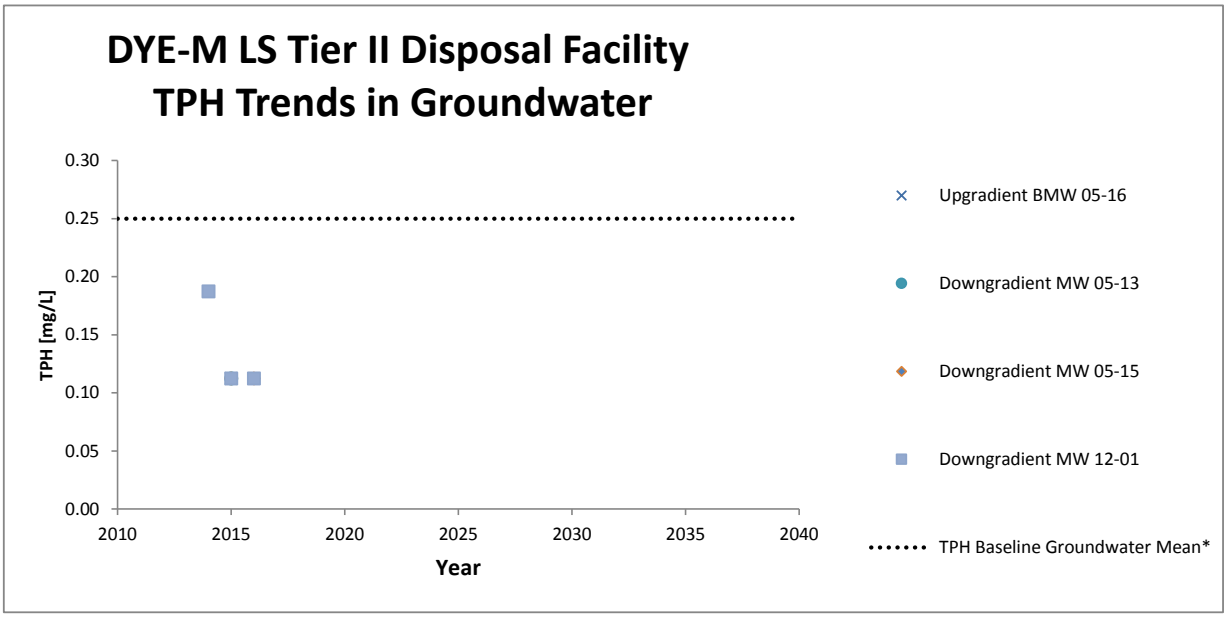


*Hg Baseline Mean is equal to the baseline detection limit.
*Hg Baseline SD = 0



*PCB Baseline Mean is equal to the baseline detection limit.
*PCB Baseline SD = 0

DYE-M LS Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



*TPH Baseline Mean is equal to the baseline detection limit.
*TPH Baseline Mean SD = 0

DYE-M LS Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						43	38	12	1.0	10	84	94	1.0	0.50	0.0002				N/A
Baseline Data - Arithmetic Mean						**27**	**35**	**10**	**1.0**	**10**	**54**	**69**	**1.1**	**0.10**	**0.05**	**10**	**16**	**36**	**59**
Baseline Data - Standard Deviation						7.5	5.0	2.1	0	5.7	27	12	0.8	0	0.11	11	73	72	116
Baseline Data Mean + 3xStandard Deviation						49	50	17	1.0	27	135	105	3.6	0.10	0.37	43	234	251	406
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2*	*5*				*2500*
Monitoring Data																			
Upgradient																			
	MW BMW 09-26 surface																		
14-8252	BMW09-26	2014	Year 1	Phase I	5-10	25	**41**	9.5	<1.0	<10	46	**75**	**1.2**	<0.010	<0.010	<10	<10	<10	15
DM MW09-26 (0-20)	BMW09-26	2015	Year 2	Phase I	0-20	24.8	34.8	9.8	<0.5	4.9	40.7	67.2	**1.4**	<0.1	<0.05	<7	<4	<8	9.5
MW09-26b	BMW09-26	2016	Year 3	Phase I	0-15	23.5	30	8.4	<0.5	5.5	34.5	59.4	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW BMW 09-26 depth																		
14-8253	BMW09-26	2014	Year 1	Phase I	45-50	21	34	8	<1.0	<10	42	63	0.9	<0.010	<0.010	<10	11	<10	21
Not sampled, refusal	BMW09-26	2015	Year 2	Phase I															#N/A
MW09-26a	BMW09-26	2016	Year 3	Phase I	40-50	21.1	27.7	7.8	<0.5	5.3	33	60.2	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

TPH Sum will appear when F1, F2 and F3 fractions are entered.

DYE-M LS Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	MW 05-09 surface																		
14-8243	MW 05-09	2014	Year 1	Phase I	5-10	**44**	**50**	**11**	<1.0	**15**	**72**	**92**	**2.4**	0.012	0.018	<10	<10	<10	15
DM MW05-09 (0-15)	MW 05-09	2015	Year 2	Phase I	0-15	**38.3**	34.4	7.6	<0.5	**12.5**	48.9	62.1	**1.4**	<0.1	<0.05	<7	<4	**52**	57.5
MW05-09a	MW 05-09	2016	Year 3	Phase I	0-15	**39.7**	33.8	8.9	<0.5	**17.2**	54.1	**72.9**	<1.0	<0.1	**0.07**	<7	<4	**59**	**64.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 05-09 depth																		
14-8244	MW 05-09	2014	Year 1	Phase I	45-50	**27**	**38**	9.4	<1.0	<10	47	**75**	**1.4**	<0.010	0.018	<10	<10	<10	15
DM MW05-09 (40-50)	MW 05-09	2015	Year 2	Phase I	40-50	**31**	32	8.7	<0.5	**23.7**	52.3	58.7	1	<0.1	**0.09**	<7	<4	**42**	47.5
Not sampled - refusal	MW 05-09	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 05-12 surface																		
14-8240/41	MW 05-12	2014	Year 1	Phase I	5-10	**44**	**47**	**12**	<1.0	**53**	**81**	**89**	**1.5**	0.013	**0.3**	<10	<10	<10	15
DM MW05-12 (0-15)	MW 05-12	2015	Year 2	Phase I	0-15	**31.3**	**40.1**	**11.2**	<0.5	6.8	50.6	**77.2**	1	<0.1	<0.05	<7	<4	<8	9.5
MW05-12a	MW 05-12	2016	Year 3	Phase I	0-15	**33.4**	**39.3**	**10.7**	<0.5	7.2	46.8	**82**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 05-12 depth																		
14-8242	MW 05-12	2014	Year 1	Phase I	35-45	**35**	**45**	**11**	<1.0	**13**	**71**	**84**	**3.2**	<0.010	**0.12**	<10	<10	<10	15
DM MW05-12 (40-50)	MW 05-12	2015	Year 2	Phase I		**30.8**	**39.6**	**10.8**	<0.5	8	51.3	**75**	**1.2**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	MW 05-12	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 09-27 surface																		
14-8248	MW 09-27	2014	Year 1	Phase I	5-10	**34**	**45**	**11**	<1.0	<10	**60**	**82**	**2**	<0.010	0.04	<10	<10	<10	15
DM MW09-27 (0-15)	MW 09-27	2015	Year 2	Phase I	0-15	**28.9**	34.3	9.3	<0.5	7.5	43.2	65.6	**2**	<0.1	<0.05	<7	<4	<8	9.5
MW09-27b	MW 09-27	2016	Year 3	Phase I	0-15	**45.3**	**39.2**	9.7	<0.5	**11.4**	51.3	**81.9**	<1.0	<0.1	<0.05	<7	<4	25	30.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 09-27 depth																		
14-8250/51	MW 09-27	2014	Year 1	Phase I	45-50	20	31	7	<1.0	<10	35	54	0.7	<0.010	<0.010	<10	<10	<10	15
DM MW09-27 (30-40)	MW 09-27	2015	Year 2	Phase I	30-40	**27.1**	32.9	9.1	<0.5	6.1	40.4	63.6	**1.4**	<0.1	<0.05	<7	<4	30	35.5
MW09-27a	MW 09-27	2016	Year 3	Phase I	40-50	**32.4**	34.9	9.7	<0.5	9.8	44.6	**75.6**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 09-28 surface																		
14-8245	MW 09-28	2014	Year 1	Phase I	5-10	**43**	**43**	**11**	<1.0	**14**	**64**	**86**	**1.6**	0.015	**0.16**	<10	<10	<10	15
MW09-28 (0-15)	MW 09-28	2015	Year 2	Phase I	0-15	**36.9**	**38.6**	**10.9**	<0.5	**14.7**	54.4	**76**	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
MW09-28a	MW 09-28	2016	Year 3	Phase I	0-15	**44.1**	**37.8**	**11**	<0.5	**16.9**	**56.6**	**89.9**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 09-28 depth																		
14-8247	MW 09-28	2014	Year 1	Phase I	45-50	**42**	**42**	10	<1.0	**15**	**64**	**81**	**2.1**	0.013	0.032	<10	<10	<10	15
DM MW09-28 (40-50)	MW 09-28	2015	Year 2	Phase I	40-50	**33.6**	32.8	9.5	<0.5	**11.8**	48.3	**69.4**	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	MW 09-28	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M LS Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
00-24957		2000	0	27	42	13	<1.0	<10	52	84	<1.0		<0.1						
00-24958	24957	2000	40	29	42	13	<1.0	<10	53	82	<1.0		<0.1						
07-30832	BMW 05-11	2007	0-10	16	29	9.7	<1.0	<10	37	58	<1.0	<0.10	<0.0030	14			<10	4.8	<9.0
07-30834	BMW 05-11	2007	25-35	20	34	12	<1.0	<10	44	67	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-9766	BMW 05-11	2008	0-10	16	29	8.8	<1.0	<10	35	53	<1.0	<0.10	0.004	29			<10	<4.0	22
08-9768/69	BMW 05-11	2008	30-40	20	32	9.6	<1.0	<10	38	55	<1.0	<0.10	<0.0030	19			<10	<4.0	12
11-13058	BMW09-26	2011	0-10	21	36	13	<1.0	<10	42	61	<1.0	<0.10	<0.050	24			<10	14	<9.0
11-13060/61	BMW09-26	2011	30-40	22	40	13	<1.0	<10	43	67	3.2	<0.10	<0.050	28			<10	18	<9.0
12-44858	BMW09-26	2012	0-10	24	37	9	<1.0	<10	43	66	1.7	<0.10	<0.050	18			<10	8.2	<9.0
12-44860	BMW09-26	2012	20-30	30	42	11	<1.0	<10	51	79	1.8	<0.10	<0.050	23			<10	7.8	9.7
13-25184/85	BMW09-26	2013	0-10	29	35	10	<1.0	<10	48	75	2.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25186	BMW09-26	2013	25-35	32	35	11	<1.0	<10	50	80	2.1	<0.10	<0.050	12			<10	<4.0	<9.0
Downgradient:																			
07-30840/41	MW 05-09	2007	0-10	22	32	10	<1.0	14	47	55	<1.0	<0.10	0.2	37			<10	4.6	27
07-30842	MW 05-09	2007	25-35	25	32	11	<1.0	15	65	59	<1.0	<0.10	0.2	56			<10	4.9	46
07-30836	MW 05-10	2007	0-10	29	41	14	<1.0	<10	51	78	<1.0	<0.10	0.0043	14			<10	4.1	<9.0
07-30838	MW 05-10	2007	25-35	27	39	14	<1.0	<10	49	77	<1.0	<0.10	<0.0030	219			<10	14	200
07-30844	MW 05-12	2007	0-10	20	34	12	<1.0	<10	41	69	<1.0	<0.10	0.003	12			<10	<4.0	<9.0
07-30846	MW 05-12	2007	25-35	18	31	11	<1.0	<10	39	61	<1.0	<0.10	<0.0030	15			<10	5.1	<9.0
08-9774	MW 05-09	2008	0-10	32	42	10	<1.0	14	58	61	<1.0	<0.10	0.18	56			<10	<4.0	49
08-9776/77	MW 05-09	2008	30-40	20	28	9.3	<1.0	<10	41	49	<1.0	<0.10	0.017	64			<10	<4.0	57
08-9770	MW 05-10	2008	0-10	24	33	9.8	<1.0	19	44	59	<1.0	<0.10	<0.0030	117			<10	<4.0	110
08-9772	MW 05-10	2008	30-40	25	34	10	<1.0	<10	42	64	<1.0	<0.10	<0.0030	36			<10	<4.0	29
08-9778	MW 05-12	2008	0-10	36	41	13	<1.0	26	73	79	<1.0	<0.10	0.08	77			<10	<4.0	70
08-9780	MW 05-12	2008	30-40	17	29	9.7	<1.0	<10	38	57	<1.0	<0.10	0.0057	25			<10	<4.0	18
09-21504	MW 05-09	2009	0-10	27	37	12	<1.0	13	61	79	<1.0	<0.10	0.032	455			20	4.7	430
09-21506/07	MW 05-09	2009	30-40	24	30	9.2	<1.0	16	49	55	<1.0	<0.10	0.44	678			81	520	77
09-21500	MW 05-12	2009	0-10	30	37	11	<1.0	23	72	75	<1.0	<0.10	0.56	220			<10	4.7	210
09-21502	MW 05-12	2009	30-40	23	36	11	<1.0	<10	210	67	<1.0	<0.10	0.021	115			15	13	87
11-13042	MW05-09	2011	0-10	32	32	11	<1.0	16	59	72	1.6	<0.10	0.05	12			<10	<4.0	<9.0
11-13044	MW05-09	2011	30-40	24	31	12	<1.0	10	50	65	<1.0	<0.10	0.15	14			<10	4.4	<9.0
11-13046	MW05-12	2011	0-10	29	36	13	<1.0	15	57	71	<1.0	<0.10	0.19	39			<10	6.3	28
11-13048	MW05-12	2011	30-40	24	33	11	<1.0	<10	43	67	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-13054	MW09-27	2011	0-10	12	19	6.8	<1.0	<10	25	36	<1.0	<0.10	<0.050	27			<10	5.8	16
11-13056	MW09-27	2011	30-40	22	28	10	<1.0	<10	39	51	<1.0	<0.10	<0.050	46			<10	7.4	34
11-13050/51	MW09-28	2011	0-10	36	39	14	<1.0	16	62	77	1.4	<0.10	0.09	42			<10	16	21
11-13052	MW09-28	2011	30-40	26	38	13	<1.0	<10	47	69	<1.0	<0.10	<0.050	15			<10	5.7	<9.0
12-44850	MW09-09	2012	0-10	25	30	9.2	<1.0	12	130	56	1.4	<0.10	<0.05	23			<10	6.1	12
12-44852/53	MW09-09	2012	20-30	26	36	9.7	<1.0	12	75	67	1.6	<0.10	0.26	14			<10	4.9	<9.0
12-44854	MW05-12	2012	0-10	33	44	11	<1.0	11	60	85	1.5	<0.10	0.08	24			<10	10	9.4
12-44856	MW05-12	2012	20-30	21	32	8.2	<1.0	<10	46	60	1.1	<0.10	0.06	16			<10	6.9	<9.0
12-44862	MW09-27	2012	0-10	20	27	6.8	<1.0	<10	33	63	1.3	<0.10	<0.050	23			<10	5	13
12-44864/65	MW09-27	2012	20-30	24	35	9	<1.0	<10	41	69	1.5	<0.10	<0.050	19			<10	9.8	<9.0
12-44866	MW09-28	2012	0-10	39	39	10	<1.0	20	63	80	2.3	<0.10	<0.050	22			<10	7	9.6
12-44868	MW09-28	2012	20-30	33	44	11	<1.0	<10	55	86	1.8	<0.10	<0.050	17			<10	7.9	<9.0
13-25196	MW 05-09	2013	0-10	27	31	8.5	<1.0	11	50	63	2.2	<0.10	<0.050	25			<10	4.3	16
13-25198	MW 05-09	2013	25-35	26	32	7.8	<1.0	16	52	64	2.0	<0.10	0.22	50			<10	6	39
13-25200/01	MW 05-12	2013	0-10	35	39	11	<1.0	<10	57	89	2.0	<0.10	<0.050	12			<10	<4.0	<9.0
13-25202	MW 05-12	2013	25-35	27	38	9.3	<1.0	<10	51	79	2.0	<0.10	<0.050	34			<10	<4.0	27
13-25188	MW 09-27	2013	0-10	47	39	9.1	<1.0	11	62	98	3.4	<0.10	<0.050	21			<10	4.7	11
13-25190	MW 09-27	2013	25-35	32	35	9.6	<1.0	13	49	77	1.8	<0.10	<0.050	21			<10	4.7	11
13-25192	MW 09-28	2013	0-10	55	38	11	<1.0	19	69	92	2.9	<0.10	0.07	15			<10	5.2	<9.0
13-25194	MW 09-28	2013	25-35	28	34	8.9	<1.0	<10	42	71	1.7	<0.10	<0.050	21			<10	4.3	12
	N value			52	52	52	52	52	52	52	52	50	52	50			50	50	50

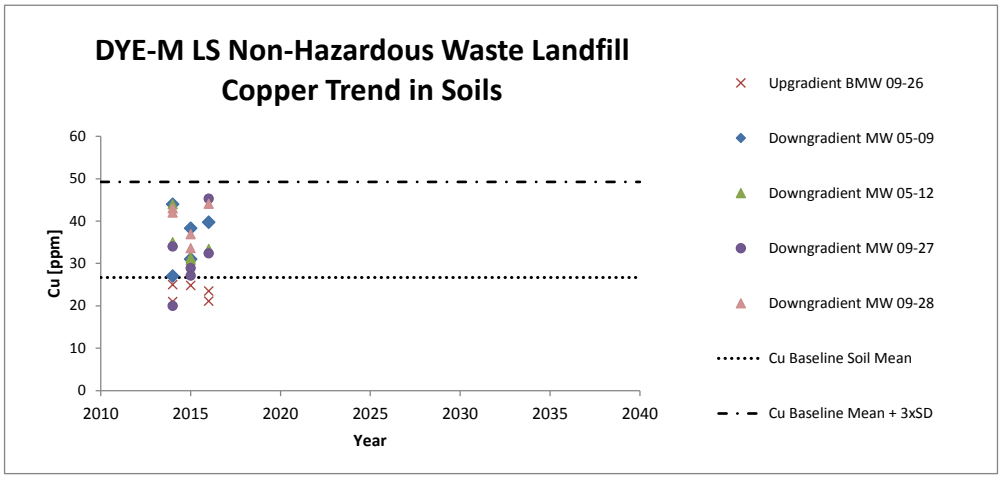
DYE-M LS Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

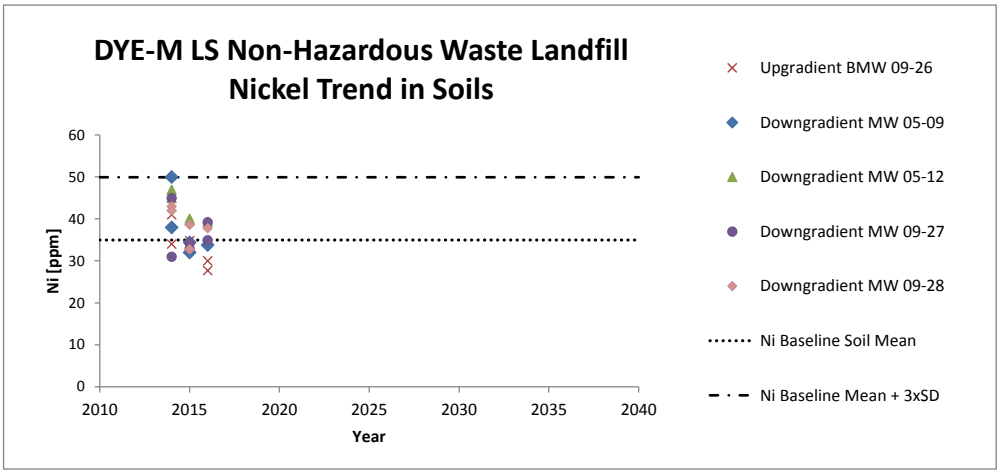
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.1	0.050	10			10	4	9
	Arithmetic Mean			27	35	10	0.5	9.2	54	69	1.1	0.05	0.067	59			7	16	36
	Arithmetic Mean Corrected for Detection Limits			27	35	10	1.0	10	54	69	1.1	0.1	0.05	59			10	16	36
	Standard Deviation			7.5	5.0	2.1	0.0	6	27	12	0.81	0.000	0.108	116			11	73	72
	Minimum			12	19	2.5	0.50	5.0	25	36	0.500	0.050	0.0015	12			15	4	9
	Maximum			55	44	14	0.50	26	210	98	3.4	0.05	0.56	678			81	520	430
	95% Confidence Limit			2.0	1.4	0.6		1.6	7.3	3.3	0.22	0.000	0.029	32			3	20	20
Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004						
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024						
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002						
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002						
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0								
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0								
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0								
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0								
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0								
00-25526	West of glacier - background	2000		93	36	13	1.5	37	113	136	<1.0								
00-25527	West of glacier - background	2000		74	29	13	1.3	13	145	151	<1.0								
00-25528	West of glacier - background	2000		77	28	14	1.8	10	213	177	<1.0								
	N value			14	14	14	14	14	14	14	14	6	6						
	Background Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	1.0	0.0002						
	Arithmetic Mean			43	38	12	0.72	9.9	84	94	0.58	0.25	0.0047						
	Arithmetic Mean Corrected for Detection Limits			43	38	12	1.0	10	84	94	1.0	0.5	0.0002						
	Standard Deviation			30	19	5.1	0.5	9.1	53	55.0	0.53	0.00	0.01						
	Minimum			7.8	18	2.5	1	5.0	28	10	0.15	0.25	0.000						
	Maximum			93	89	23	2	37	213	177	2.4	0.3	0.02						
	95% Confidence Limit			16	10						0.28		0.01						

DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

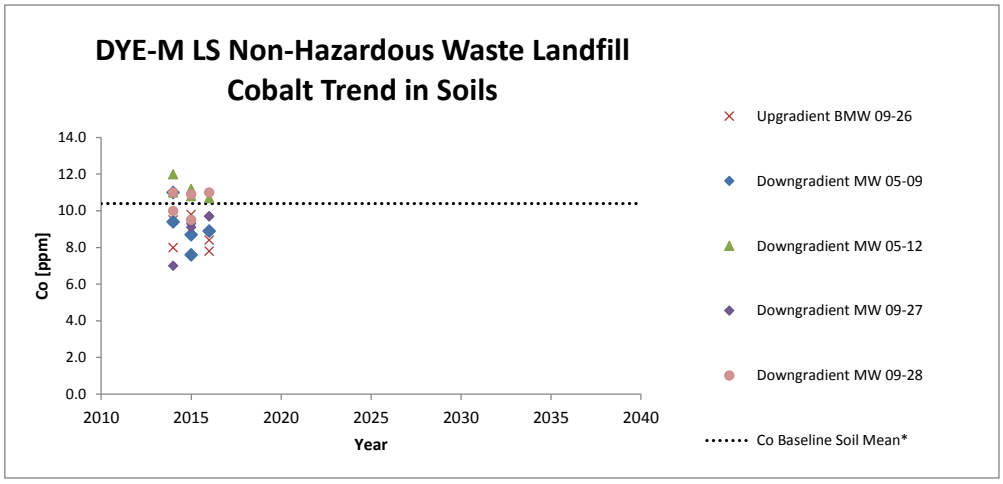




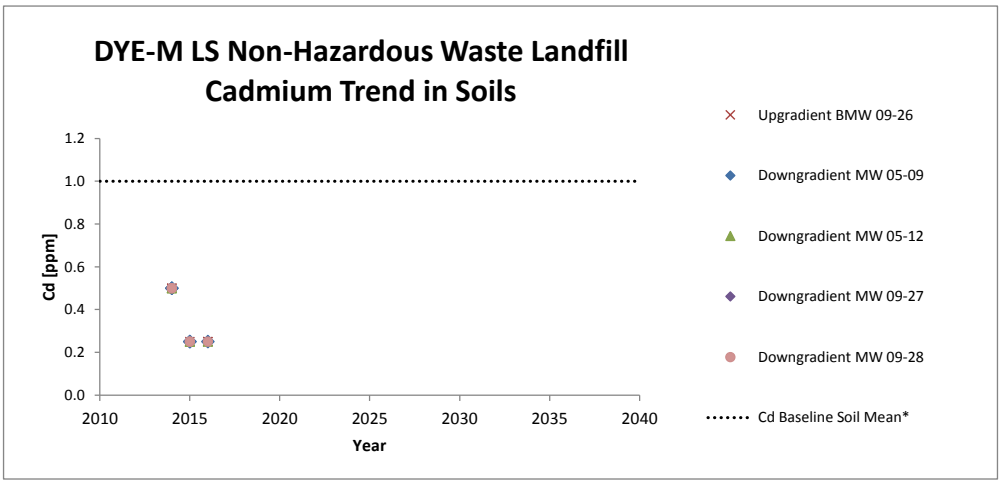
DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*Co Baseline Arithmetic Mean is equal to the baseline detection limit.
*Co Baseline SD = 0

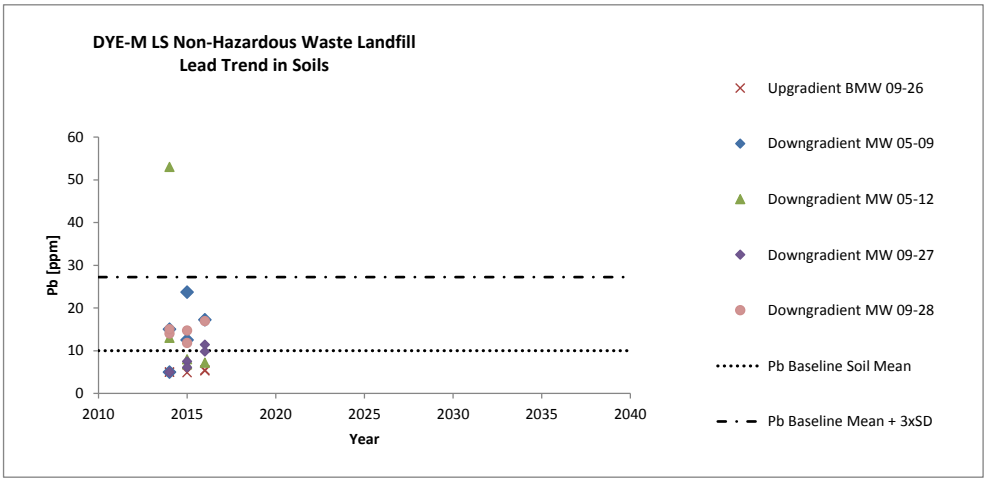


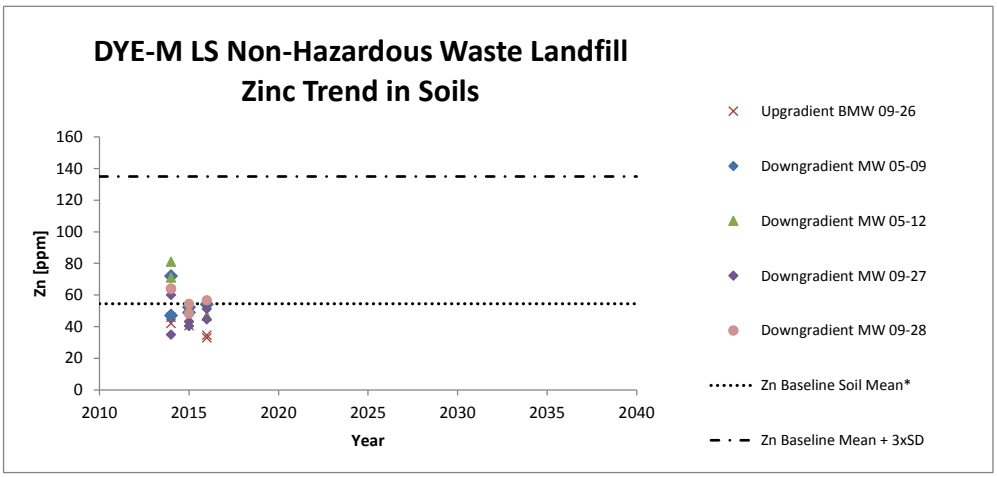
*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
*Cd Baseline SD = 0

DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

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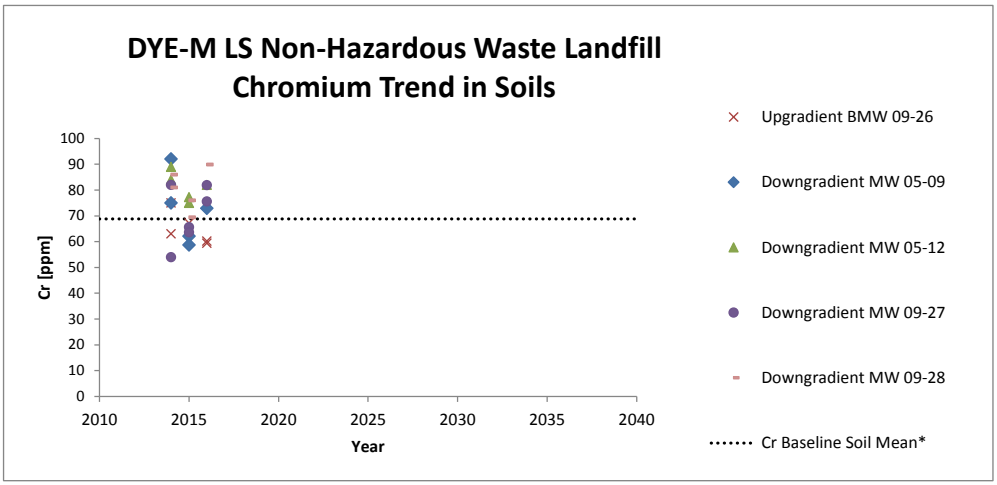


*Zn Baseline Arithmetic Mean is equal to the baseline detection limit.

DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

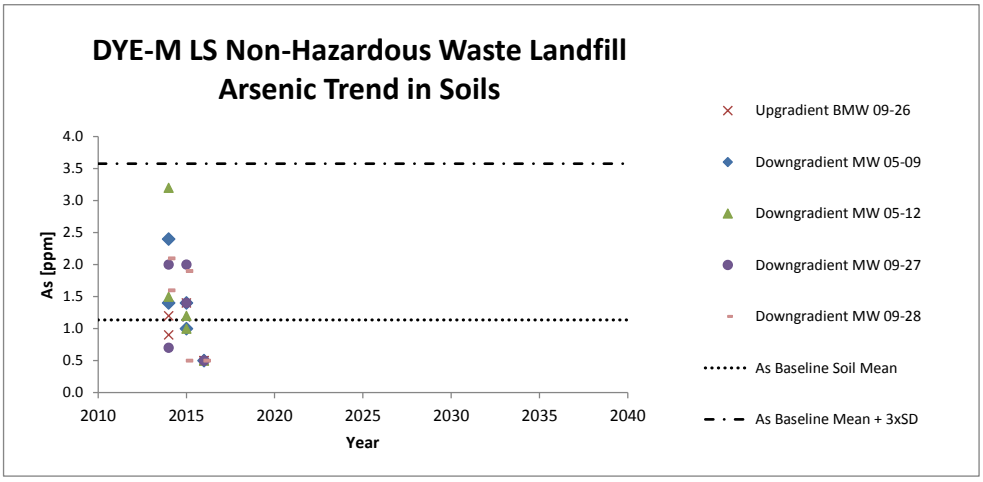
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*Cr Baseline Arithmetic Mean is equal to the baseline detection limit.

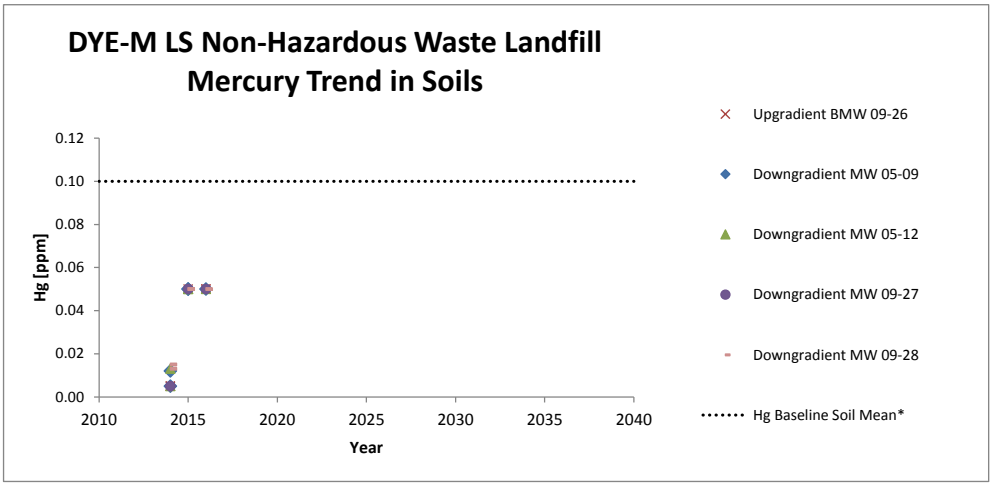
*Cr Baseline Mean + 3xSD = 0



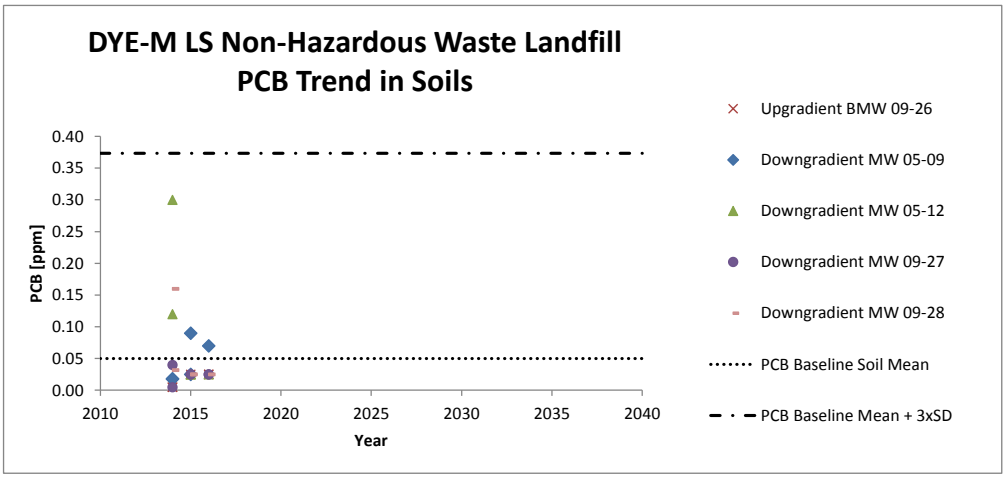
DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

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Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



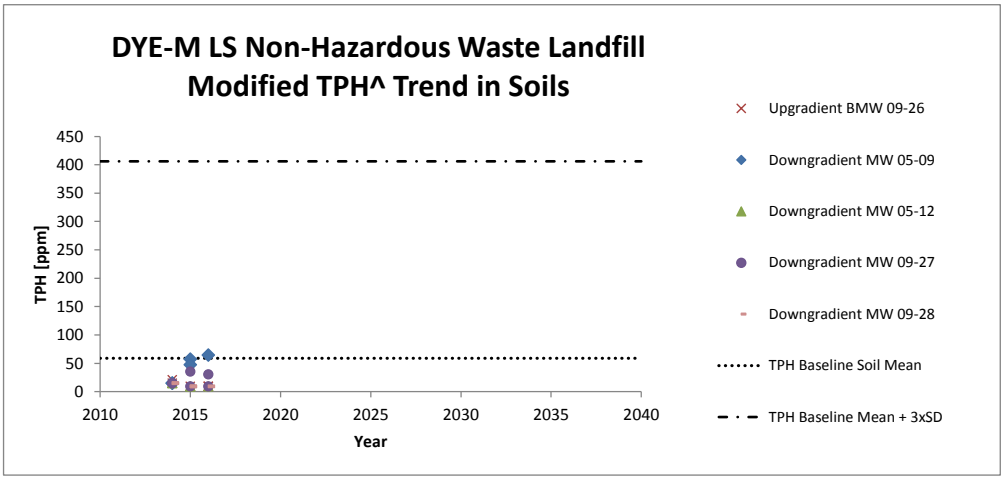
*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



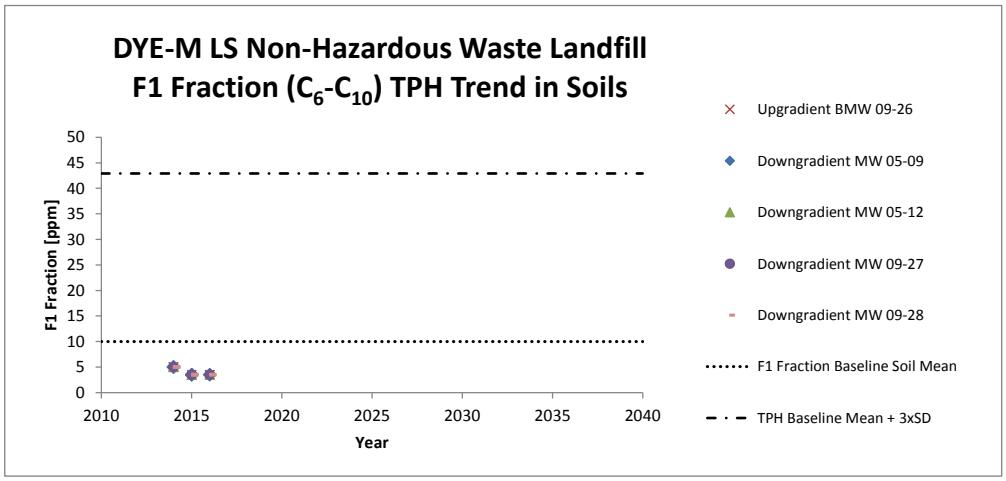
DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

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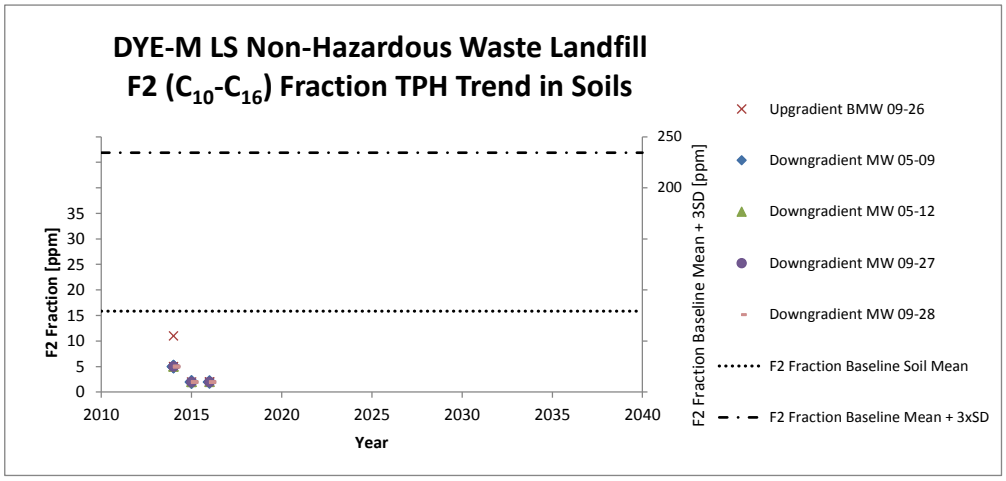
^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

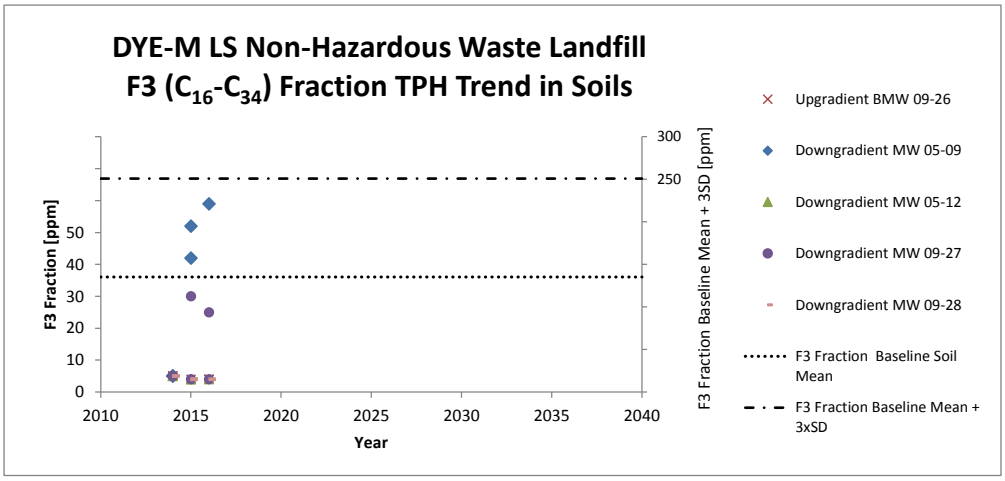


DYE-M LS Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





DYE-M LS Non-Hazardous Waste Landfill - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Baseline Data																		
Upgradient:																		
07-30666	BMW 05-11	2007			0.010	0.08	<0.0030	<0.0010	<0.010	0.66	0.12	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9735	BMW 05-11	2008			0.023	0.21	0.004	<0.0010	<0.010	0.39	0.37	<0.0030	<0.00040	0.001100	<0.050	<0.50	<1.0	0.8
11-12194	BMW09-26	2011			0.007	<0.0050	<0.0030	<0.0010	<0.010	3.2	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34993	BMW09-26	2012			0.016	0.0160	<0.0030	<0.0010	<0.0050	11	0.24	0.002	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29582	BMW09-26	2013			0.010	0.0805	<0.0030	<0.0010	<0.0050	3.9	0.10	0.001	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
Downgradient:																		
07-30668	MW 05-09	2007			0.026	0.14	0.005	<0.0010	0.021	2.9	0.22	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
07-30667	MW 05-10	2007			0.012	0.14	<0.0030	<0.0010	<0.010	0.05	0.30	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
07-30669	MW 05-12	2007			0.016	0.057	0.0039	<0.0010	<0.010	2.0	0.088	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9738	MW 05-09	2008			0.012	0.089	<0.0030	<0.0010	<0.010	1.6	0.16	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9736/37	MW 05-10	2008			0.031	0.140	0.005	<0.0010	<0.010	0.1	0.26	<0.0030	<0.00040	0.000430	<0.050	<0.50	<1.0	0.8
09-21641	MW 05-09	2009			0.039	0.056	0.010	<0.0010	0.048	1.0	0.10	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12188	MW05-09	2011			<0.0050	0.042	<0.0030	<0.0010	<0.010	15	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12193	MW05-12	2011			<0.0050	0.007	<0.0030	<0.0010	<0.010	6.4	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12210/11	MW09-27	2011			<0.0050	<0.0050	<0.0030	<0.0010	<0.010	0.5	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12206	MW09-28	2011			0.024	0.007	<0.0030	<0.0010	<0.010	1.1	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34989	MW05-09	2012			<0.0050	0.0140	<0.0030	<0.0010	<0.0050	7.2	0.086	0.001	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34988	MW05-12	2012			<0.0050	0.006	<0.0030	<0.0010	<0.0050	8.5	0.18	0.003	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34991/92	MW09-27	2012			<0.0050	0.0240	<0.0030	<0.0010	<0.0050	1.1	0.45	0.0080	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34990	MW09-28	2012			<0.0050	0.034	<0.0030	<0.0010	<0.0050	0.53	0.42	0.0050	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29584	MW05-09	2013			<0.0050	0.042	<0.0030	<0.0010	<0.0050	23	0.032	0.0014	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29580/81	MW09-27	2013			<0.0050	0.026	<0.0030	<0.0010	<0.0050	1.8	0.210	0.004	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29583	MW09-28	2013			0.008	0.0299	<0.0030	<0.0010	<0.0050	0.55	0.11	0.0015	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
		N value			22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Arithmetic Mean				**0.021**	**0.11**	**0.004**	**0.001**	**0.012**	**4.2**	**0.20**	**0.002**	**0.0002**	**0.0007**	**0.025**	**0.25**	**0.50**	**0.25**
Arithmetic Mean Corrected for Detection Limits					**0.021**	**0.11**	**0.003**	**0.001**	**0.010**	**4.2**	**0.20**	**0.003**	**0.0004**	**0.003**	**0.050**	**0.5**	**1.0**	**1.00**
	Standard Deviation				0.010	0.053	0.0	0.0	0.0	5.7	0.12	0.0016	0.0	0.0	0.0	0.0	0.0	0.0
Arithmetic Mean + 3xStandard Deviation					0.052	0.27	0.012	0.001	0.057	21	0.57	0.008	0.0004	0.005	0.050	0.50	1.00	1.00
	Detection Limit				0.005	0.005	0.003	0.001	0.010	0.010	0.005	0.003	0.0004	0.003	0.050	0.5	1.0	1.0

DYE-M LS Non-Hazardous Waste Landfill - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Monitoring Data																		**Modified TPH TOTAL will appear when F1, F2, F3 fraction results are entered.**
Upgradient - BMW- 09-26																		
14-8188	BMW09-26	2014	Year 1	Phase I	0.0029	0.096	0.001	0.00024	<0.00050	0.55	<0.00050	<0.0010	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.19
Not sampled - dry	BMW09-26	2015	Year 2	Phase I														#N/A
MW09-26	BMW09-26	2016	Year 3	Phase I	0.0027	**0.184**	0.0029	0.0002	<0.0001	**4.69**	0.01	<0.001	<0.0001		<0.025	<0.100	<0.100	0.1
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 05-09																		
Not sampled - dry	MW 05-09	2014	Year 1	Phase I														#N/A
Not sampled - dry	MW 05-09	2015	Year 2	Phase I														#N/A
Not sampled - dry	MW 05-09	2016	Year 3	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

DYE-M LS Non-Hazardous Waste Landfill - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Downgradient - MW 05-12																		
Not sampled - dry	MW 05-12	2014	Year 1	Phase I														#N/A
Not sampled - dry	MW 05-12	2015	Year 2	Phase I														#N/A
Not sampled - dry	MW 05-12	2016	Year 3	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 09-27																		
14-8186	MW09-27	2014	Year 1	Phase I	<0.0010	0.023	0.00034	<0.000090	<0.00050	0.0045	<0.00050	<0.0010	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.2
14-8187ǂ	MW09-27	2014	Year 1	Phase I	**0.086**	**0.180**	**0.013**	<0.0010	0.005	0.47	**1.8**	0.003	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
Not sampled - dry	MW09-27	2015	Year 2	Phase I														#N/A
MW09-27	MW09-27	2016	Year 3	Phase I	0.0044	0.021	<0.0005	<0.0001	<0.0001	0.528	0.005	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	0.1
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 09-28																		
Not sampled - dry	MW 09-28	2014	Year 1	Phase I														#N/A
MW09-28	MW 09-28	2015	Year 2	Phase I	**0.0292**	0.024	0.0009	<0.0001	0.003	1.34	0.015	<0.001	<0.0001		<0.025			#N/A
Not sampled - dry	MW 09-28	2016	Year 3	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

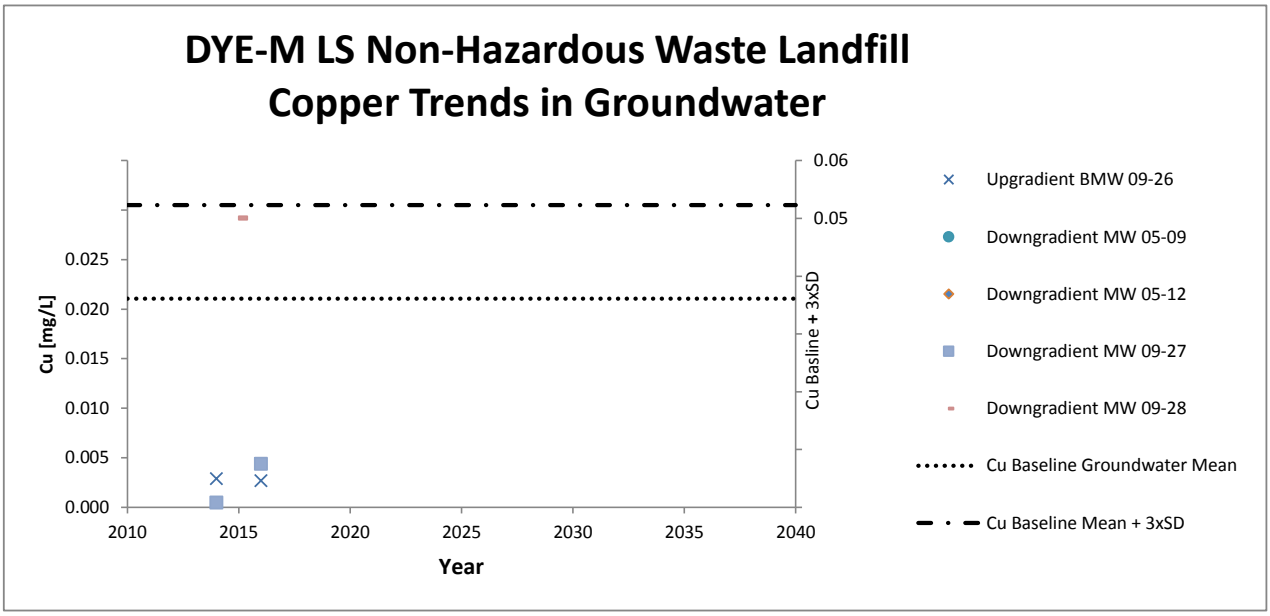
ǂ sample analyzed for total metals as an interlab sample

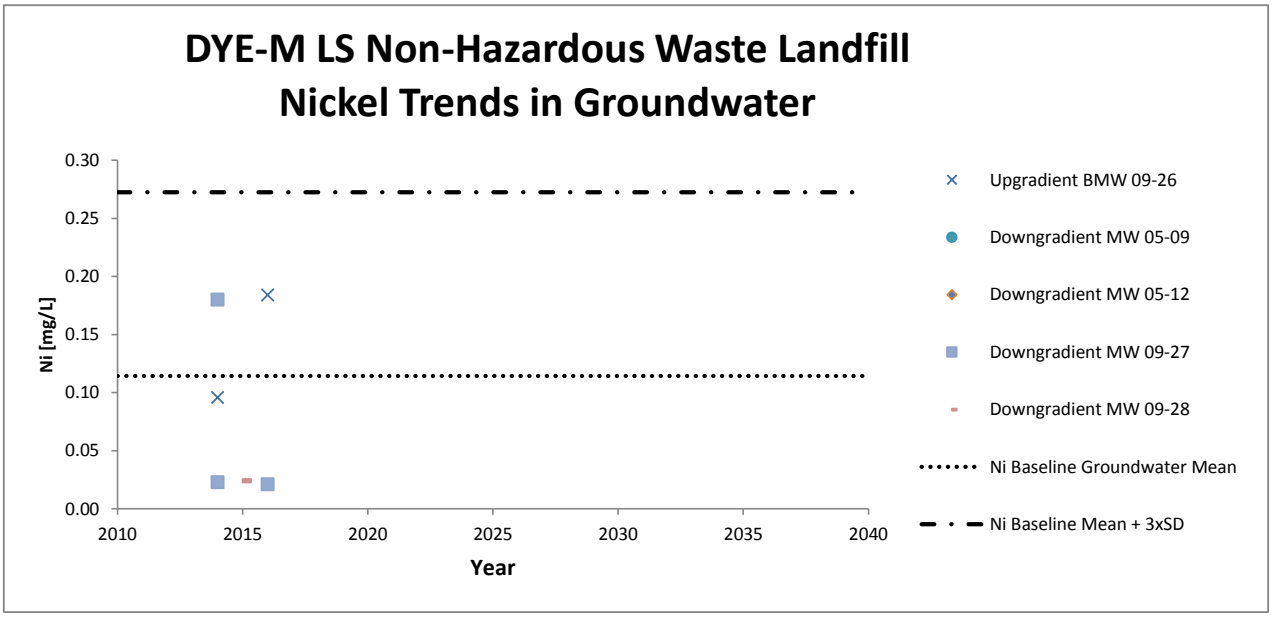
blue highlight indicates dissolved metal results. No highlight indicates total metals.

Dissolved metal results have not been included in the Baseline Arithmetic Mean

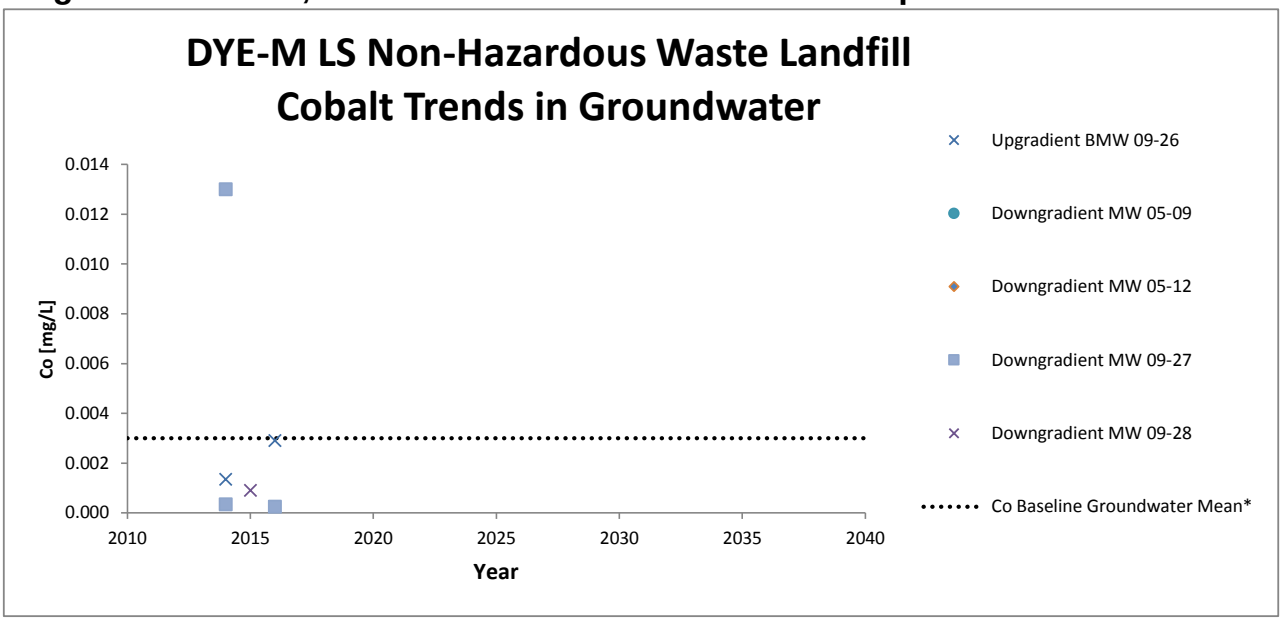
DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

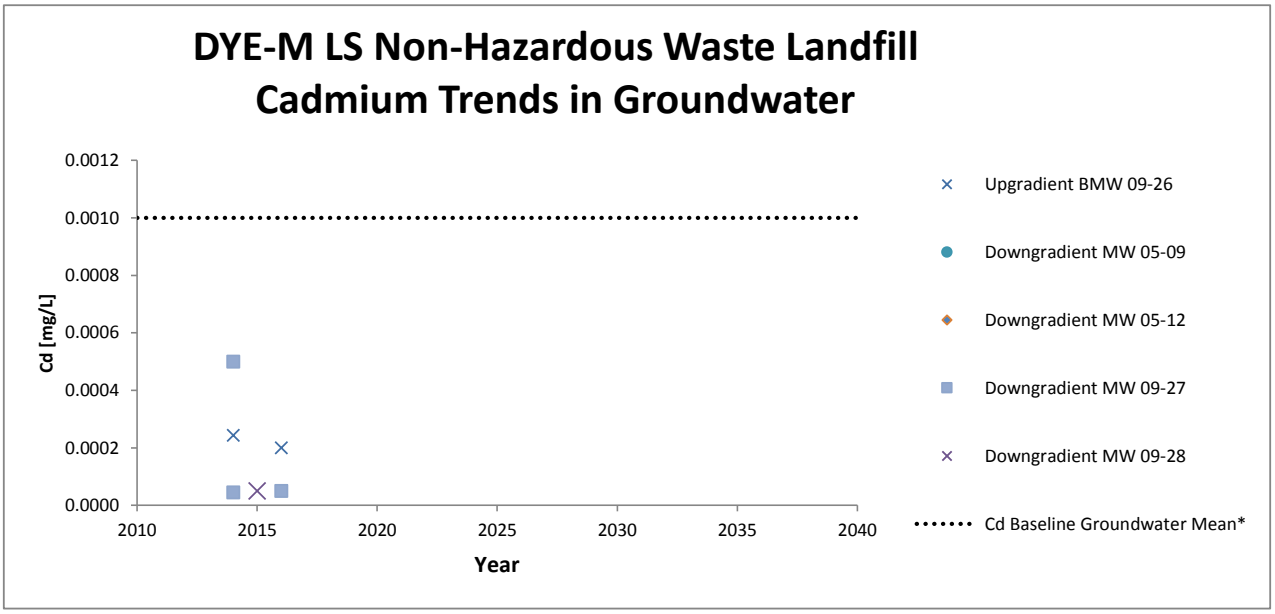




DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

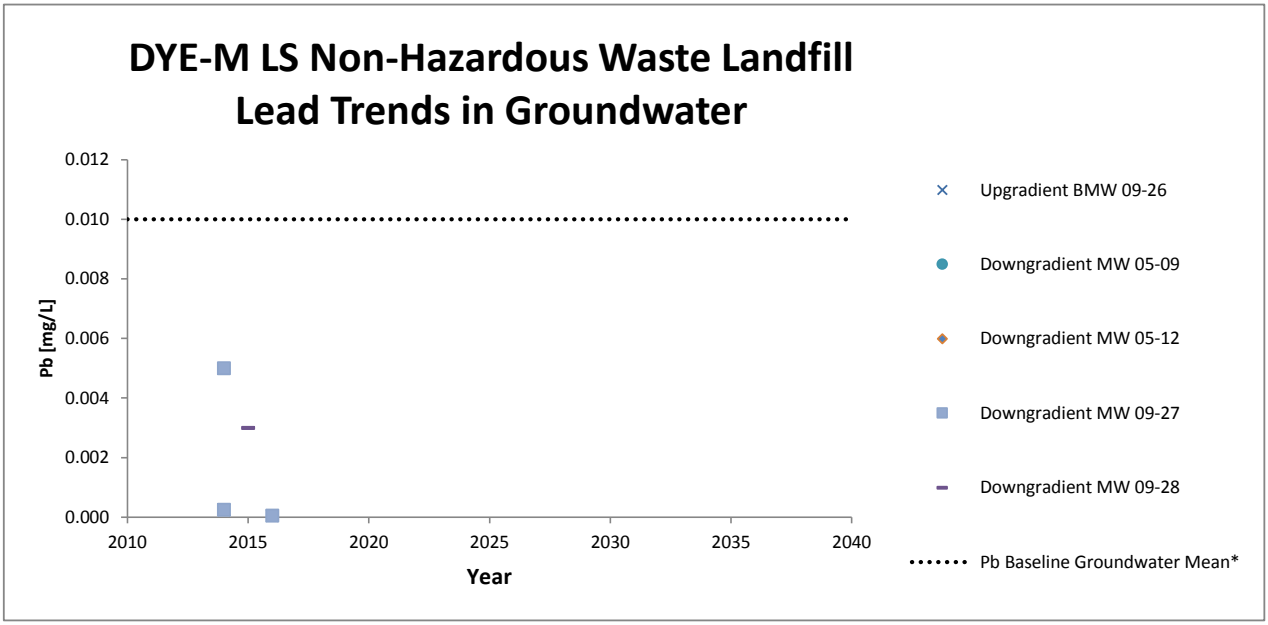


*Co Baseline Mean is equal to the baseline detection limit.
*Co SD = 0

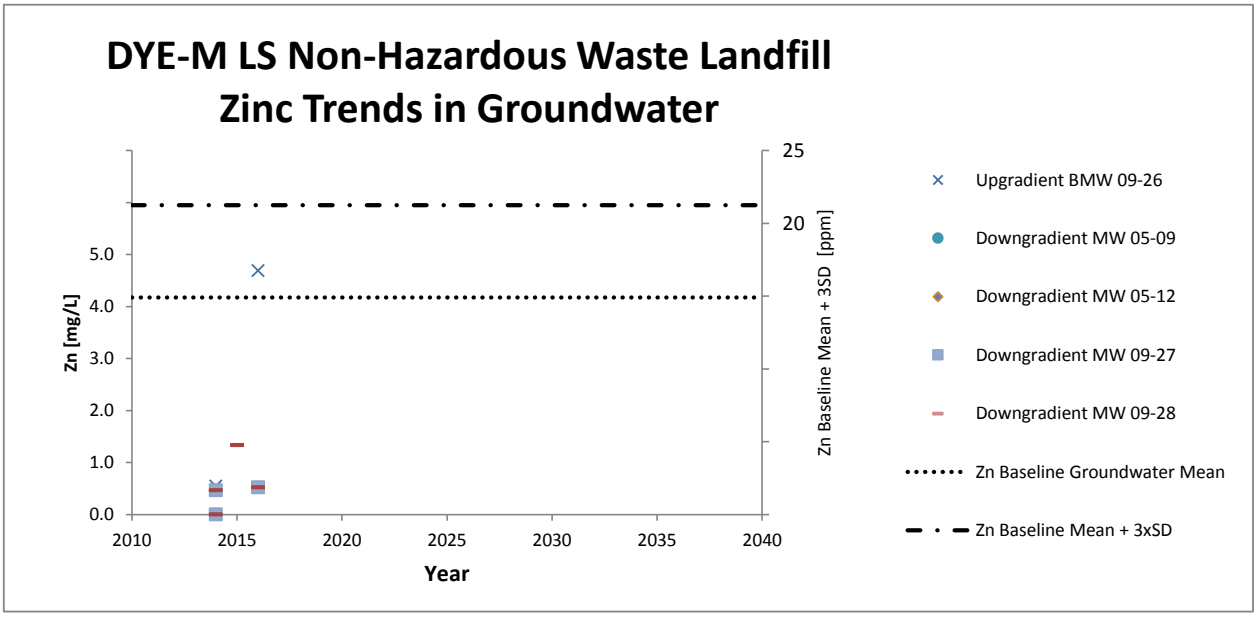


*Cd Baseline Mean is equal to the baseline detection limit.
*Cd Baseline Mean SD = 0

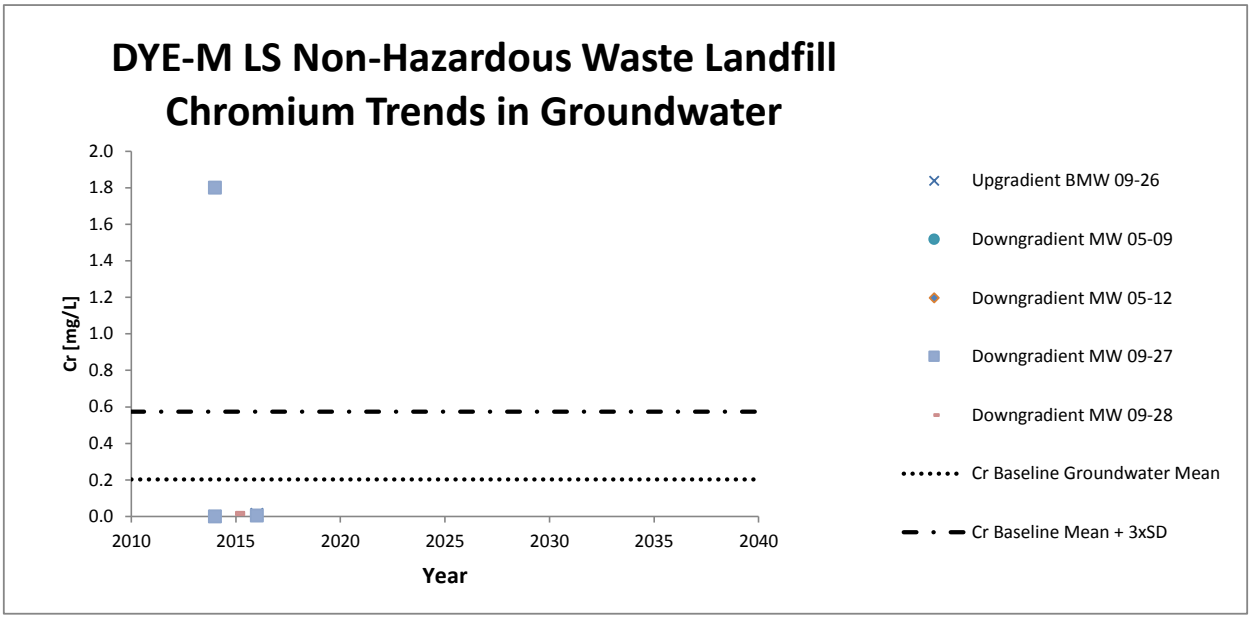
DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

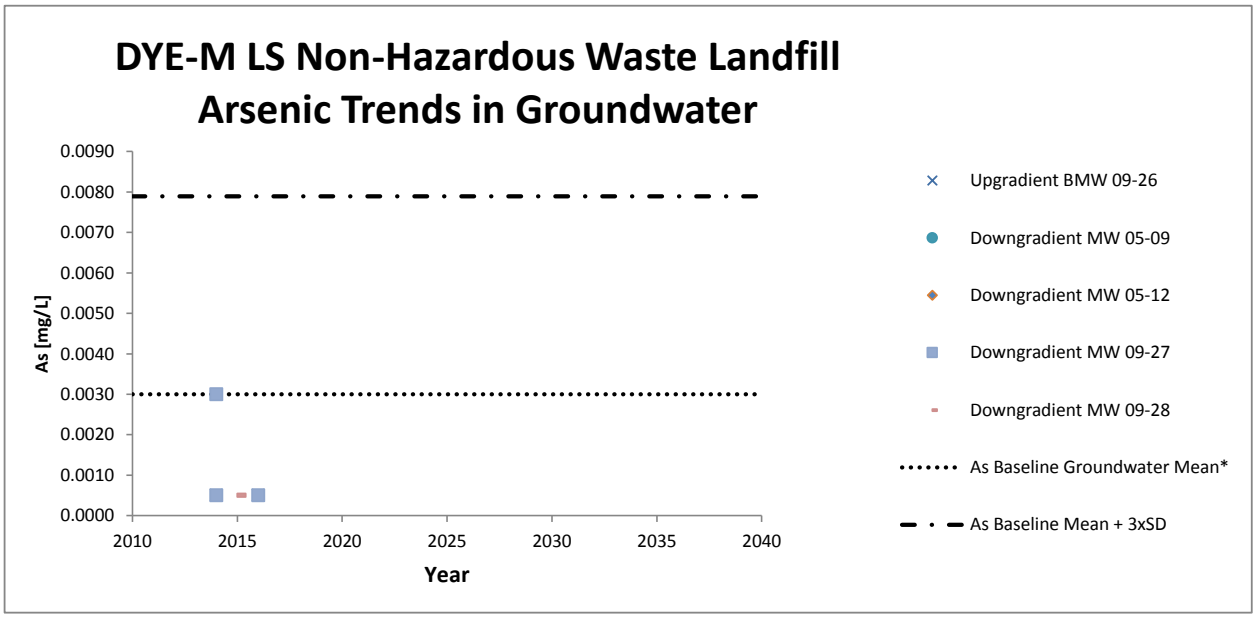


*Pb Baseline Mean is equal to the baseline detection limit.
*Pb Baseline SD=0



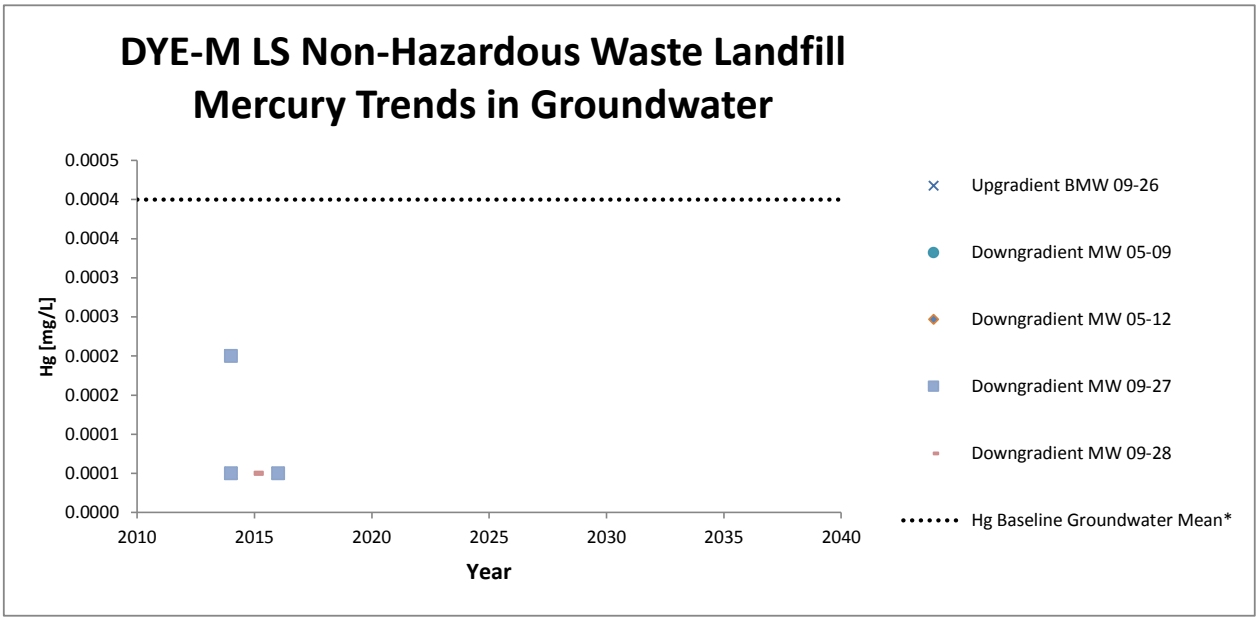
DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



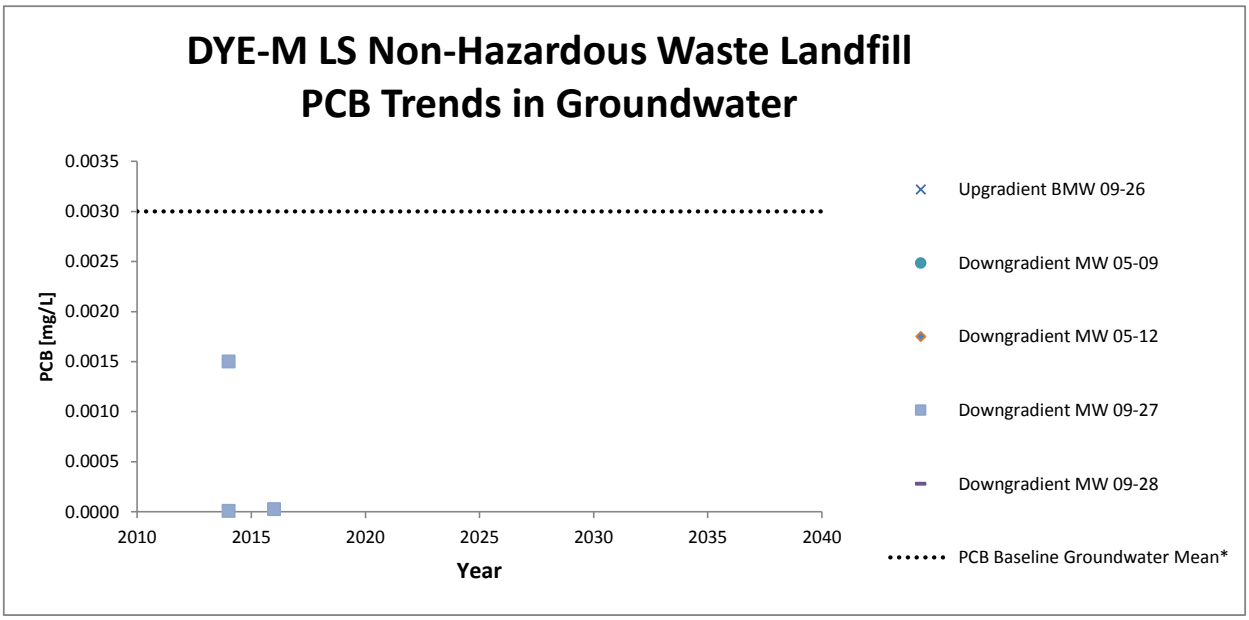


*As Baseline Mean is equal to the baseline detection limit.

DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

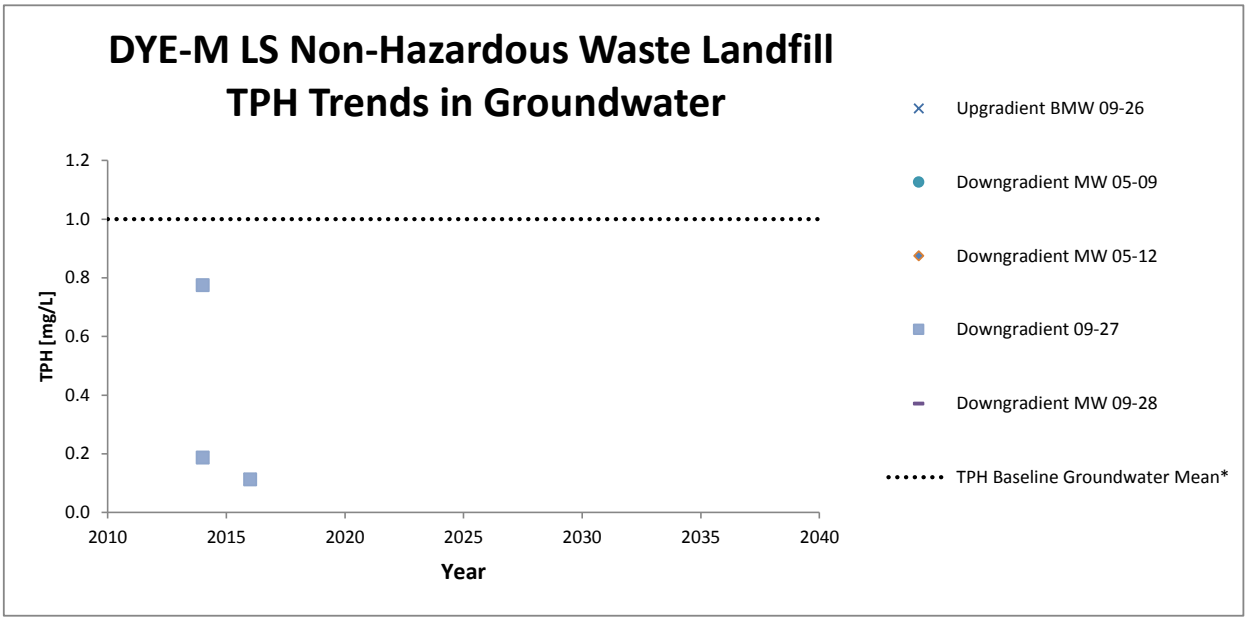


*Hg Baseline Mean is equal to the baseline detection limit.
*Hg Baseline SD = 0



*PCB Baseline Mean is equal to the baseline detection limit.
*PCB Baseline SD = 0

DYE-M LS Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



*TPH Baseline Mean is equal to the baseline detection limit.
*TPH Baseline Mean SD = 0

DYE-M LS Powerhouse Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						43	38	12	1.0	10	84	94	1.0	0.50	0.005				N/A
Baseline Data - Arithmetic Mean						**27**	**34**	**10**	**1.0**	**10**	**55**	**64**	**1.2**	**0.10**	**0.17**	**10**	**32**	**44**	**194**
Baseline Data - Standard Deviation						9	9	2.8	0.0	3.5	26	13	0.80	0.000	0.20	2.6	90	37	372
Baseline Data Mean + 3xStandard Deviation						55	62	19	1.0	20	132	104	3.6	0.10	0.78	18	302	156	1311
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			
TPH Sum will appear when F1, F2 and F3 fractions are entered.																			
Upgradient																			
	BMW 05-08 surface																		
14-8475	BMW 05-08	2014	Year 1	Phase I	5-10	24	31	7.8	<1.0	<10	48	56	1.2	0.011	**0.46**	<10	<10	21	31
MW05-08 (0-15)	BMW 05-08	2015	Year 2	Phase I	0-15	**32.9**	**34.5**	9.3	<0.5	**17**	53.9	**68.2**	**1.8**	<0.1	**0.24**	<7	<4	**109**	114.5
MW05-08a	BMW 05-08	2016	Year 3	Phase I	0-15	24.7	27.9	7.9	<0.5	9.2	34.8	49.3	<1.0	<0.1	0.06	<7	<4	**100**	105.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	BMW 05-08 depth																		
14-8477	BMW 05-08	2014	Year 1	Phase I	40-45	18	29	7.1	<1.0	<10	33	52	0.8	<0.010	<0.010	<10	<10	<10	15
DM MW05-08 (40-50)	BMW 05-08	2015	Year 2	Phase I	40-50	25.3	30.7	8.6	<0.5	8.7	39.1	57.3	<1	<0.1	<0.05	<7	<4	**59**	64.5
Not sampled - refusal	BMW 05-08	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Powerhouse Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	MW 05-05 surface																		
14-8467	MW 05-05	2014	Year 1	Phase I	5-10	**69**	**99**	**22**	<1.0	<10	**140**	**130**	**4.3**	<0.010	<0.010	<10	<10	<10	15
DM MW05-05 (0-15)	MW 05-05	2015	Year 2	Phase I	0-15	**31.2**	34.2	9.4	<0.5	**27.9**	53.9	**69**	1	<0.1	0.09	<7	<4	<8	9.5
MW05-05a	MW 05-05	2016	Year 3	Phase I	0-15	21.4	24.7	6.7	<0.5	4.4	27.5	48.1	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 05-05 depth																		
14-8468	MW 05-05	2014	Year 1	Phase I	40-45	21	**39**	8.1	<1.0	<10	50	**83**	**1.3**	<0.010	0.013	<10	<10	<10	15
DM MW05-05 (40-50)	MW 05-05	2015	Year 2	Phase I	40-50	**27.2**	31.1	8.4	<0.5	**14.4**	43.4	62	1.2	<0.1	0.11	<7	**43**	**63**	109.5
Not sampled - refusal	MW 05-05	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Powerhouse Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 05-06 surface																		
14-8470/71	MW 05-06	2014	Year 1	Phase I	5-10	24	**36**	7.2	<1.0	**29**	52	**76**	**1.6**	<0.010	0.068	<10	<10	14	24
DM MW05-06 (0-15)	MW 05-06	2015	Year 2	Phase I	0-15	15.4	20.4	5.7	<0.5	3	23.4	38.5	<1	<0.1	<0.05	<7	<4	<8	9.5
MW05-06a	MW 05-06	2016	Year 3	Phase I	0-15	22.1	25.6	7	<0.5	8.8	31	49.6	<1.0	<0.1	<0.05	<7	**458**	**243**	**704.5**
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 05-06 depth																		
14-8472	MW 05-06	2014	Year 1	Phase I	35-40	25	**40**	7.6	<1.0	<10	52	**72**	1.2	<0.010	<0.010	**14**	**2000**	**50**	**2064**
DM MW05-06 (40-50)	MW 05-06	2015	Year 2	Phase I	40-50	15.5	21.7	6	<0.5	3	24.2	38.9	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	MW 05-06	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Powerhouse Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 05-07 surface																		
14-8473	MW 05-07	2014	Year 1	Phase I	5-10	19	28	7.2	<1.0	<10	40	53	1.1	<0.010	<0.010	<10	<10	<10	15
DM MW05-07 (0-15)	MW 05-07	2015	Year 2	Phase I	0-15	**29.8**	33.1	9.2	<0.5	**14.8**	48.8	64	**2.3**	<0.1	0.1	<7	<4	**101**	106.5
MW05-07a	MW 05-07	2016	Year 3	Phase I	0-15	26.1	29.3	8.1	<0.5	5.9	33.5	56.6	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 05-07 depth																		
14-8474	MW 05-07	2014	Year 1	Phase I	45-50	19	30	7.3	<1.0	<10	37	55	1.2	<0.010	<0.010	**51**	**2800**	**130**	*2981*
DM MW05-07 (15-30)	MW 05-07	2015	Year 2	Phase I	15-30	12.9	18.6	5.1	<0.5	4.3	22.6	34.8	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	MW 05-07	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M LS Powerhouse Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
Baseline Data																	
Upgradient:																	
01-4432		2001	0										0.80	60			
01-4433		2001	0										0.60	220			
01-4436		2001	0	25	31	11	<1.0	10	45	58	<1.0						
01-4437		2001	0										0.02	210			
01-18702	18702	2001	10	26	35	11	<1.0	<10	47	64	<1.0		0.29				
01-18710		2001	40	23	25	8	<1.0	<10	40	48	<1.0		0.14	2200			
01-18711	18710	2001	40	22	27	9	<1.0	<10	43	55	<1.0						
01-18715	18714	2001	50										<0.5	<40			
01-19334		2001	0										0.26	120			
01-19335		2001	0										0.20	120			
01-20606	20606	2001	15	23	35	11	<1.0	<10	51	66	<1.0		0.70	59			
01-20627		2001	0										<0.5	<40			
01-20628		2001	0										<0.5	<40			
00-23767		2000	0						140								
00-23770		2000	0											42			
00-23771		2000	0											<40			
00-23773		2000	0						110				<0.5				
00-24007		2000	0	22	29	10	<1.0	14	49	54	<1.0		<0.5	940			
00-24009		2000	0	24	28	10	<1.0	<10	44	55	<1.0		0.50	760			
00-24010		2000	0										0.10				
00-24049		2000	0										0.50	100			
00-24075		2000	0										<0.5	<40			
00-24076		2000	0	23	31	10	<1.0	10	40	66	<1.0		<0.5	<40			
00-24268		2000	0										<0.5	<40			
09-21544	BMW 05-08	2009	0-10	28	34	11	<1.0	13	50	66	1.4	<0.10	0.098	77	<10	<4.0	70
09-21546	BMW 05-08	2009	30-40	24	32	10	<1.0	<10	51	60	1.2	<0.10	0.048	90	<10	5.4	80
11-38124	BMW05-08	2011	0-10	29	33	10	<1.0	13	61	60	1.1	<0.10	0.670	73	<10	<4.0	66
11-38126/27	BMW05-08	2011	30-40	22	37	13	<1.0	<10	41	69	1.4	<0.10	0.066	17	<10	<4.0	9.7
12-44894	BMW05-08	2012	0-10	22	32	8	<1.0	<10	38	56	1.0	<0.10	<0.050	52	<10	6.1	41
12-44896/97	BMW05-08	2012	20-30	19	27	6	<1.0	<10	31	49	1	<0.10	<0.050	23	<10	8.4	10
13-25216	BMW 05-08	2013	0-10	32	43	10	<1.0	12	58	77	2.5	<0.10	0.14	131	<10	6	120
13-25218	BMW 05-08	2013	30-40	33	45	11	<1.0	<10	55	80	2.0	<0.10	<0.050	55	<10	6.5	43
Downgradient:																	
01-4134	4134	2001	0	24	28	9.8	<1.0	<10	43	53	<1.0						
01-4135	4134	2001	40										<0.5	40			
01-4441		2001	0										0.4				
01-4444		2001	0														
01-4445		2001	0	24	28	9.9	<1.0	<10	42	52	1.6						
01-4483		2001	0	32	34	11	<1.0	<10	58	62	1.5		0.3	570			
01-4485		2001	0										0.4	170			
01-5327	5327	2001	0						170				0.3				
01-5328	5327	2001	50											1300			
01-5336	5336	2001	0						110				0.04				
01-5337	5336	2001	50											1500			
01-5346	5346	2001	0	20	19	7.3	<1.0	<10	58	39	3.1		<0.5				
01-5347	5346	2001	40										<0.5	790			

DYE-M LS Powerhouse Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_{6}-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
01-5350		2001	0	12	17	6.0	<1.0	<10	35	30	1.3		<0.5	280			

DYE-M LS Powerhouse Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
01-5352	5350	2001	40	27	37	13	<1.0	<10	47	71	1.7		<0.5	190			
97-7159		1997	0											<40			
97-7172		1997	0											<40			
97-7206		1997	0											<40			
01-18699[1]		2001	50	23	28	9.2	<1.0	<10	40	53	<1.0		<0.5	5400			
01-19298	19298	2001	0	35	37	11	<1.0	<10	51	69	<1.0		<0.1	<40			
01-19302	19302	2001	10	26	29	9.1	<1.0	15	51	62	1.1		0.4				
01-19532	19532	2001	40	23	33	11	<1.0	<10	44	66	1.2		<0.1				
00-23774		2000	0											<40			
00-23777		2000	0										<0.5				
00-23800		2000	0	26	32	15	<1.0	<10	47	60	<1.0						
00-24001		2000	0											50			
00-24003		2000	0											50			
00-24004		2000	0										<0.5				
00-24005		2000	0										<0.5	580			
00-24038		2000	0										<0.5				
00-24233		2000	0											<40			
00-24245		2000	0											460			
00-24247		2000	0											380			
00-24248		2000	0											<40			
00-24249		2000	0										<0.5				
00-24252		2000	0	23	30	11	<1.0	<10	38	61	1.8						
00-24253		2000	0	27	34	12	<1.0	10	49	66	1.7		<0.5				
00-24267		2000	0										<0.5	<40			
00-24643		2000	0										<0.1				
00-24647		2000	0	32	32	11	<1.0	11	47	58	<1.0		<0.5	590			
00-24710	Well 39	2000	0										<0.5	<40			
00-24711	Well 39	2000	0											<40			
00-24712	Well 39	2000	30										<0.5				
00-24973	24247	2000	40	26	42	13	<1.0	<10	56	79	<1.0	<0.1	<0.1	<40			
09-21540	MW 05-05	2009	0-10	31	38	13	<1.0	13	56	78	1.4	<0.10	0.043	63	11	<4.0	50
09-21542	MW 05-05	2009	30-40	25	31	10	<1.0	<10	43	61	<1.0	<0.10	0.033	32	10	<4.0	20
09-21536	MW 05-06	2009	0-10	24	31	10	<1.0	<10	45	63	1.3	<0.10	0.072	53	11	<4.0	40
09-21538	MW 05-06	2009	30-40	24	32	10	<1.0	<10	43	64	1.3	<0.10	0.017	433	13	310	110
09-21532/33	MW 05-07	2009	0-10	27	36	12	<1.0	<10	52	70	1.4	<0.10	0.150	63	14	8.9	40
09-21534	MW 05-07	2009	30-40	21	30	9.3	<1.0	17	38	55	1.1	<0.10	0.025	70	<10	45	20
11-12469*	MW05-05	2011	0-10	26	33	11	<1.0	12	50	64	1.1	<0.10	0.09	59	<10	<30	54
11-12471/845*	MW05-05	2011	30-40	24	33	12	<1.0	<10	45	63	<1.0	<0.10	0.07	30	<10	<30	25
11-12846*	MW05-06	2011	0-10	24	32	11	<1.0	<10	45	59	1.3	<0.10	<0.050	61	<10	<30	56
11-12848 *	MW05-06	2011	30-40	18	27	9.5	<1.0	<10	33	51	<1.0	<0.10	0.16	45	<10	<30	40
11-38120/21*	MW05-07	2011	0-10	21	37	12	<1.0	<10	47	69	<1.0	<0.10	0.07	44	<10	<30	39
11-38122 *	MW05-07	2011	30-40	19	34	11	<1.0	<10	47	64	<1.0	<0.10	<0.050	10	<10	<30	<9.0
12-44882	MW05-05	2012	0-10	83	82	25	<1.0	<10	130	120	5	<0.10	<0.050	18	<10	8.8	<9.0
12-44884	MW05-05	2012	20-30	21	29	7.4	<1.0	<10	39	58	1.4	<0.10	<0.050	15	<10	5.6	<9.0
12-44886	MW05-06	2012	0-10	27	35	9.0	<1.0	10	48	68	1.2	<0.10	0.13	39	<10	6.6	27
12-44888/89	MW05-06	2012	20-30	25	34	8.6	<1.0	<10	41	63	1.5	<0.10	<0.050	12	<10	<4.0	<9.0
12-44890	MW05-07	2012	0-10	24	32	8.1	<1.0	<10	41	59	1.6	<0.10	<0.050	12	<10	<4.0	<9.0
12-44892	MW05-07	2012	20-30	34	46	11	<1.0	<10	52	81	1.3	<0.10	<0.050	17	<10	7.2	<9.0
13-25204	MW 05-05	2013	0-10	41	52	12	<1.0	11	70	84	2.1	<0.10	0.06	49	<10	6.8	37
13-25206	MW 05-05	2013	30-40	42	47	12	<1.0	<10	67	81	1.9	<0.10	<0.050	42	<10	5.2	32

DYE-M LS Powerhouse Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
13-25208	MW 05-06	2013	0-10	29	43	10	<1.0	11	55	75	2.0	<0.10	0.14	85	<10	7.7	72
13-25210/11	MW 05-06	2013	30-40	29	40	9.4	<1.0	<10	52	70	2.1	<0.10	0.23	51	<10	<4.0	44
13-25212	MW 05-07	2013	0-10	28	37	8.8	<1.0	13	54	75	1.3	<0.10	0.48	102	<10	5.8	91
13-25214	MW 05-07	2013	30-40	26	36	7.9	<1.0	11	47	65	1.9	<0.10	0.12	525	<10	360	160
	N value			55	55	55	55	55	59	55	55	33	77	76	32	32	32
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.10	0.10	10	10	10	10
	Arithmetic Mean			27	34	10	0.5	7.2	55	64	1.2	0.05	0.17	194	6	32	44
	Arithmetic Mean Corrected for Detection Limits			27	34	10	1.0	10	55	64	1.2	0.10	0.17	194	10	32	44
	Standard Deviation			9	9	2.8	0.0	3.5	26	13.2	0.80	0.000	0.20	372	3	90	37
	Minimum			12	17	2.5	0.5	5.0	31	30	0.500	0.050	0.02	10	10	5	10
	Maximum			83	82	25	0.5	17	170	120	5.0	0.05	0.80	2200	14	360	160
	95% Confidence Limit			2.5	2.4			0.9	6.6		0.21	0.000	0.045	84	0.9	31	13

*F2 fraction TPH results for some Baseline samples from 2011 were reported with elevated detection limits due to interferences. These samples have been removed from the baseline average calculation.

DYE-M LS Powerhouse Landfill - Summary of Baseline and Background Soil Analytical Data

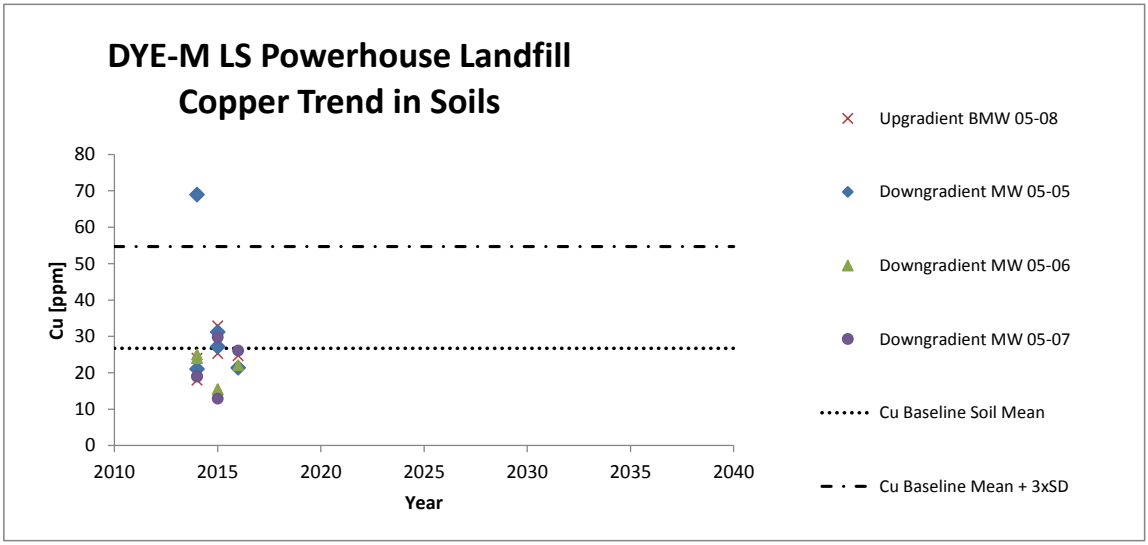
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
Background Data																	
89-G300	Along the beach, 1 km NW of ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004				
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024				
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002				
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001				
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002				
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002				
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0						
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0						
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0						
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0						
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0						
00-25526	West of glacier - background	2000		93	36	13	1.5	37	113	136	<1.0						
00-25527	West of glacier - background	2000		74	29	13	1.3	13	145	151	<1.0						
00-25528	West of glacier - background	2000		77	28	14	1.8	10	213	177	<1.0						
	N value			14	14	14	14	14	14	14	14	6	6				
	Background Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	1.0	0.0002				
	Arithmetic Mean			43	38	12	0.72	9.9	84	94	0.58	0.25	0.0047				
	Arithmetic Mean Corrected for Detection Limits			43	38	12	1.0	10	84	94	1.0	0.5	0.0047				
	Standard Deviation			30	19	5.1	0.5	9.1	53	55	0.53	0.00	0.0096				
	Minimum			7.8	18	2.5	0.50	5.0	28	10	0.15	0.25	0.00005				
	Maximum			93	89	23	1.80	37	213	177	2.4	0.3	0.02				
	95% Confidence Limit			16	10						0.28		0.01				

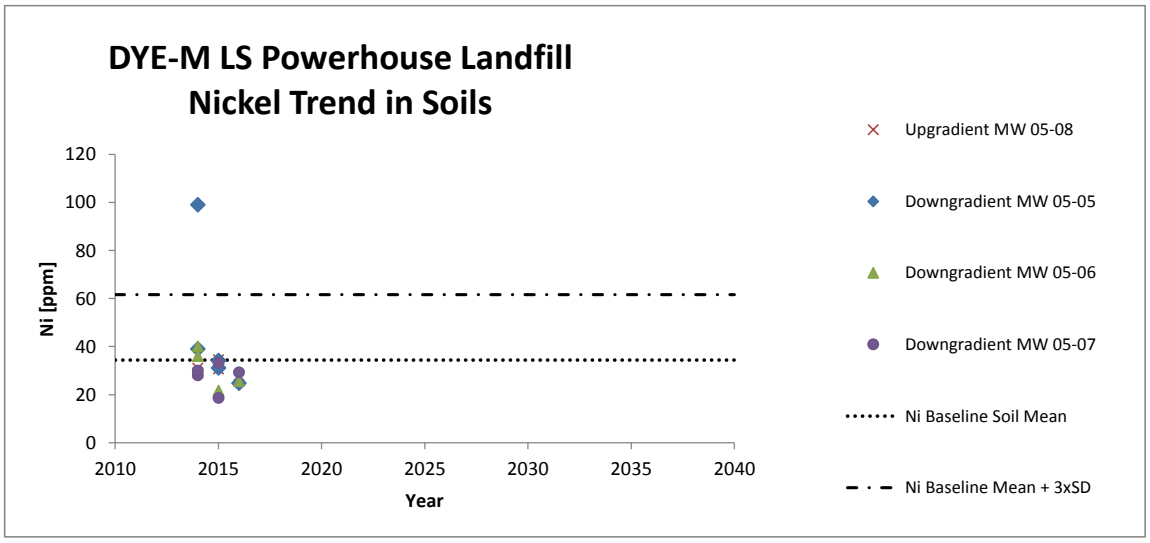
[1]sample results not included in calculation of Baseline Arithmetic Mean

DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

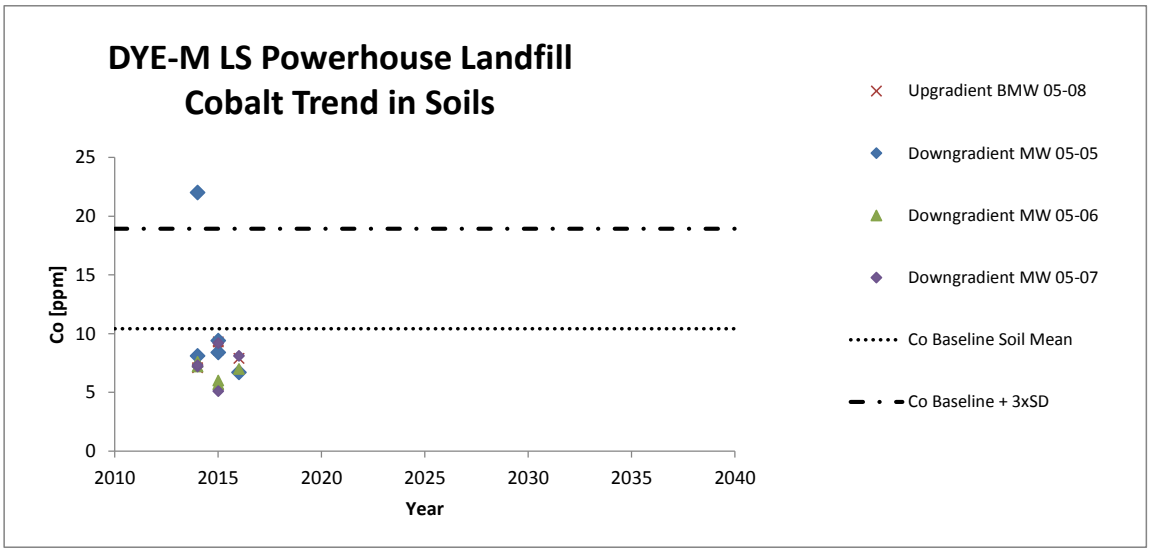
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

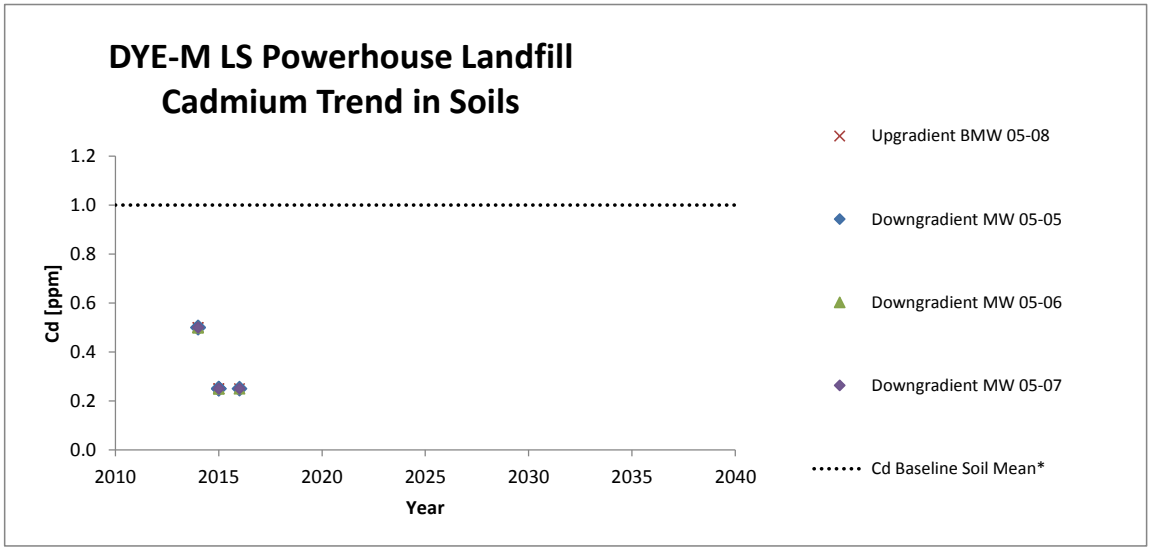
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





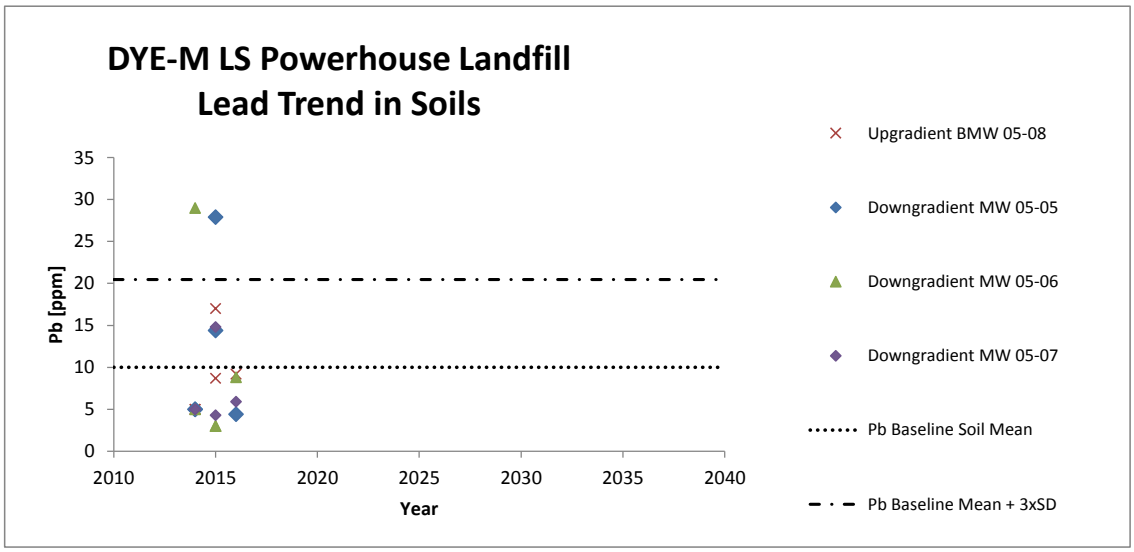
DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



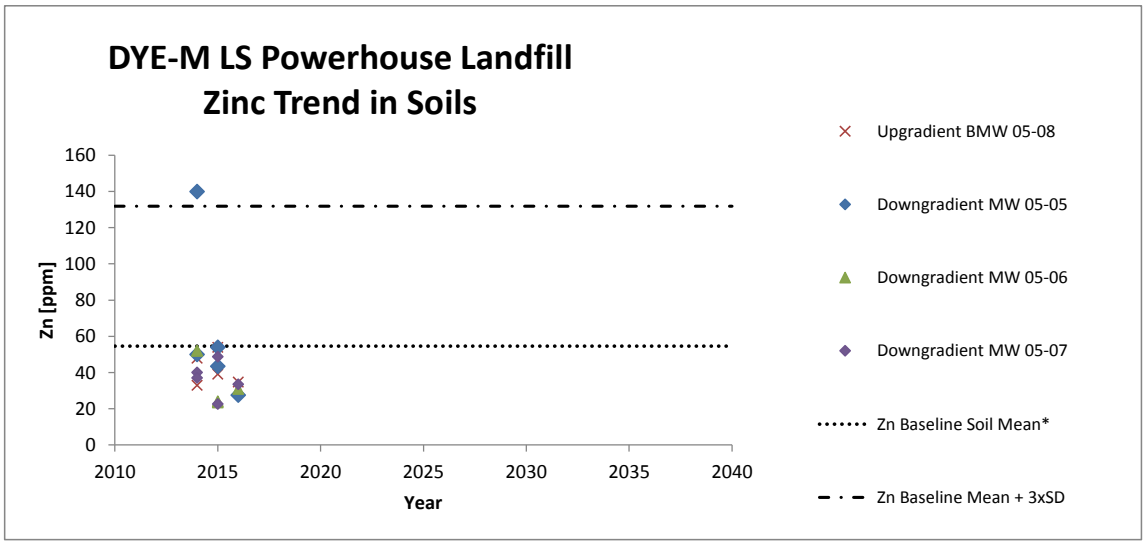


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
*Cd Baseline SD = 0

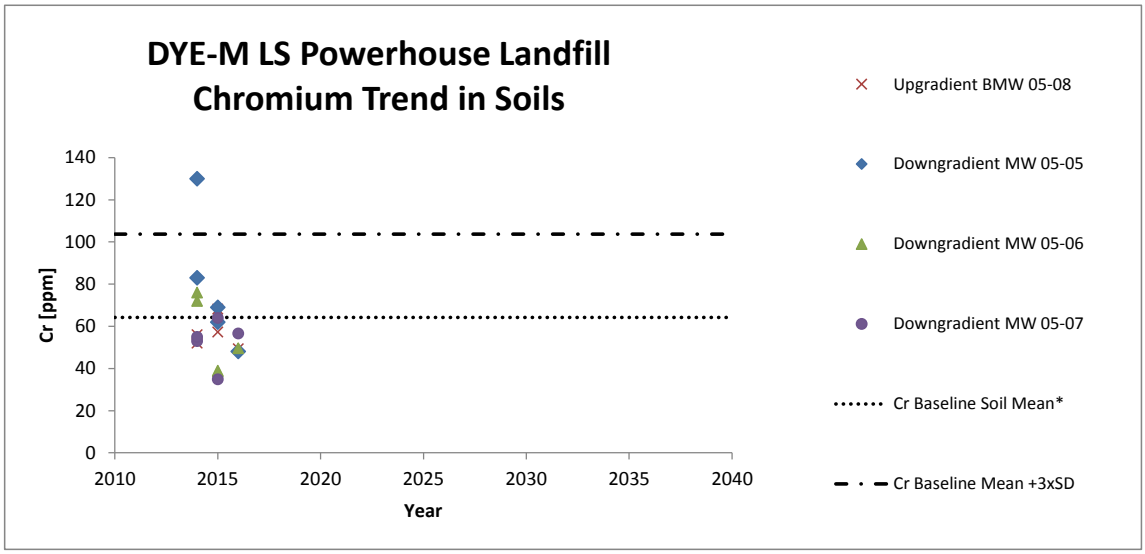
DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

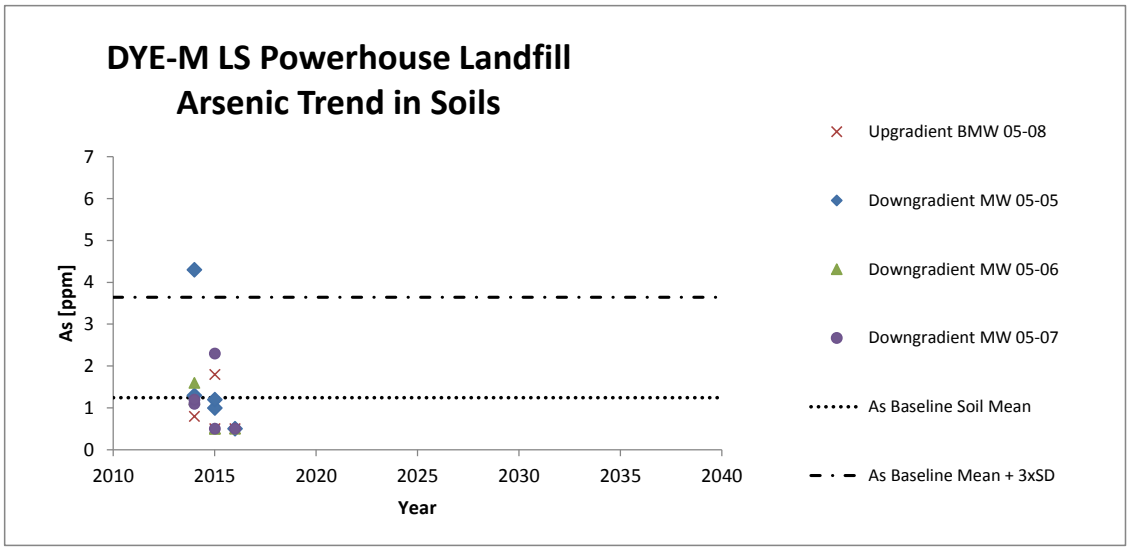


Pb Baseline Arithmetic Mean is equal to the detection limit.

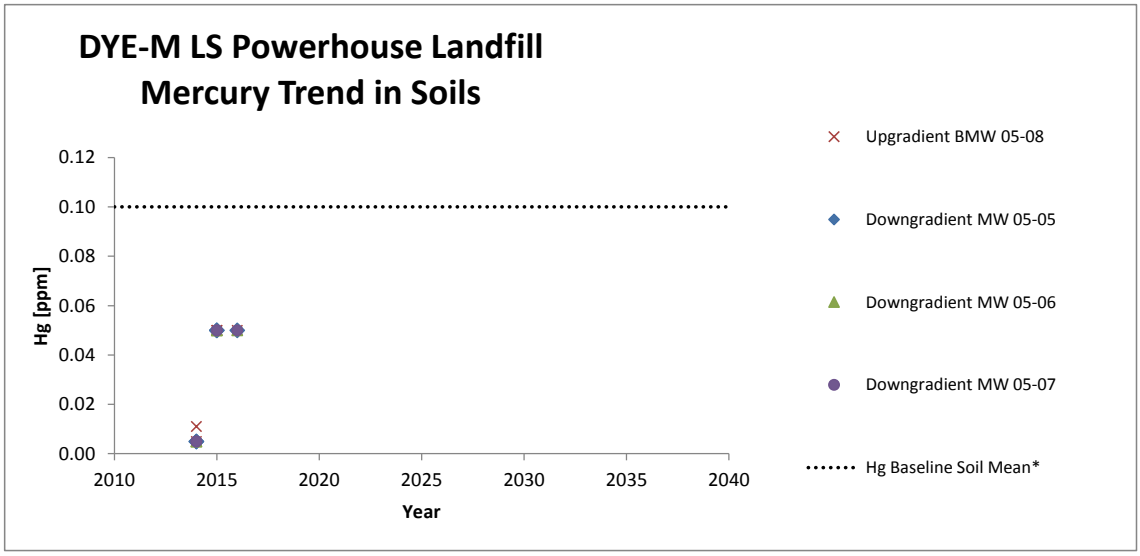


DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

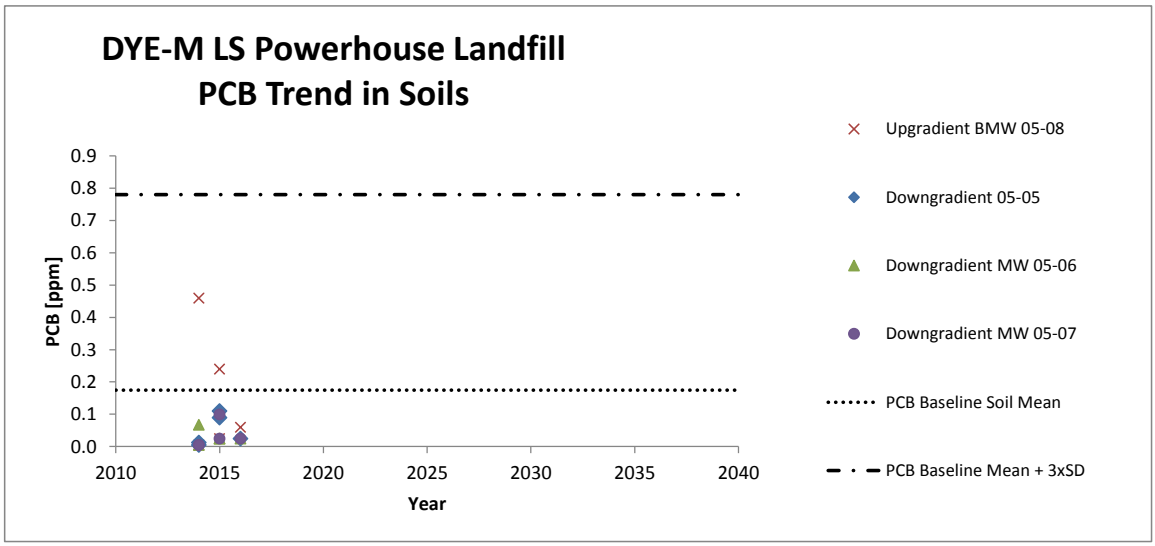




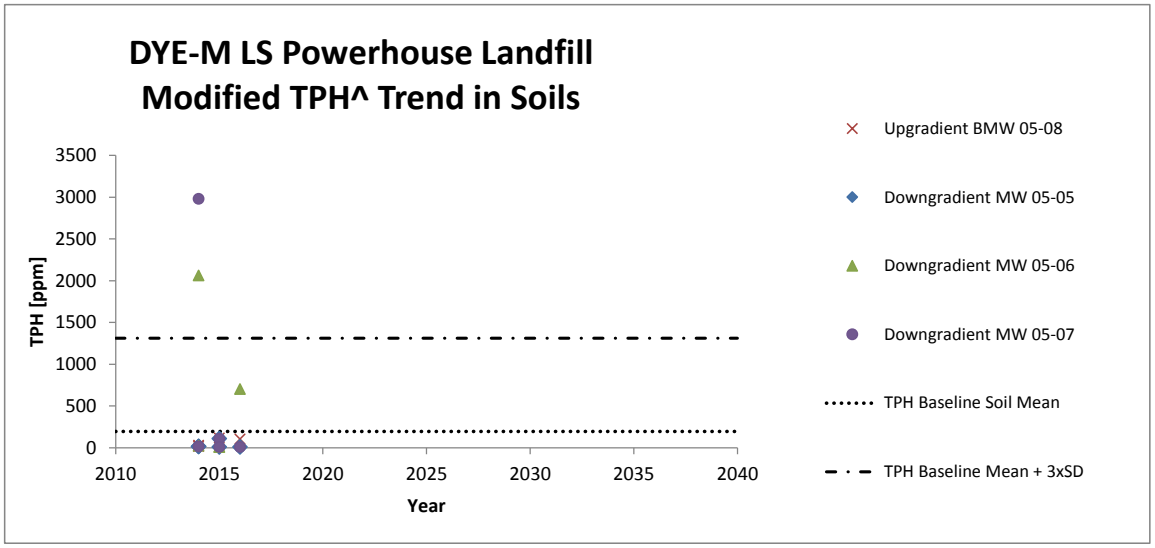
DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



DYE-M LS Powerhouse Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M LS Powerhouse - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Baseline Data																		
Upgradient:																		
11-12214	BMW05-08	2011			0.006	0.0061	<0.0030	<0.0010	<0.010	12	<0.0050	0.003	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34995	BMW05-08	2012			<0.0050	0.0089	<0.0030	<0.0010	<0.0050	5.3	0.099	0.004	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
All wells were dry in 2013		2013																
Downgradient:																		
12-34998	MW05-05	2012			0.005	0.009	<0.0030	<0.0010	<0.0050	1.4	0.12	0.006	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34997	MW05-06	2012			<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	3.5	0.09	0.003	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34996	MW05-07	2012			<0.0050	0.006	<0.0030	<0.0010	<0.0050	2.6	0.05	<0.0010	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
All wells were dry in 2013		2013																0.0
		N value			5	5	5	5	5	5	5	5	5	5	5	5	5	6
		Arithmetic Mean								**4.9**	**0.09**	**0.003**	**0.0002**	**0.00**	**0.03**	**0.25**	**0.50**	**0.25**
		Arithmetic Mean Adjusted for Detection Limits								**4.9**	**0.09**	**0.003**	**0.0004**	**0.003**	**0.05**	**0.50**	**1.0**	**1.0**
		Standard Deviation								4.1	0.028	0.0020	0.0	0.0	0.0	0.0	0.0	0.0
		Arithmetic Mean + 3xStandard Deviation								17	0.18	0.0096	0.00020	0.0032	0.025	0.25	0.50	0.25
		Detection Limit			0.0050	0.005	0.0030	0.0010	0.010	0.0100	0.0050	0.003	0.0004	0.0030	0.050	0.50	1.0	1.0
Monitoring Data																		**Modified TPH TOTAL will appear when F1, F2, F3 fraction results are entered.**
Upgradient - BMW 05-08																		
Not sampled - well dry	BMW 05-08	2014	Year 1	Phase I														#N/A
MW 05-08	BMW 05-08	2015	Year 2	Phase I	<0.0005	0.016	0.0011	0.0005	0.0006	**12.1**	0.001	<0.001	<0.0001	<0.0001	<0.025	<0.1	<0.1	0.1
Not sampled - well dry	BMW 05-08	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

DYE-M LS Powerhouse - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Downgradient - MW 05-05																		
Not sampled - well dry	MW 05-05	2014	Year 1	Phase I														#N/A
MW0505 (Dup Avg)	MW 05-05	2015	Year 2	Phase I	0.005	0.014	0.002	0.0004	0.029	4.42	<0.004	<0.003	0.00006	<0.00005	<0.025	<0.1	<0.1	0.1
Not sampled - frozen	MW 05-05	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 05-06																		
Not sampled - well dry	MW 05-06	2014	Year 1	Phase I														#N/A
MW0506	MW 05-06	2015	Year 2	Phase I	0.0097	0.009	<0.0025	<0.0005	<0.0005	**15.1**	<0.005	<0.005	<0.0001	<0.0001	<0.025	<0.1	<0.1	0.1
Not sampled - frozen	MW 05-06	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 05-07																		
Not sampled - well dry	MW 05-07	2014	Year 1	Phase I														#N/A
Not sampled - well dry	MW 05-07	2015	Year 2	Phase I														#N/A
Not sampled - well dry	MW 05-07	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A

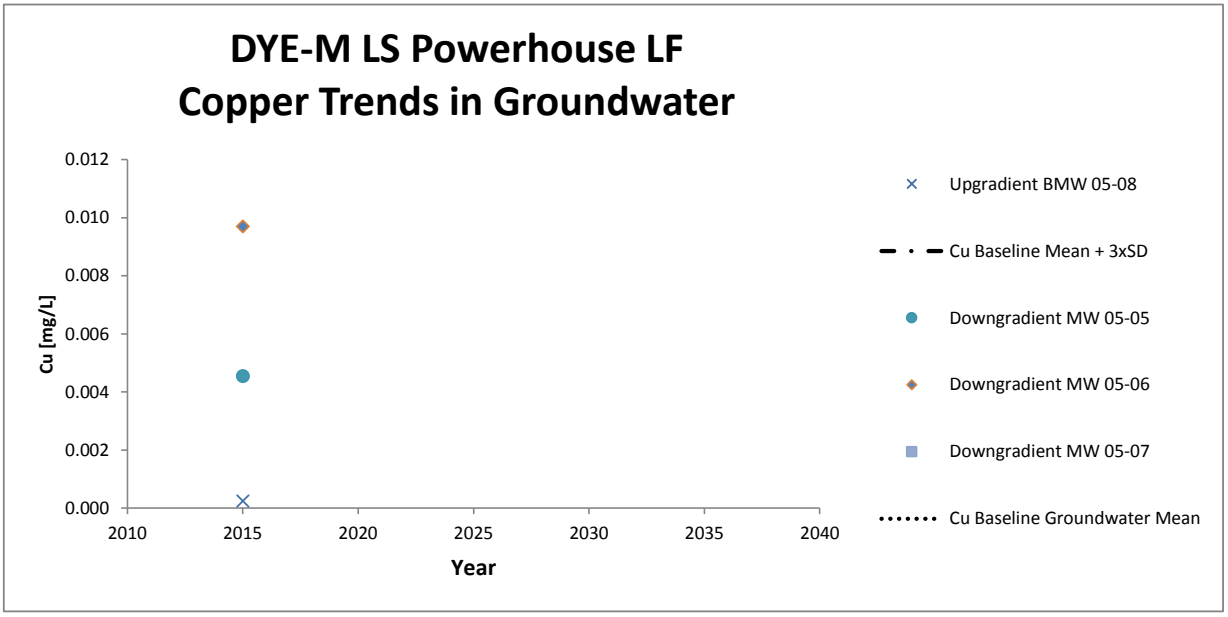
Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

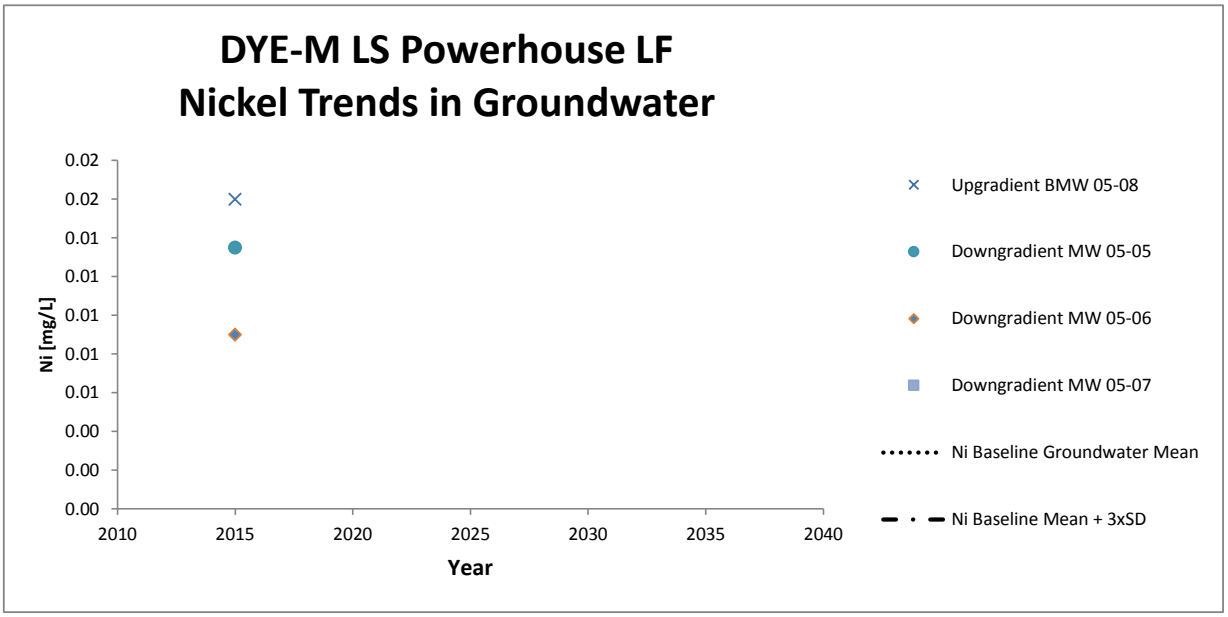
blue highlight indicates dissolved metal results. No highlight indicates total metals.

Dissolved metal results have not been included in the Baseline Arithmetic Mean

DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

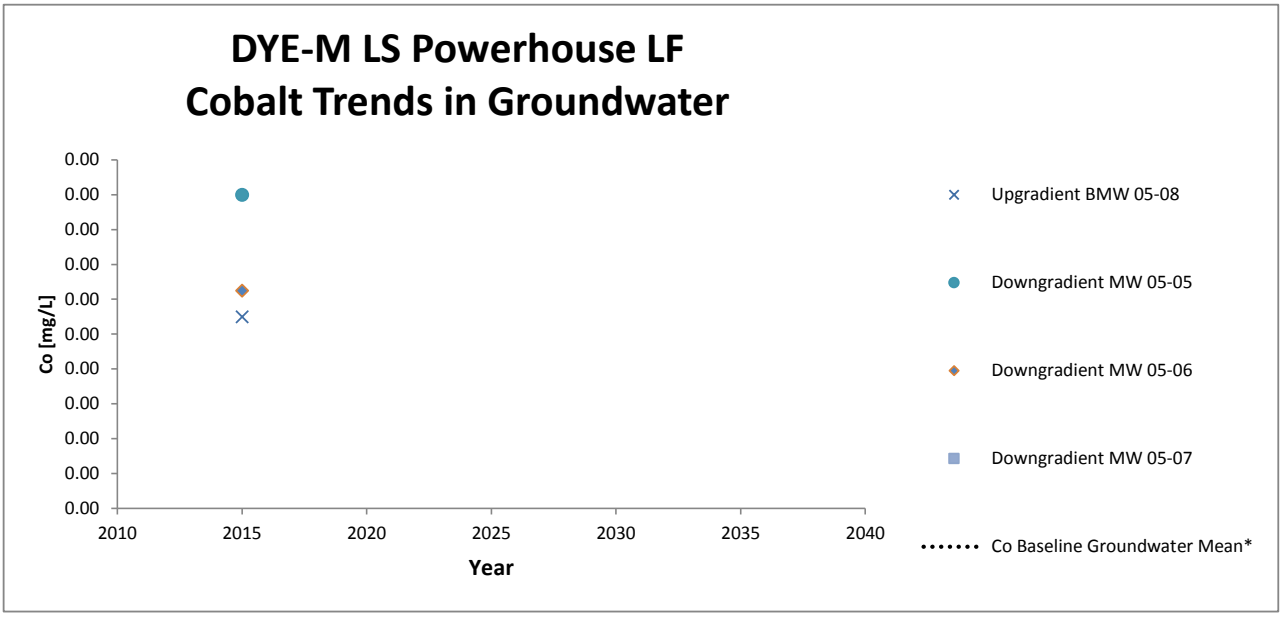
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

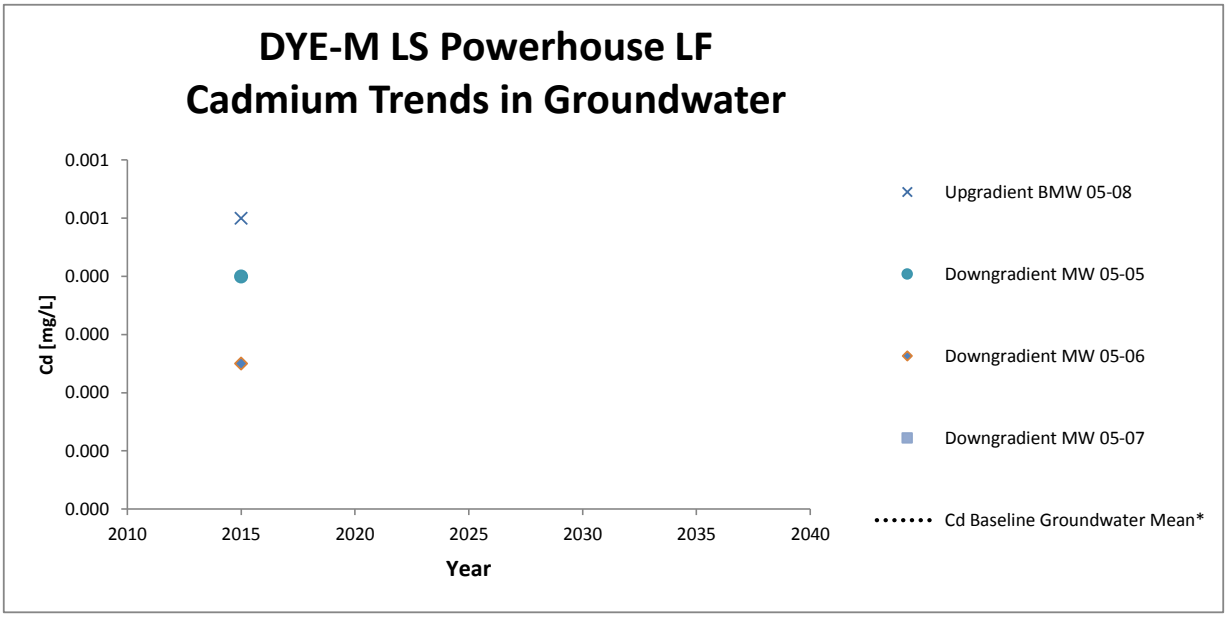




DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

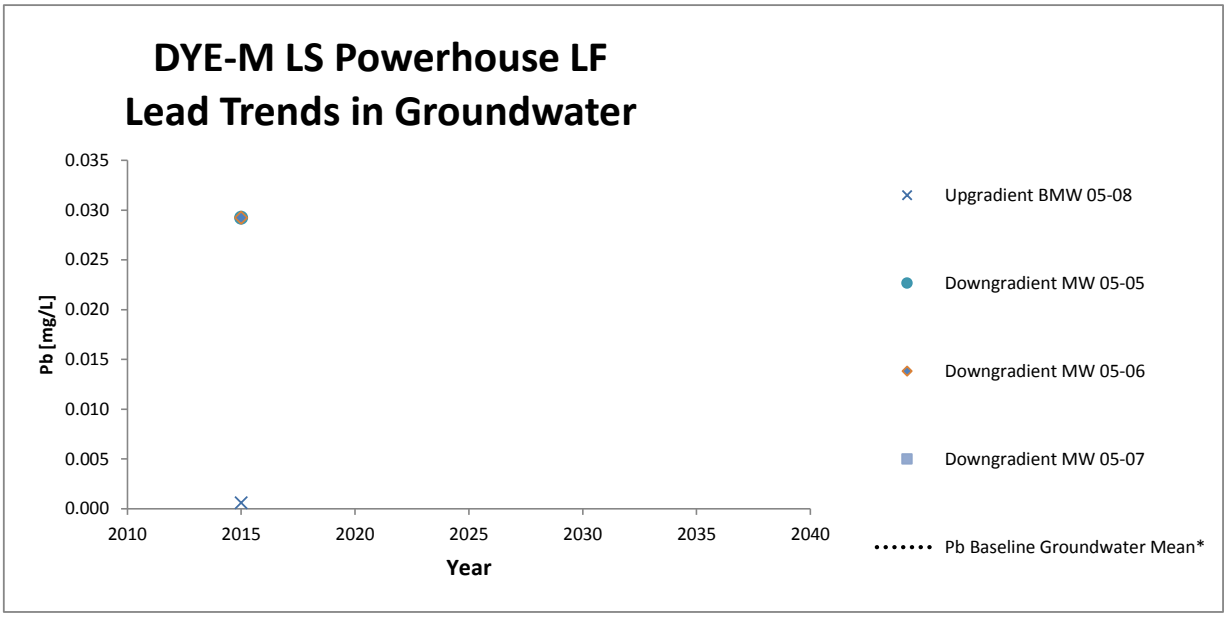
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

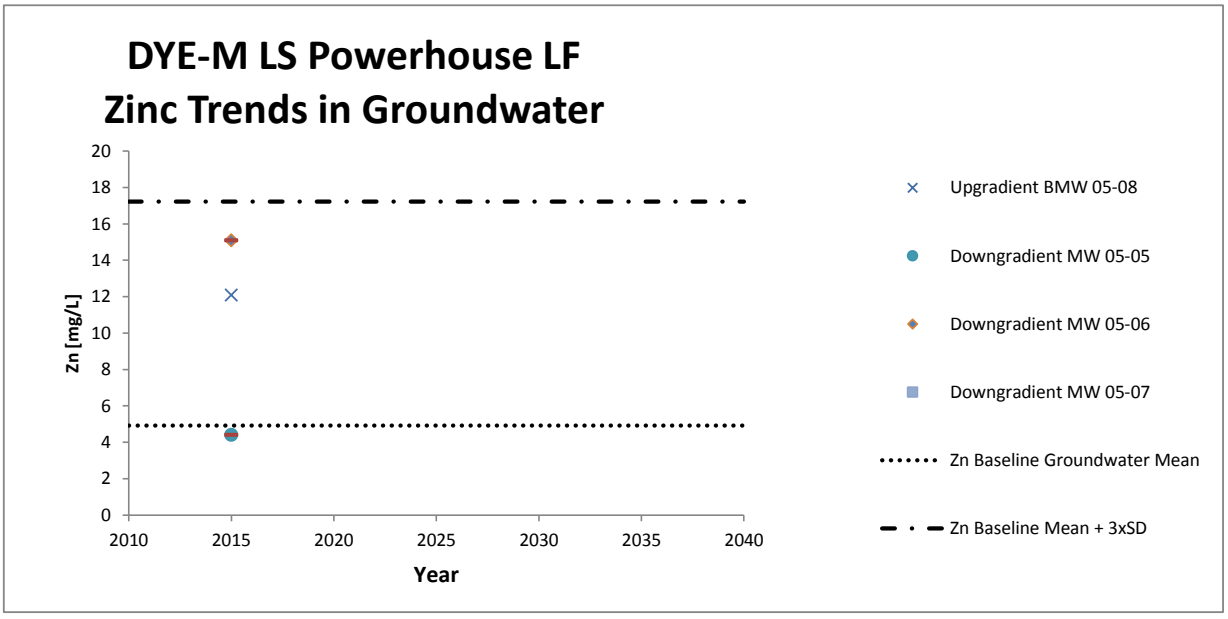




DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

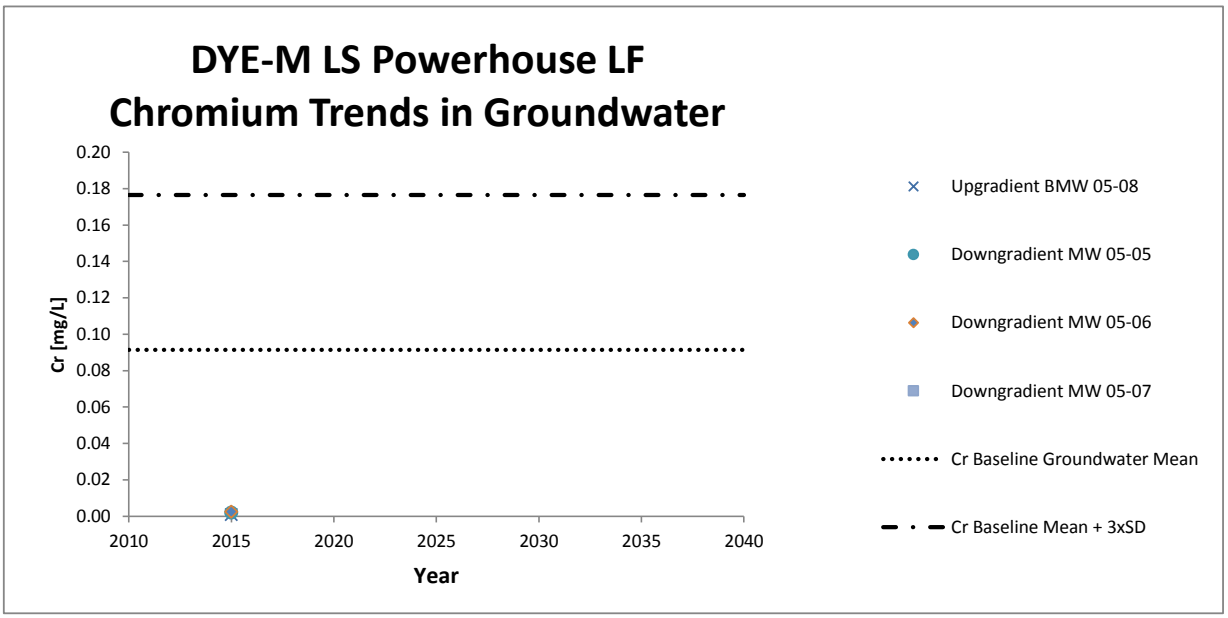
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

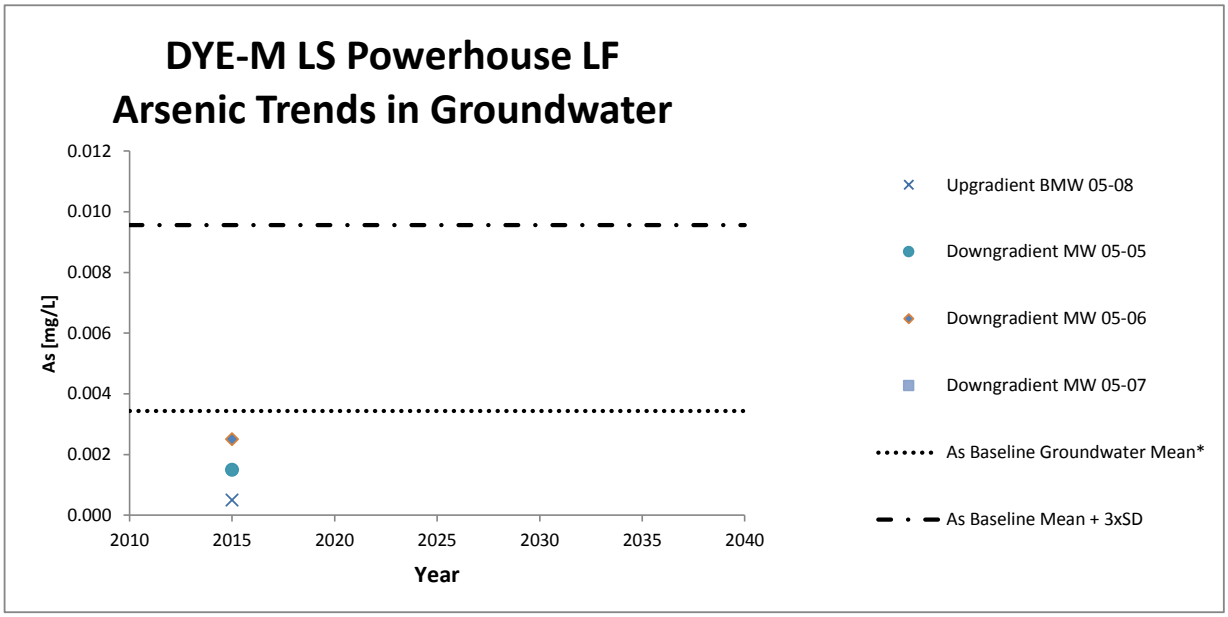




DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

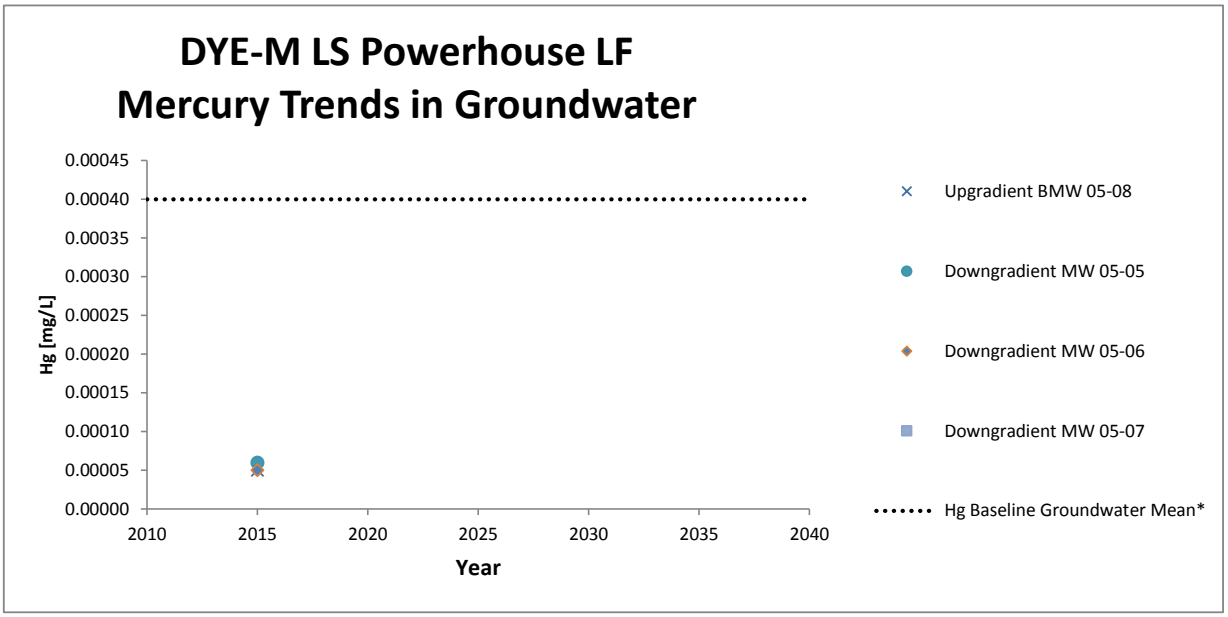
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



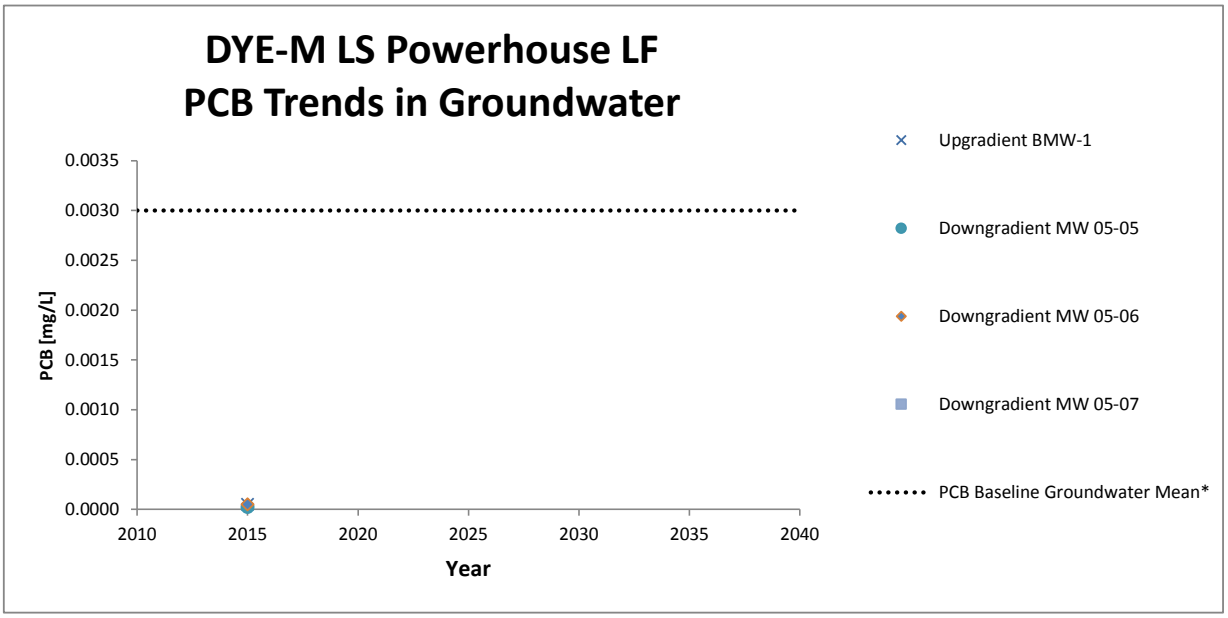


DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



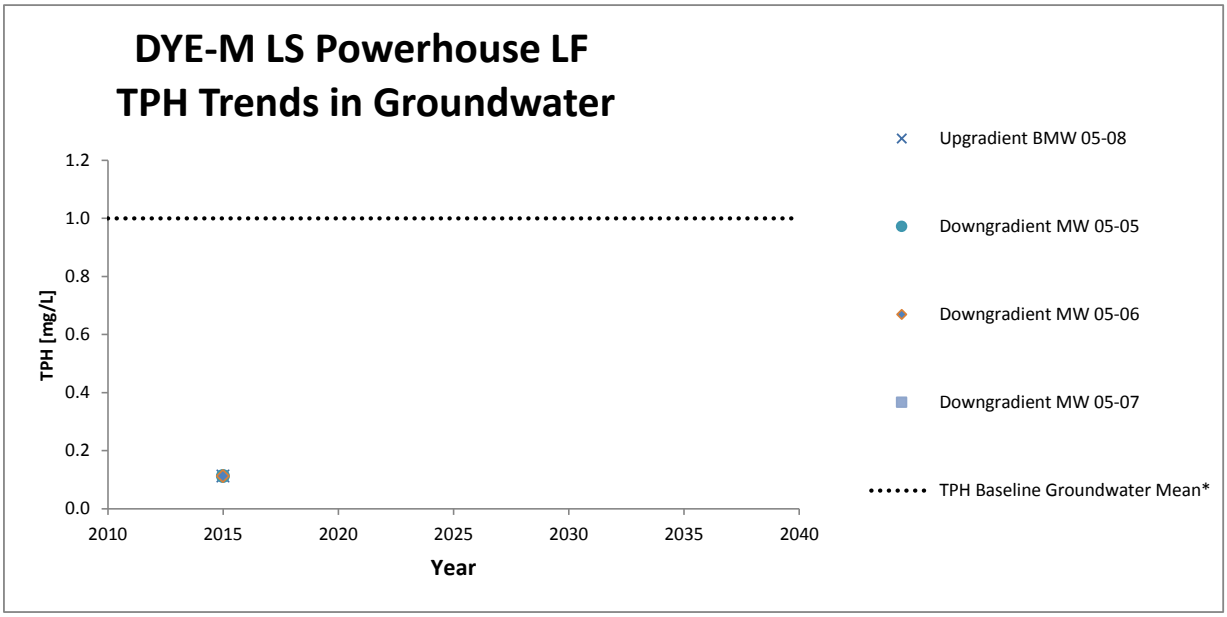
*Hg Baseline Mean is equal to the baseline detection limit.
*Hg Baseline SD = 0



*PCB Baseline Mean is equal to the baseline detection limit.
*PCB Baseline SD = 0

DYE-M LS Powerhouse LF Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*TPH Baseline Mean is equal to the baseline detection limit.
*TPH Baseline Mean SD = 0



DYE-M LS Crossroads Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						43	38	12	1.0	10	84	94	1.00	0.50	0.0002	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**30**	**38**	**11**	**1.0**	**10**	**47**	**69**	**1.0**	**0.10**	**0.10**	**5.0**	**10**	**22**	**70**
Baseline Data - Standard Deviation						7.4	7.8	2.5	0.0	2.9	8.0	12	0.82	0.0	0.020	0.0	17	21	190
Baseline Data Mean + 3xStandard Deviation						52	61	19	1.0	19	71	106	3.4	0.10	0.16	5.0	60	85	641
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-1 surface																		
14-8330/31	DM-1	2014	Year 1	Phase I	5-10	26	36	8.0	<1.0	<10	39	66	**1.2**	<0.01	<0.010	<10	<10	<10	15
DM-01 (0-15)	DM-1	2015	Year 2	Phase I	0-15	24.2	30.1	8.2	<0.5	5.1	32.2	53.7	**1.2**	<0.1	<0.05	<7	**65**	10	**78.5**
DM-01a	DM-1	2016	Year 3	Phase I	0-15	**30.7**	32	8.6	<0.5	9.2	37.9	**70.3**	<1.0	<0.1	<0.05	<7	<4	**78**	**83.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-1 depth																		
14-8332	DM-1	2014	Year 1	Phase I	45-50	23	36	7.8	<1.0	<10	34	61	**3.3**	<0.01	<0.010	<10	<10	<10	15
DM-01 (40-50)	DM-1	2015	Year 2	Phase I	40-50	20.9	29.5	7.9	<0.5	4.2	28.9	51.1	**1.3**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-1	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Crossroads Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	DM-2 surface																		
14-8333	DM-2	2014	Year 1	Phase I	5-10	**33**	**41**	9.6	<1.0	<10	**49**	**80**	**1.6**	<0.01	<0.010	<10	<10	<10	15
DM-02 (0-15)	DM-2	2015	Year 2	Phase I	0-15	**31.7**	35.8	9.9	<0.5	8.1	43.8	67.5	**1.4**	<0.1	<0.05	<7	<4	**35**	40.5
DM-02a (Dup Avg)	DM-2	2016	Year 3	Phase I	0-15	**32**	35	8	<0.5	6	39	58	**2**	<0.1	<0.05	<6	**17**	**47**	67
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-2 depth																		
14-8334	DM-2	2014	Year 1	Phase I	45-50	**42**	**45**	11	<1.0	**11**	**54**	**94**	**1.6**	<0.01	<0.010	<10	**56**	<10	66
DM-02 (15-30)	DM-2	2015	Year 2	Phase I	15-30	**31.3**	34.1	9.1	<0.5	6.1	40	64.7	**1.3**	<0.1	<0.05	<7	**39**	**57**	**99.5**
Not sampled - refusal	DM-2	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Crossroads Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-3 surface																		
14-8335	DM-3	2014	Year 1	Phase I	5-10	28	35	8.6	<1.0	<10	41	68	**1.4**	<0.01	<0.010	<10	<10	<10	15
DM-03 (0-15)	DM-3	2015	Year 2	Phase I	0-15	26.6	27.7	7.7	<0.5	3.1	29.4	47.8	**1.2**	<0.1	<0.05	<7	<4	**41**	46.5
DM-03a	DM-3	2016	Year 3	Phase I	0-15	28.1	28.8	7.7	<0.5	5.6	29.5	52.3	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-3 depth																		
14-8337	DM-3	2014	Year 1	Phase I	45-50	21	28	7.2	<1.0	<10	31	59	0.9	<0.01	<0.010	<10	<10	<10	15
DM-03 (40-50) (Dup Av	DM-3	2015	Year 2	Phase I	40-50	29	29	7.9	<0.5	3	33	50	**1**	<0.1	<0.05	<6	<4	18	23
Not sampled - refusal	DM-3	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M LS Crossroads Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_{6}-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-18696	18696	2001	0	20	26	9	<1.0	<10	58	50	1.2		<0.5						
01-18697	18696	2001	25	28	38	13	<1.0	<10	54	75	1.1		<0.5	1100					
01-19375	19375	2001	40	24	33	10	<1.0	<10	39	59	<1.0		<0.1	<40					
01-19535	19535	2001	20	19	23	7	<1.0	<10	28	38	<1.0		<0.1	<40					
01-20036	20036	2001	0	17	27	8.9	<1.0	<10	36	55	<1.0		<0.1						
01-20040	20040	2001	0	31	32	9.9	<1.0	<10	46	62	<1.0		<0.1						
01-20041	20040	2001	0	28	33	9.3	<1.0	13	45	58	<1.0		<0.1						
01-20042	20040	2001	40	33	37	11	<1.0	<10	47	74	<1.0		<0.1						
01-20607	20607	2001	0	29	34	10	<1.0	<10	49	64	<1.0		<0.1						
00-24257		2000	0											<40					
07-30880/81	DM-1	2007	0-10	23	34	11	<1.0	<10	41	65	<1.0	<0.10	<0.0030	77			<10	<4.0	70
07-30882	DM-1	2007	25-35	41	43	13	<1.0	<10	50	68	<1.0	<0.10	<0.0030	90			<10	5.4	80
08-11673	DM-1	2008	0-10	26	34	12	<1.0	<10	41	61	<1.0	<0.10	<0.0030	33			<10	<4.0	26
08-11675	DM-1	2008	30-40	36	45	16	<1.0	<10	54	86	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
11-12970/71	DM-1	2011	0-10	26	49	13	<1.0	<10	60	68	<1.0	<0.10	<0.050	141			<10	82	54
11-12972	DM-1	2011	30-40	16	23	8.7	<1.0	<10	33	44	<1.0	<0.10	<0.050	36			<10	21	10
13-25028	DM-1	2013	0-10	37	43	8.9	<1.0	22	59	76	2.0	<0.10	<0.050	18			<10	8.1	<9.0
13-25030/31	DM-1	2013	30-40	35	41	9.3	<1.0	<10	44	73	2.1	<0.10	<0.050	17			<10	7.3	<9.0
Downgradient:																			
01-19382	19382	2001	40	33	42	13	<1.0	<10	56	83	<1.0		<0.1						
01-19385	19382	2001	40											110					
01-19386	19386	2001	30	28	32	11	<1.0	<10	47	70	<1.0		<0.1						
01-19389	19389	2001	40	30	38	13	<1.0	<10	52	79	<1.0		<0.1						
01-20023	20023	2001	0	24	29	11	<1.0	<10	35	59	<1.0		<0.1						
01-20027	20027	2001	0	25	35	11	<1.0	<10	46	64	<1.0		<0.1						
01-20032	20032	2001	0	32	39	12	<1.0	<10	49	80	<1.0		<0.1						
01-20655	20655	2001	0	19	27	9.1	<1.0	<10	36	52	<1.0		<0.1	<40					
01-20658	20658	2001	0	22	34	10	<1.0	<10	39	67	<1.0		<0.1	<40					
01-20662	20662	2001	0	23	32	11	<1.0	<10	42	66	<1.0		<0.1	<40					
07-30888	DM-2	2007	0-10	39	41	14	<1.0	<10	50	78	<1.0	<0.10	<0.0030	18			<10	<4.0	11
07-30890	DM-2	2007	25-35	36	41	14	<1.0	<10	47	74	<1.0	<0.10	<0.0030	25			<10	<4.0	18
07-30884	DM-3	2007	0-10	29	32	9.7	<1.0	<10	37	59	2.3	<0.10	<0.0030	28			<10	6.7	16
07-30886	DM-3	2007	25-35	41	45	14	<1.0	<10	57	81	1.6	<0.10	<0.0030	44			<10	<4.0	37
08-11665	DM-2	2008	0-10	34	43	14	<1.0	<10	49	79	<1.0	<0.10	<0.0030	25			<10	6.6	13
08-11667/68	DM-2	2008	30-40	28	37	12	<1.0	<10	46	72	<1.0	<0.10	<0.0030	29			<10	9.7	14
08-11669	DM-3	2008	0-10	41	55	16	<1.0	<10	61	90	2.3	<0.10	<0.0030	51			<10	22	24
08-11671	DM-3	2008	35-45	37	46	14	<1.0	<10	56	80	1.0	<0.10	<0.0030	30			<10	4.3	21
11-12974	DM-2	2011	0-10	29	38	13	<1.0	<10	55	71	<1.0	<0.10	<0.050	37			<10	5.9	26
11-12976	DM-2	2011	30-40	26	34	11	<1.0	<10	42	59	<1.0	<0.10	<0.050	59			<10	19	35
11-12978	DM-3	2011	0-10	27	37	11	<1.0	<10	45	65	1.2	<0.10	<0.050	52			<10	6.7	40
11-12980	DM-3	2011	30-40	24	33	11	<1.0	<10	40	59	<1.0	<0.10	<0.050	33			<10	15	13
13-25032	DM-2	2013	0-10	37	48	10	<1.0	<10	51	86	2.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25034	DM-2	2013	30-40	35	39	8.3	<1.0	<10	43	70	1.6	<0.10	<0.050	12			<10	<4.0	<9.0
13-25036	DM-3	2013	0-10	48	58	11	<1.0	<10	59	99	3.9	<0.10	<0.050	12			<10	<4.0	<9.0
13-25038	DM-3	2013	30-40	40	48	9.5	<1.0	<10	50	82	3.0	<0.10	<0.050	12			<10	<4.0	<9.0
	N value			42	42	42	42	42	42	42	42	24	42	32			24	24	24
	Baseline Detection Limits			3.0	5	5	1.0	10	15	20	1	0.10	0.10	10			10	4	9
	Arithmetic Mean			30	38	11	0.50	5.6	47	69	1.0	0.050	0.0280	70			5	10	22
	Arithmetic Mean Corrected for Detection Limits			30	38	11	1.0	10	47	69	1.0	0.10	0.10	70			5	10	22
	Standard Deviation			7.4	7.8	2.5	0.0	3	8.0	12	0.82	0.000	0.020	190			0	17	21
	Minimum			16	23	2.5	0.50	5.0	28	38	0.500	0.050	0.0015	12			5	2	5
	Maximum			48	58	16.0	0.50	22	61	99	3.9	0.05	0.05	1100			5	82	80
	95% Confidence Limit			2.2	2.4			0.9	2.4		0.25	0.000	0.006	66				7	8

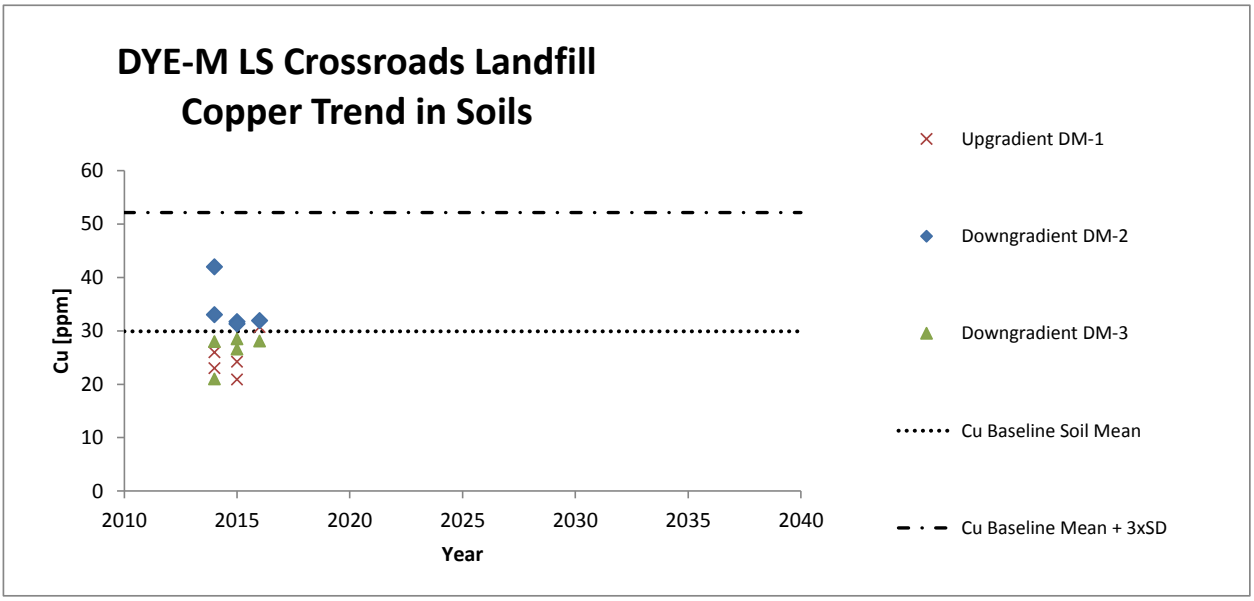
DYE-M LS Crossroads Landfill - Summary of Baseline and Background Soil Analytical Data

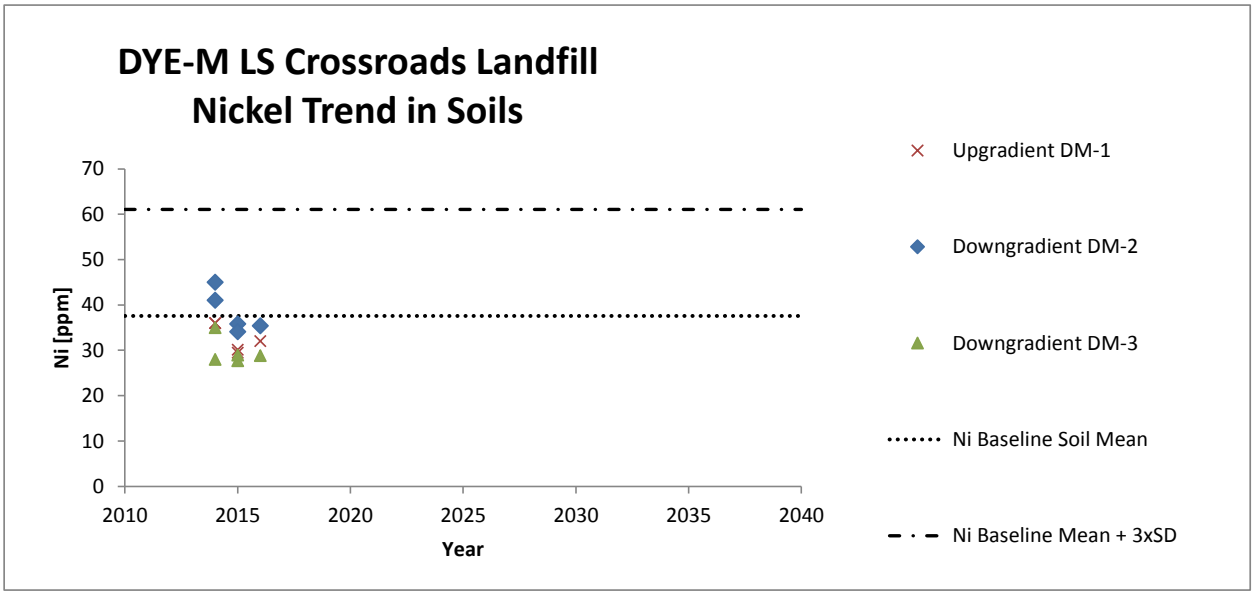
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_{6}-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004						
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024						
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002						
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002						
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0								
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0								
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0								
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0								
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0								
00-25526	West of glacier - background	2000		93	36	13	1.5	37	113	136	<1.0								
00-25527	West of glacier - background	2000		74	29	13	1.3	13	145	151	<1.0								
00-25528	West of glacier - background	2000		77	28	14	1.8	10	213	177	<1.0								
	N value			14	14	14	14	14	14	14	14	6	6						
	Background Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	1.0	0.0002						
	Arithmetic Mean			43	38	12	0.72	9.9	84	94	0.58	0.25	0.0047						
Arithmetic Mean Corrected for Detection Limits				43	38	12	1.0	10	84	94	1.0	0.5	0.0002						
	Standard Deviation			30	19	5.1	0.5	9.1	53	55	0.53	0.00	0.0096						
	Minimum			7.8	18	2.5	0.5	5.0	28	10	0.15	0.25	0.000						
	Maximum			93	89	23	1.8	37	213	177	2.4	0.3	0.02						
	95% Confidence Limit			16	10	3	0	5	28	29	0.28		0.01						

DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

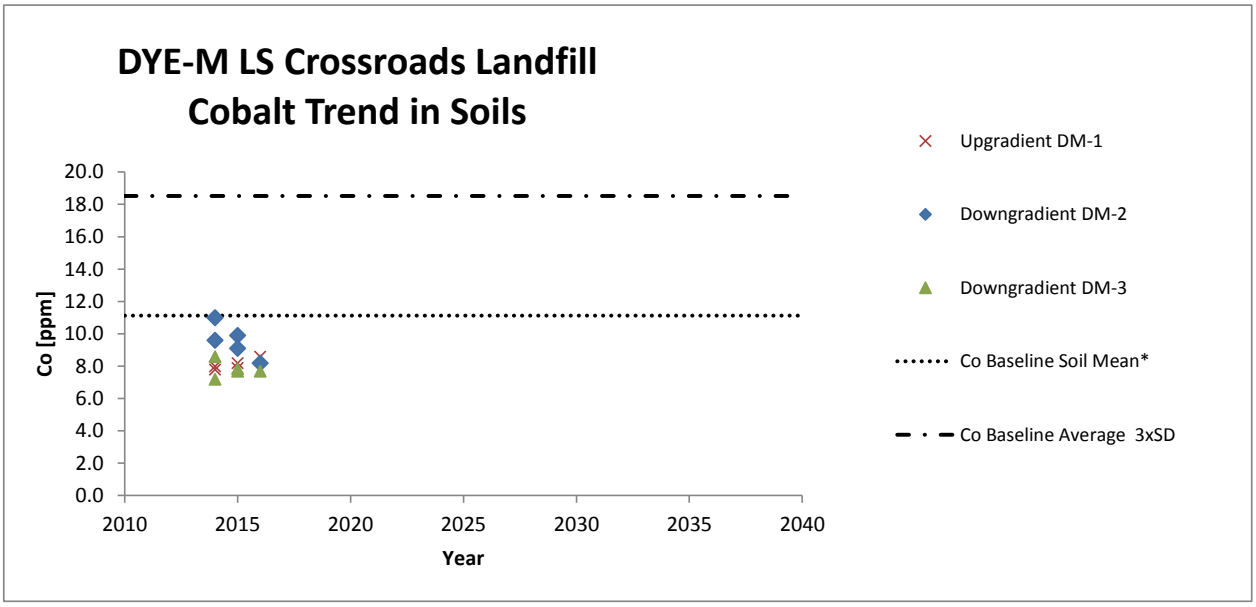


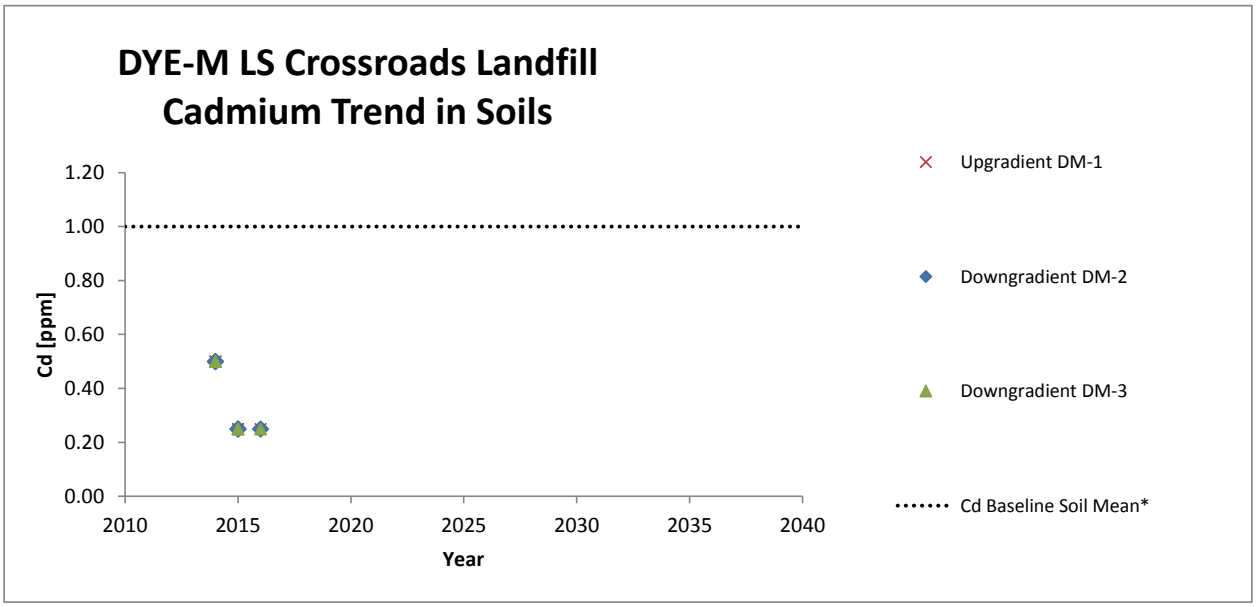


DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



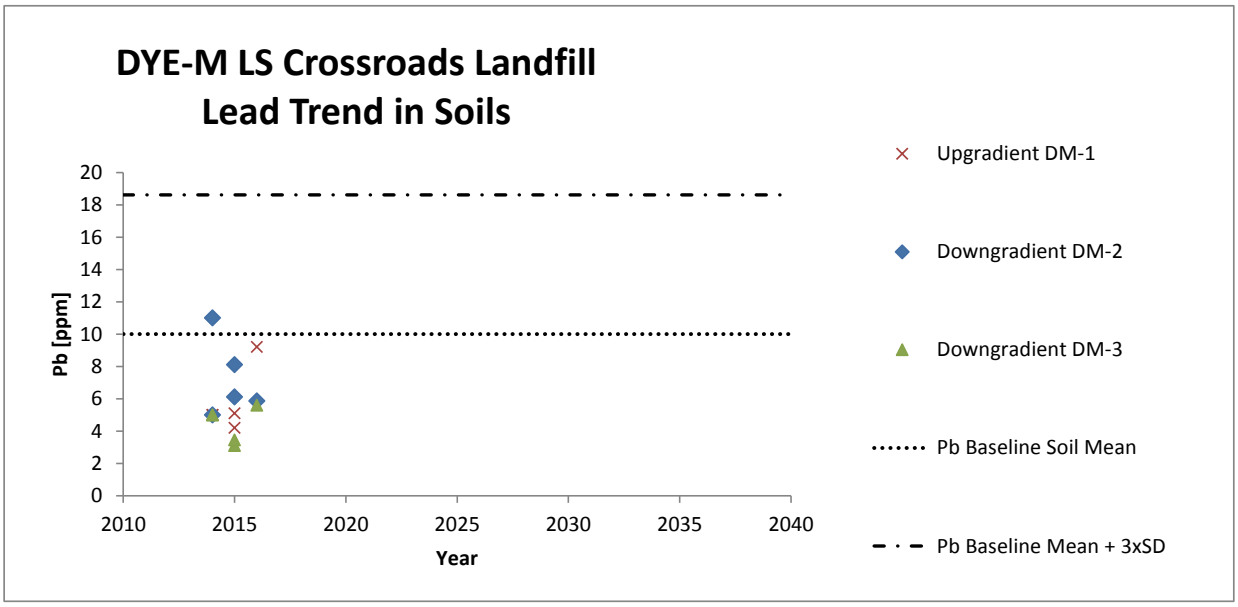


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
*Cd Baseline SD = 0

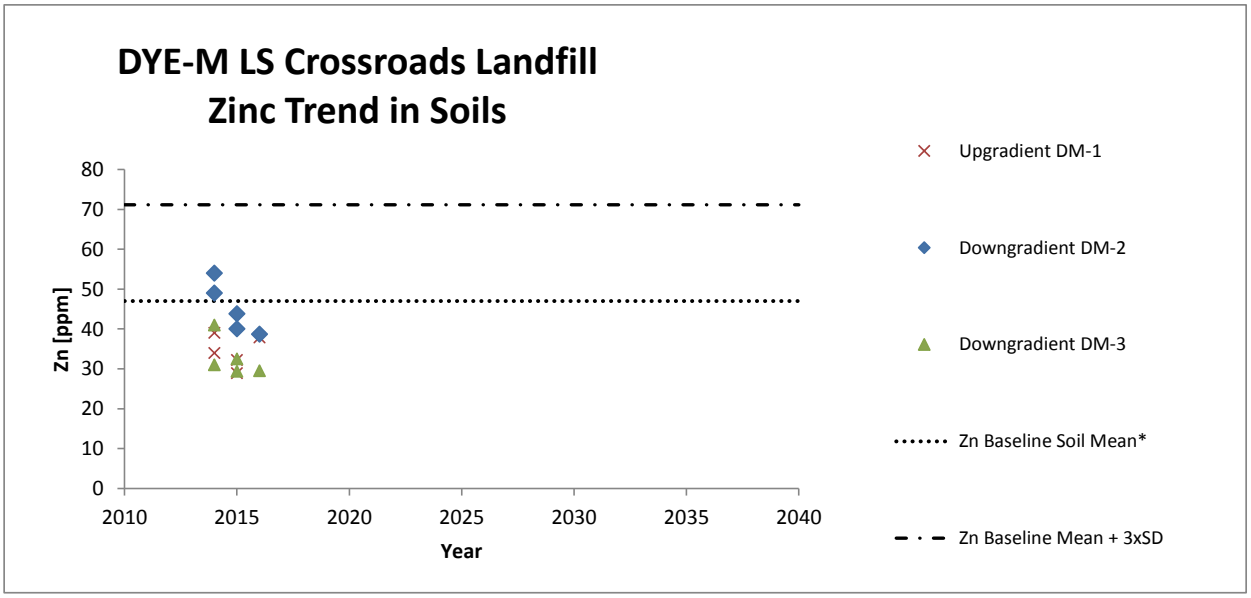
DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



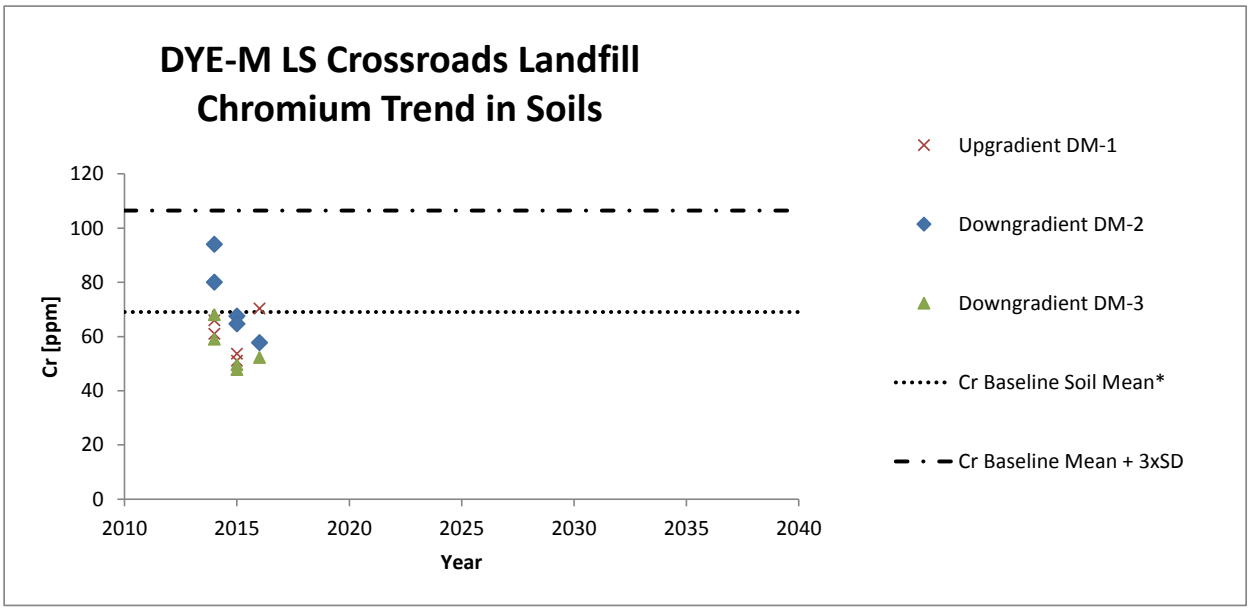
*Pb Baseline Arithmetic Mean is equal to the baseline detection limit.

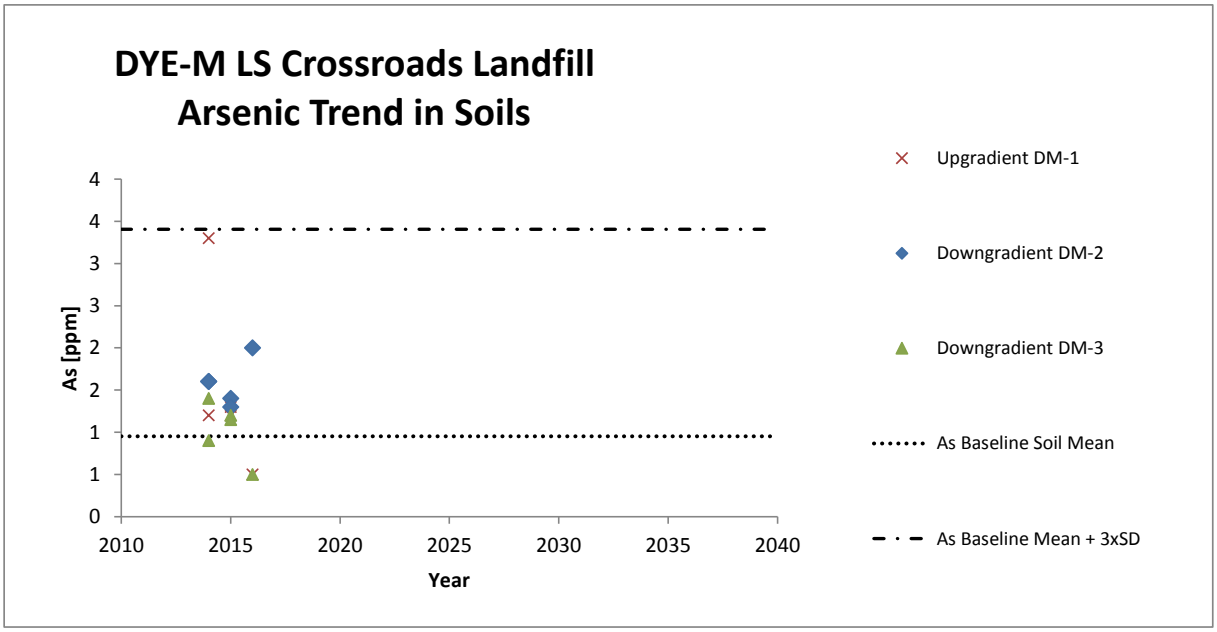


DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



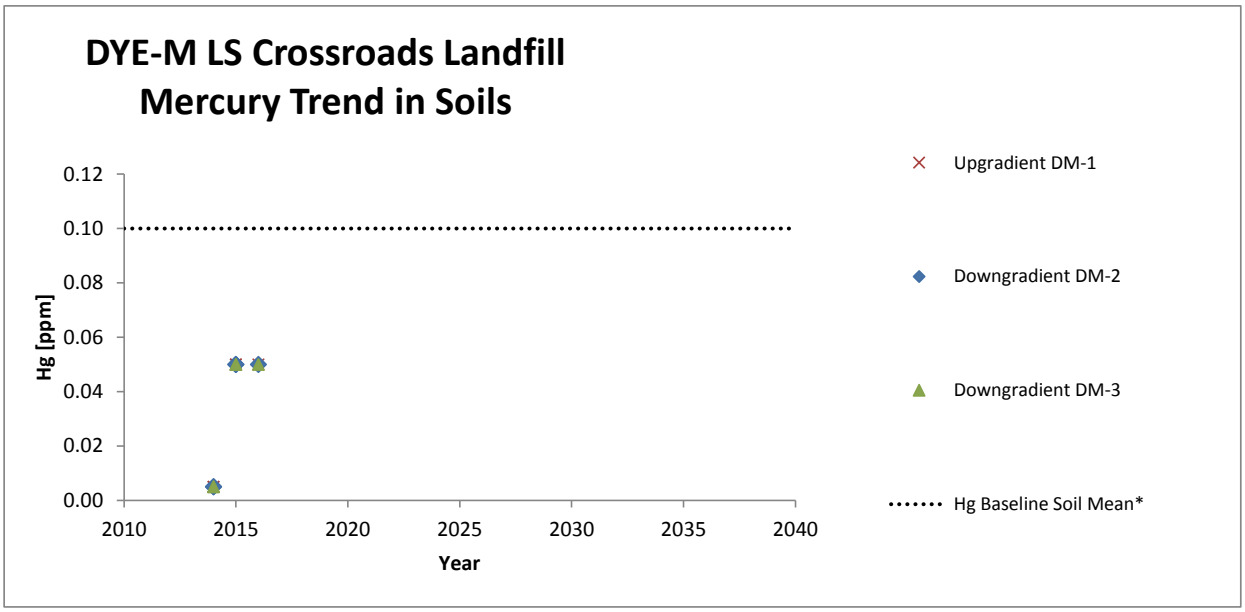


*As Baseline Arithmetic Mean is equal to the baseline detection limit.

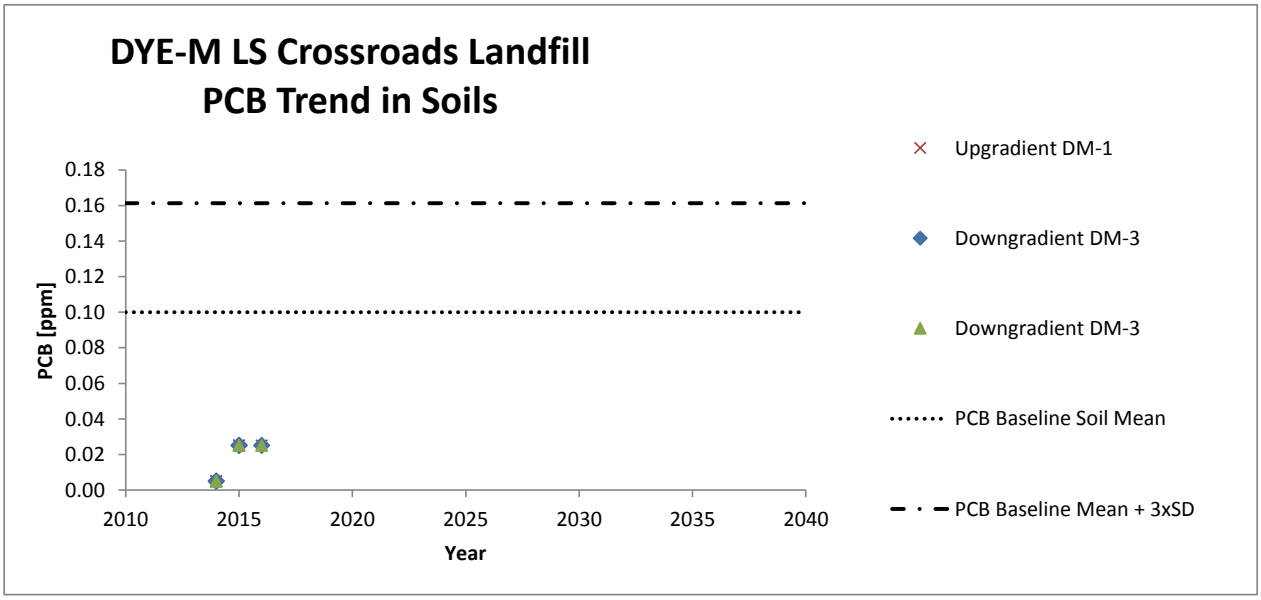
DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg baseline SD = 0

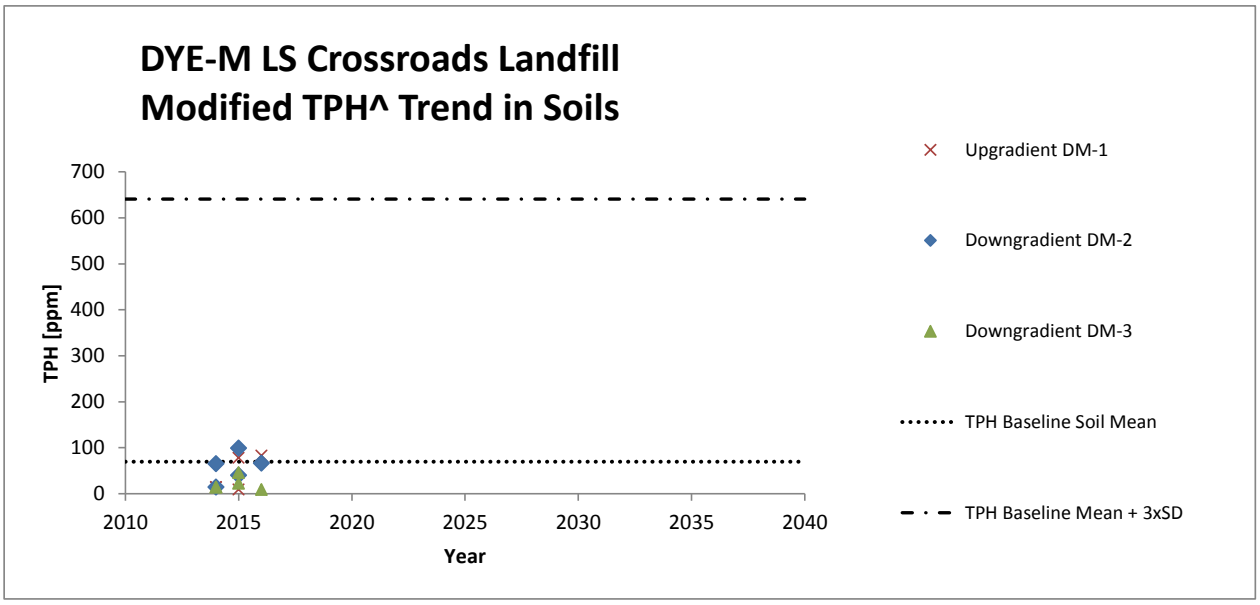


*PCB Baseline Arithmetic Mean is equal to the baseline detection limit.

DYE-M LS Crossroads Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M LS Foundation Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						43	38	12	1.0	10	84	94	1.0	0.50	0.0002	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**28**	**35**	**11**	**1.0**	**10**	**61**	**67**	**1.0**	**0.10**	**0.10**	**10**	**4.8**	**25**	**133**
Baseline Data - Standard Deviation						13	6.0	2.4	0.0	19	39	10	0.54	0.000	0.11	0.0	3.2	32	242
Baseline Data Mean + 3xStandard Deviation						67	53	18	1.0	66	179	98	2.6	0.10	0.42	10	14	121	859
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-4 surface																		
14-8322	DM-4	2014	Year 1	Phase I	0-10	26	32	7.7	<1.0	<10	42	**68**	**1.0**	<0.010	0.027	<10	<10	<10	15
DM-04 (0-15)	DM-4	2015	Year 2	Phase I	0-15	25.3	31.2	9.3	<0.5	9.1	41.6	61.3	**1.2**	<0.1	0.09	<7	<4	**38**	44
DM-04b	DM-4	2016	Year 3	Phase I	0-15	26.7	33.1	9.1	<0.5	5.6	36.3	57	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-4 depth																		
14-8323	DM-4	2014	Year 1	Phase I	40-45	20	29	7.2	<1.0	<10	35	59	**1.0**	<0.010	0.014	<10	<10	<10	15
DM-04 (40-50)	DM-4	2015	Year 2	Phase I	40-50	18.5	24.8	7.4	<0.5	6.8	31.4	49.3	<1	<0.1	<0.05	<7	<4	**28**	34
DM-04a	DM-4	2016	Year 3	Phase I	30-40	**30.7**	**37.3**	10.2	<0.5	6.5	40.5	66.8	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Foundation Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	DM-5 surface																		
14-8324	DM-5	2014	Year 1	Phase I	0-10	26	**35**	8.4	<1.0	**19**	49	**75**	**1.3**	0.013	0.052	<10	<10	**170**	**180**
DM-05 (0-15)	DM-5	2015	Year 2	Phase I	0-15	27.8	34.2	9.9	<0.5	3.6	38.5	**67**	**2.1**	<0.1	<0.05	<7	<4	<8	9.5
DM-05a	DM-5	2016	Year 3	Phase I	0-15	**35.2**	**44.5**	9.1	<0.5	**131**	44.6	63.1	<1.0	<0.1	<0.05	<7	**15**	**431**	**449.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-5 depth																		
14-8325	DM-5	2014	Year 1	Phase I	40-45	**30**	**38**	9.5	<1.0	<10	45	**75**	**1.3**	<0.010	<0.010	<10	<10	<10	15
DM-05 (40-50)	DM-5	2015	Year 2	Phase I	40-50	17.4	23.6	6.9	<0.5	2.4	24.8	45	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-5	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS Foundation Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-6 surface																		
14-8327	DM-6	2014	Year 1	Phase I	0-10	**31**	**38**	9.3	<1.0	<10	46	**76**	**1.6**	<0.010	<0.010	<10	<10	<10	15
DM-06 (0-15)	DM-6	2015	Year 2	Phase I	0-15	**29.7**	**36.3**	**11.1**	<0.5	4.6	42.4	**71.8**	**2.2**	<0.1	<0.05	<7	<4	<8	9.5
DM-06a	DM-6	2016	Year 3	Phase I	0-15	24.1	27.5	7.1	<0.5	5.4	33.1	51.6	<1.0	<0.1	<0.05	<7	<4	25	30.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-6 depth																		
14-8328	DM-6	2014	Year 1	Phase I	40-45	**30**	**43**	**11**	<1.0	<10	49	**86**	**1.3**	<0.010	<0.010	<10	<10	<10	15
DM-06 (40-50)	DM-6	2015	Year 2	Phase I	40-50	27.8	30.8	8.9	<0.5	3.4	38.3	59.3	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-6	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX sample exceeds background

XX **sample exceeds baseline**

XX *sample exceeds DLCU Tier I criteria*

XX *sample exceeds DLCU Tier II criteria*

DYE-M LS Foundation Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_{6}-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-5327	5327	2001	0						170				0.3						
01-5328	5327	2001	50											1300					
97-7199		1997	0											61					
97-7200		1997	0											<40					
97-7201		1997	0											43					
97-7203[1]		1997	0	26	29	8.6	<1.0	61	160	68	0.66		<0.5	14000					
97-7204		1997	15											98					
97-7205		1997	0						180					<40					
97-7206		1997	0											<40					
97-7207		1997	0											<40					
97-7208		1997	0	110				<100	170					<40					
97-7209[1]		1997	0	33				48	150				<0.5	5200					
97-7210		1997	30											570					
01-20487	20487	2001	0	31	42	12	<1.0	12	54	77	<1.0		<0.1						
01-20492	20492	2001	0	24	27	8.2	<1.0	21	51	53	<1.0		0.3						
01-20508	20508	2001	0	28	39	12	<1.0	<10	51	74	<1.0		<0.1						
00-24233		2000	0											<40					
00-24235		2000	0										<0.5						
00-24245		2000	0											460					
00-24253		2000	0	27	34	12	<1.0	10	49	66	1.7		<0.5						
00-24973	24247	2000	40	26	42	13	<1.0	<10	56	79	<1.0	<0.10	<0.1	<40					
08-11677	DM-4	2008	0-10	28	38	13	<1.0	<10	52	73	<1.0	<0.10	0.14	49			<10	<4.0	42
08-11679	DM-4	2008	30-40	29	41	13	<1.0	13	54	80	<1.0	<0.10	0.17	117			<10	<4.0	110
11-12982	DM-4	2011	0-10	24	34	12	<1.0	11	47	65	<1.0	<0.10	0.050	66			<10	6.9	54
11-12984	DM-4	2011	30-40	21	36	9.9	<1.0	<10	39	67	<1.0	<0.10	0.13	45			<10	4.3	36
13-25040/41	DM-4	2013	0-10	28	39	8.6	<1.0	13	50	73	2.0	<0.10	0.067	23			<10	6.2	12
13-25042	DM-4	2013	30-40	19	28	6.2	<1.0	<10	34	52	0.7	<0.10	<0.050	12			<10	<4.0	<9.0
Downgradient:																			
01-5350		2001	0	12	17	6	<1.0	<10	35	30	1.3		<0.5	280					
01-5352		2001	40	27	37	13	<1.0	<10	47	71	1.7		<0.5	190					
01-18692		2001	0	29	35	11	<1.0	<10	47	65	<1.0		<0.1						
01-18693		2001	50	31	38	11	<1.0	<10	47	66	<1.0		<0.1						
01-19339		2001	0	25	31	9.6	<1.0	<10	200	61	<1.0		<0.1						
01-19538		2001	0	27	31	11	<1.0	42	59	64	<1.0		<0.1	<40					
01-19539		2001	50	19	25	8.7	<1.0	<10	35	54	<1.0		<0.1	<40					
01-19842		2001	0	21	31	8.9	<1.0	<10	43	63	<1.0		<0.1						
01-19846		2001	0	28	33	11	<1.0	19	57	67	<1.0		<0.1						
01-19850		2001	0	28	33	11	<1.0	28	46	60	<1.0		<0.1						
01-19851		2001	0	23	30	9.5	<1.0	15	38	54	<1.0		<0.1						
01-20046		2001	0	23	27	8.4	<1.0	96	63	52	<1.0		<0.1						
01-20478		2001	0	26	33	11	<1.0	11	48	66	<1.0		<0.1						
01-20483		2001	0	28	35	9.9	<1.0	30	49	69	<1.0		<0.1						
01-20514		2001	0	26	34	10	<1.0	17	56	66	<1.0		<0.1						
01-20516		2001	0	20	27	7.9	<1.0	<10	40	55	<1.0		<0.1						
01-20517		2001	40	30	40	11	<1.0	<10	48	64	<1.0		<0.1	90					
01-20610		2001	0	26	33	11	<1.0	<10	52	69	<1.0		<0.1						
01-20611		2001	0	24	34	11	<1.0	<10	53	71	<1.0		<0.1						
00-24239		2000	0										<0.5	<40					
00-24242		2000	0											<40					
00-24255		2000	0	32	34	13	<1.0	28	49	67	1.6		0.6	330					
00-24256		2000	0											430					
00-24257		2000	0											<40					
00-24260		2000	0	24	32	12	<1.0	45	45	61	1.6		<0.5	550					
00-24261		2000	0	24	30	11	<1.0	40	44	60	1.4		<0.5	470					
00-24719		2000	0											<40					

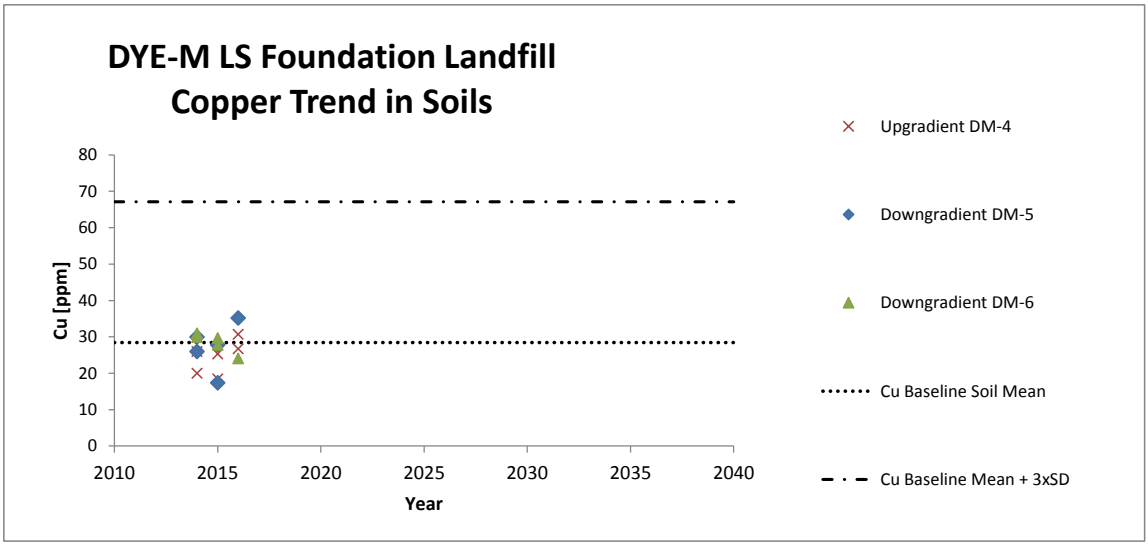
DYE-M LS Foundation Landfill - Summary of Baseline and Background Soil Analytical Data

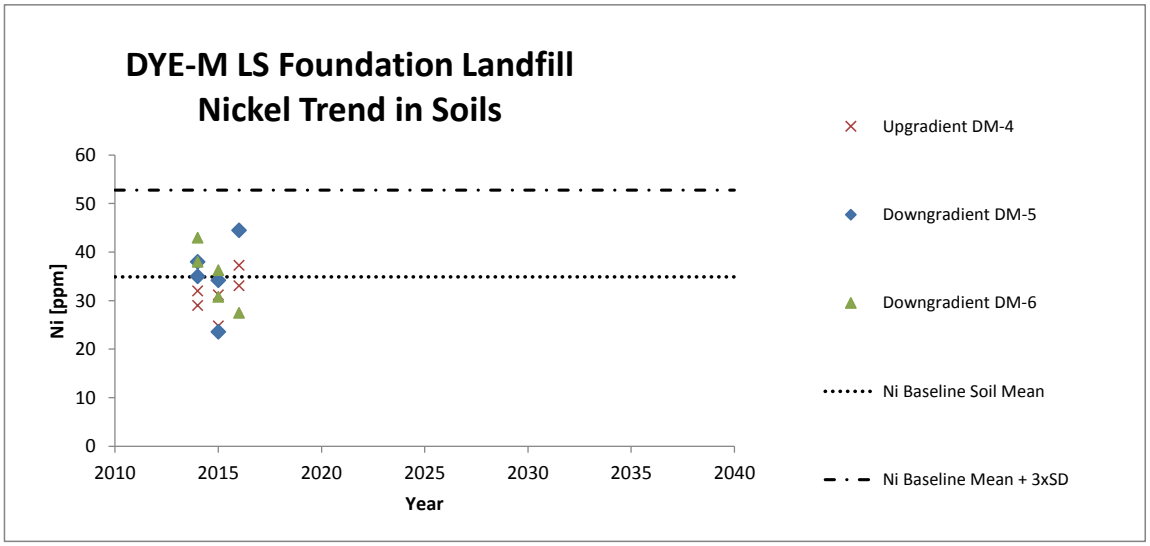
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_{6}-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
08-11681	DM-5	2008	0-10	32	41	15	<1.0	18	52	78	<1.0	<0.10	0.006	99			<10	5.7	88
08-11683	DM-5	2008	35-45	30	40	14	<1.0	<10	45	75	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11685/86	DM-6	2008	0-10	30	41	14	<1.0	<10	46	74	<1.0	<0.10	<0.0030	23			<10	13	<9.0
08-11687	DM-6	2008	30-40	29	39	13	<1.0	<10	46	73	<1.0	<0.10	<0.0030	14			<10	4.5	<9.0
11-12986	DM-5	2011	0-10	17	26	9.6	<1.0	<10	35	51	<1.0	<0.10	<0.050	36			<10	<4.0	29
11-12988	DM-5	2011	30-40	35	44	15	<1.0	<10	53	80	1.2	<0.10	<0.050	19			<10	<4.0	12
11-12990	DM-6	2011	0-10	27	36	12	<1.0	<10	43	70	1.1	<0.10	<0.050	12			<10	<4.0	<9.0
11-12992	DM-6	2011	30-40	30	42	14	<1.0	<10	49	80	<1.0	<0.10	<0.050	15			<10	5.5	<9.0
13-25044	DM-5	2013	0-10	28	37	9	<1.0	21	54	69	1.8	<0.10	<0.050	26			<10	6.7	14
13-25046	DM-5	2013	30-40	33	44	10	<1.0	<10	48	81	1.9	<0.10	<0.050	19			<10	9.5	<9.0
13-25048	DM-6	2013	0-10	36	46	10	<1.0	12	58	89	1.9	<0.10	<0.050	12			<10	<4.0	<9.0
13-25050/51	DM-6	2013	30-40	31	40	9.4	<1.0	<10	44	72	2.1	<0.10	<0.050	17			<10	7.8	<9.0
	N value			48	46	46	46	48	50	46	46	19	50	46			18	18	18
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.10	0.05	40			10	4	9
	Arithmetic Mean			28	35	11	0.50	16	61	67	0.8	0.050	0.073	133			5	5	25
	Arithmetic Mean Corrected for Detection Limits			28	35	11	1.0	10	61	67	1.0	0.10	0.10	133			10	5	25
	Standard Deviation			13	6.0	2.4	0.0	19	39	10	0.54	0.000	0.11	242			0	3	32
	Minimum			12	17	2.5	0.50	5.0	34	30	0.50	0.050	0.0015	12			5	2	5
	Maximum			110	46	15	0.50	96	200	89	2.1	0.05	0.60	1300			5	13	110
	95% Confidence Limit			3.6	1.7			5.3	10.9		0.16	0.000	0.029	70				1.5	15
Background Data																			
89-G300	ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004						
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024						
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002						
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002						
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0								
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0								
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0								
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0								
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0								
00-25526	West of glacier - background	2000		93	36	13	1.5	37	113	136	<1.0								
00-25527	West of glacier - background	2000		74	29	13	1.3	13	145	151	<1.0								

DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

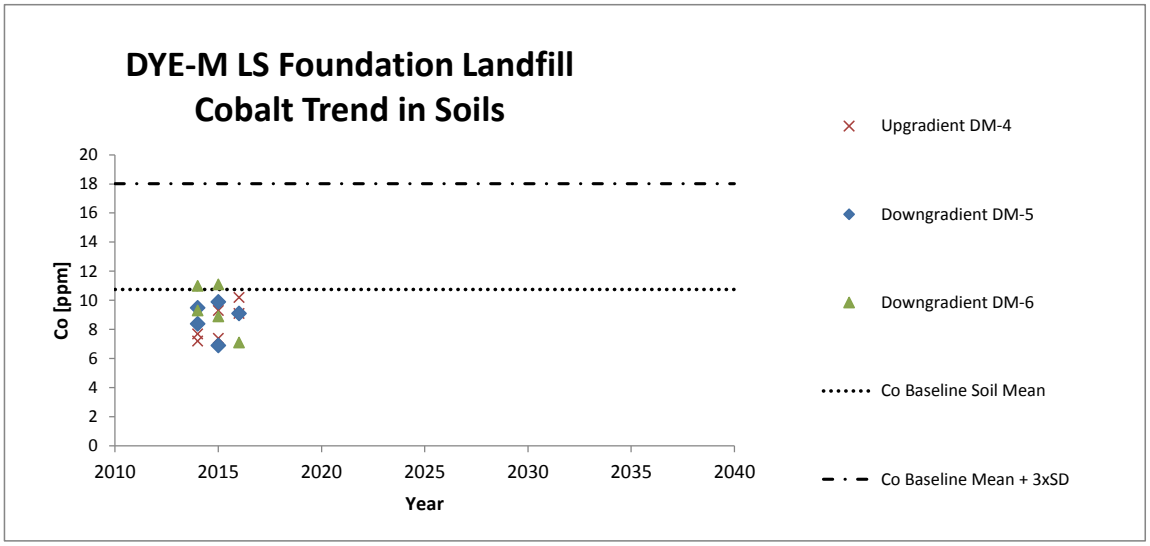


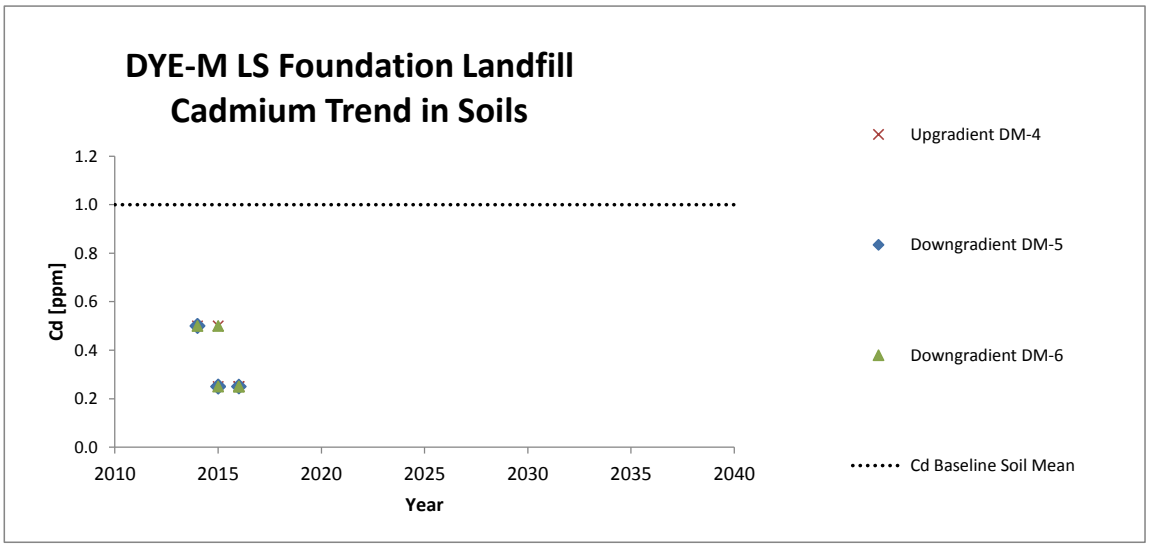


DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

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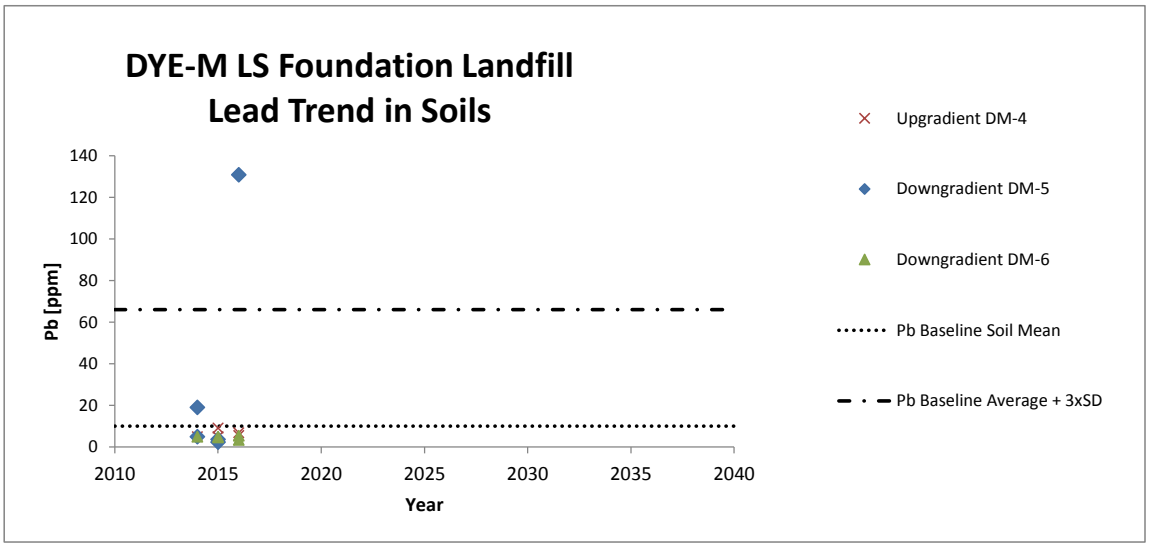


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
*Cd Baseline SD = 0

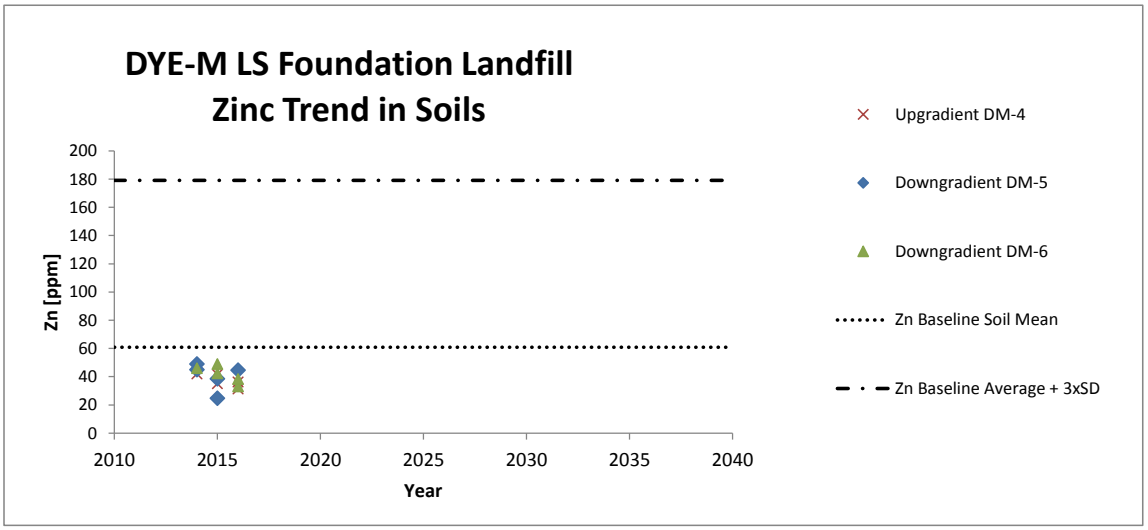
DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



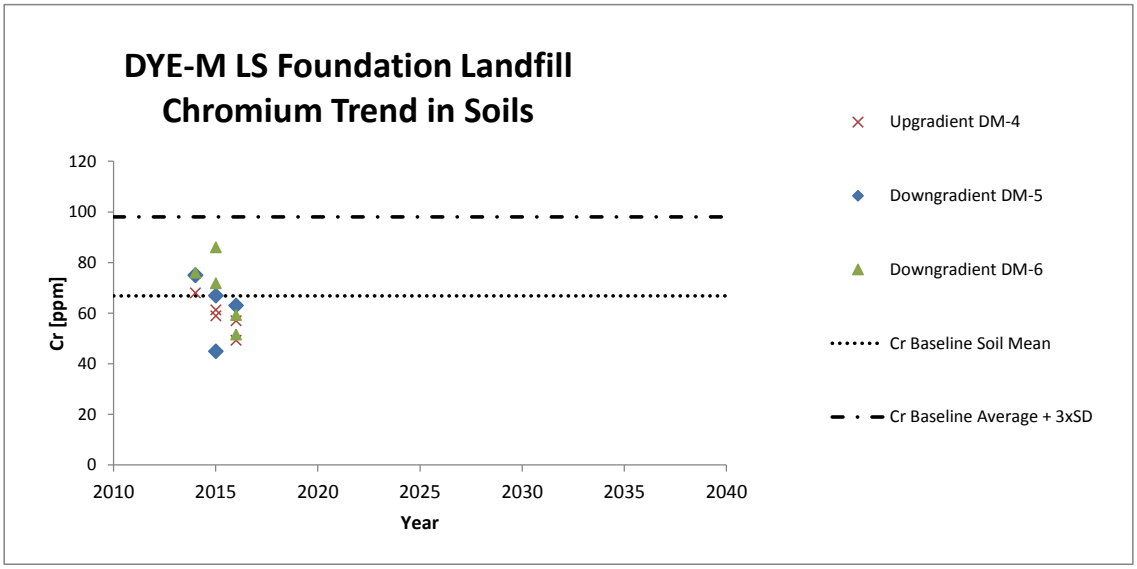
*Pb Baseline Arithmetic Mean is equal to the baseline detection limit.

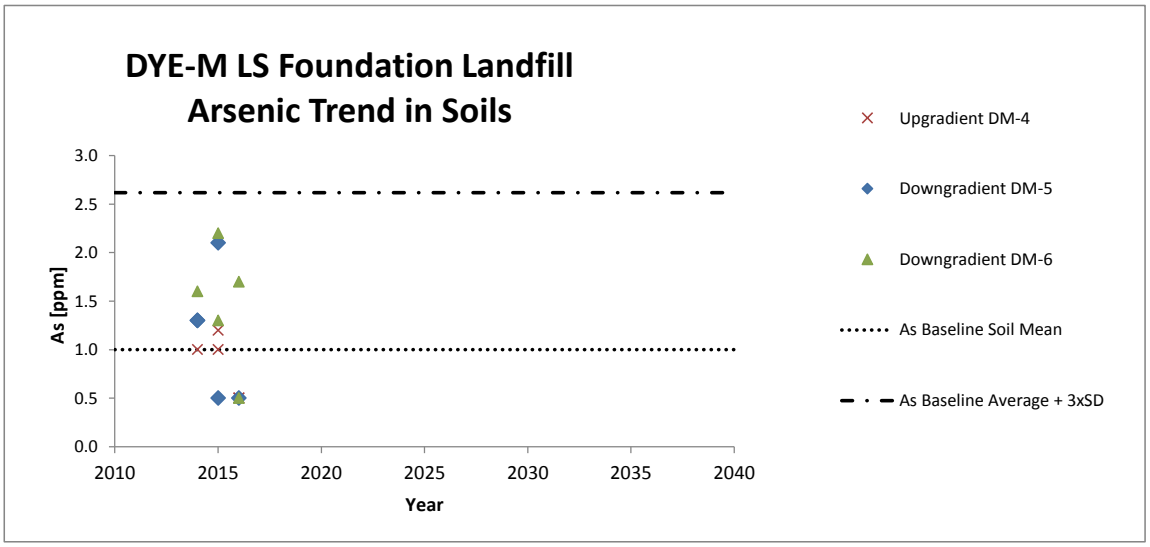


DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



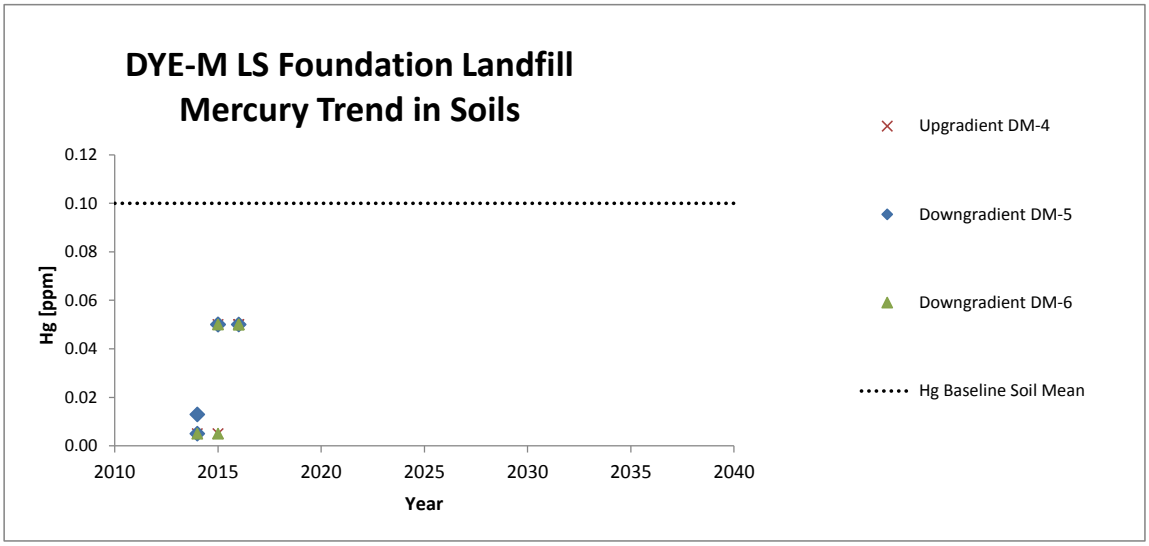


*As Baseline Arithmetic Mean is equal to the detection limit.

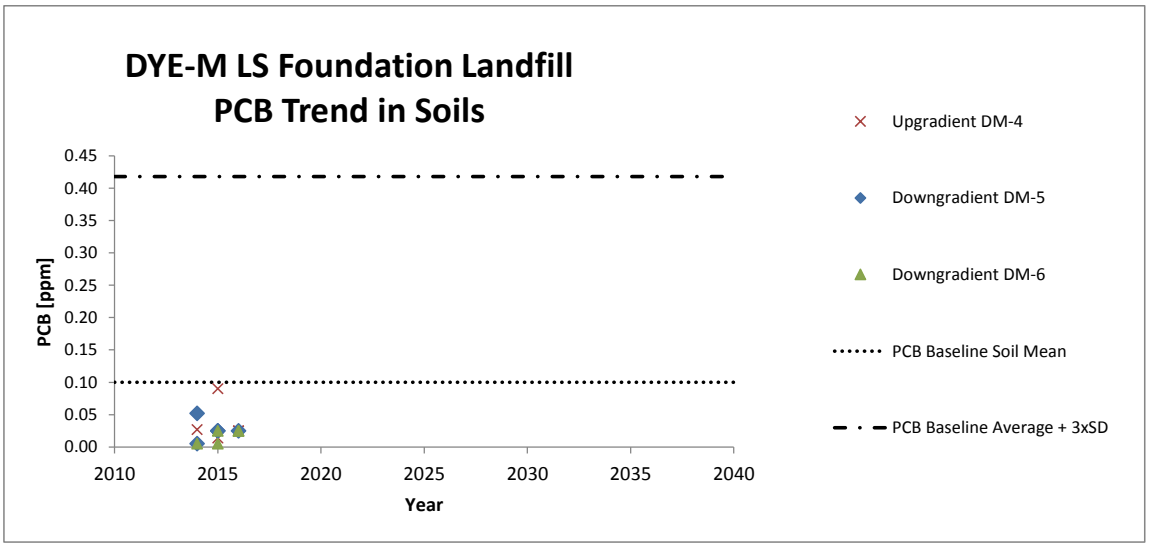
DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD is equal to zero

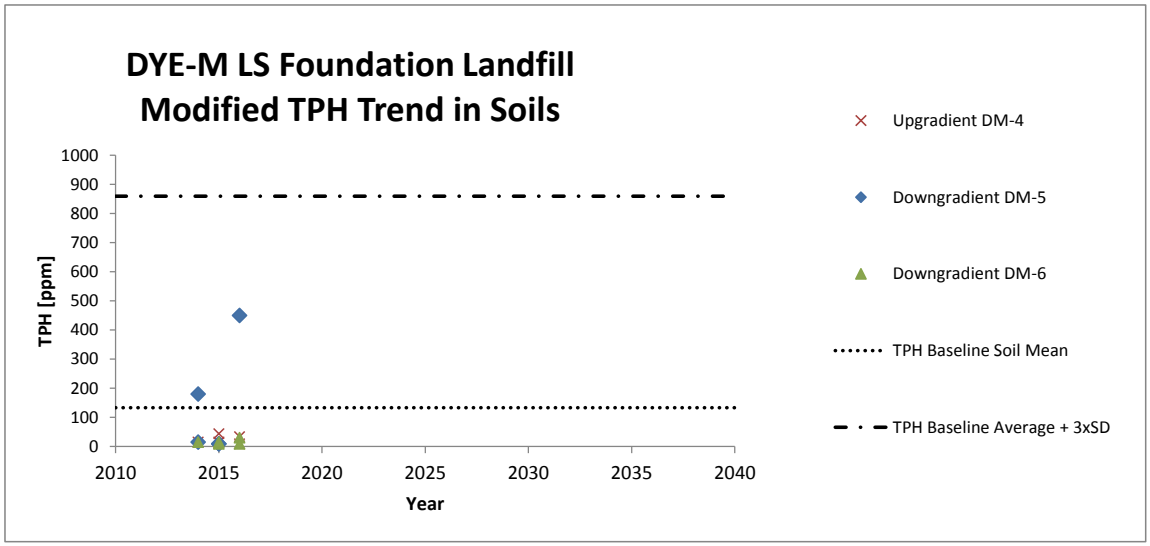


*PCB Baseline Arithmetic Mean is equal to the baseline detection limit.

DYE-M LS Foundation Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M LS North Warning System (NWS) Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						43	38	12	1.0	10	84	94	1.00	0.50	0.0002	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**26**	**34**	**12**	**1.0**	**10**	**51**	**65**	**1.0**	**0.10**	**0.10**	**10**	**4.0**	**9.0**	**101**
Baseline Data - Standard Deviation						7.2	10	3.6	0.0	4.0	15	21	0.66	0.000	0.017	0	3.7	11	276
Baseline Data Mean + 3xStandard Deviation						48	64	23	1.0	22	97	126	3.0	0.10	0.15	10	15	43	929
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-7 surface																		
14-8444	DM-7	2014	Year 1	Phase I	5-10	21	29	6.0	<1.0	<10	35	47	**1.3**	<0.010	<0.010	<10	<10	<10	15
DM-07 (0-15)	DM-7	2015	Year 2	Phase I	0-15	23.5	**37**	11.3	<0.5	3.8	39.5	**68.3**	**1.2**	<0.1	<0.05	<7	<4	<8	9.5
DM-07b	DM-7	2016	Year 3	Phase I	0-15	**27**	**37**	10	<0.5	5	42	63	**1**	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-7 depth																		
14-8445	DM-7	2014	Year 1	Phase I	40-45	25	33	7.0	<1.0	<10	39	58	**1.1**	<0.010	<0.010	<10	<10	<10	15
DM-07 (40-50)	DM-7	2015	Year 2	Phase I	40-50	23.8	**37.6**	11.2	<0.5	4.9	38.7	**67**	<1	<0.1	<0.05	<7	<4	<8	9.5
DM-07a	DM-7	2016	Year 3	Phase I	40-50	**26**	33.9	10.1	<0.5	5.6	36.6	**69.5**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS North Warning System (NWS) Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	DM-8 surface																		
14-8453	DM-8	2014	Year 1	Phase I	5-10	18	32	6.9	<1.0	**11**	49	54	**1.3**	<0.010	0.01	<10	<10	<10	15
DM-08 (0-15) (Dup Avg	DM-8	2015	Year 2	Phase I	0-15	23	30	9.3	<0.5	**11**	50	55	**1**	<0.1	<0.05	<6	<4	**11**	16
DM-08a	DM-8	2016	Year 3	Phase I	0-15	25.6	28.5	8.9	<0.5	**10.8**	43.3	56.3	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-8 depth																		
14-8454	DM-8	2014	Year 1	Phase I	45-50	15	29	6.3	<1.0	<10	40	50	**1.1**	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	DM-8	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-8	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS North Warning System (NWS) Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-9 surface																		
14-8450/51	DM-9	2014	Year 1	Phase I	5-10	**40**	**74**	**16**	<1.0	<10	**91**	**130**	**2.0**	<0.010	<0.010	<10	<10	<10	15
DM-09 (0-15)	DM-9	2015	Year 2	Phase I	0-15	**40.5**	**53.7**	**19**	<0.5	9.7	**70.1**	**107**	**1.8**	<0.1	<0.05	<7	<4	<8	9.5
DM-09a	DM-9	2016	Year 3	Phase I	0-15	**27.2**	31.9	9.6	<0.5	5.2	36.1	63.9	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-9 depth																		
14-8452	DM-9	2014	Year 1	Phase I	40-45	**38**	**71**	**15**	<1.0	<10	**87**	**120**	**1.8**	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	DM-9	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-9	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M LS North Warning System (NWS) Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-10 surface																		
14-8447*	DM-10	2014	Year 1	Phase I	5-10	21	**40**	8.4	<1.0	<10	48	**77**	**1.1**	<0.010	<0.010	<10	<10	<10	15
DM-10 (0-15)	DM-10	2015	Year 2	Phase I	0-15	**30.8**	**39.2**	**14.5**	<0.5	8.9	**55.7**	**74.7**	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
DM-10a	DM-10	2016	Year 3	Phase I	0-15	**28.7**	31.5	10	<0.5	6.3	41.1	**64.7**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-10 depth																		
14-8448	DM-10	2014	Year 1	Phase I	30-35	18	31	6.5	<1.0	<10	37	58	0.8	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	DM-10	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-10	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M LS NWS Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-20747		2001	0	27	36	13	<1.0	<10	48	65	1.2		<0.1						
01-20750		2001	0	24	34	12	<1.0	<10	50	65	<1.0		<0.1						
01-20751		2001	0	28	39	14	<1.0	<10	56	74	<1.0		<0.1						
08-11577/78	DM-7	2008	0-10	15	24	8.1	<1.0	<10	27	44	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11579	DM-7	2008	30-40	12	21	6.8	<1.0	<10	25	38	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
11-13002	DM-7	2011	0-10	24	32	11	<1.0	<10	39	54	<1.0	<0.10	<0.050	23			<10	<4.0	16
11-13004	DM-7	2011	30-40	22	28	11	<1.0	<10	37	49	<1.0	<0.10	<0.050	65			<10	4.9	55
13-25168	DM-7	2013	0-10	25	35	10	<1.0	<10	45	67	0.7	<0.10	<0.050	30			<10	12	13
13-25170/71	DM-7	2013	25-35	29	43	12	<1.0	<10	46	73	1.6	<0.10	<0.050	12			<10	<4.0	<9.0
Downgradient:																			
01-20573		2001	0	25	18	7.3	<1.0	11	33	30	<1.0		<0.1	<40					
01-20574		2001	50											120					
01-20576		2001	0	29	39	15	<1.0	<10	53	75	<1.0		<0.1						
01-20579		2001	0	39	55	20	<1.0	<10	72	130	<1.0		<0.1						
01-20582		2001	0	25	34	14	<1.0	<10	55	65	<1.0		<0.1	81					
01-20583		2001	25	19	25	11	<1.0	<10	45	47	<1.0		<0.1	640					
01-20584		2001	0	33	41	15	<1.0	<10	65	81	<1.0		<0.1	<40					
01-20587		2001	0	31	43	17	<1.0	<10	62	81	<1.0		<0.1	<40					
02-14044		2002	0											110					
02-14047		2002	0											270					
02-14048		2002	40											1000					
02-14050/51		2002	0											<40					
02-14052		2002	40											<40					
02-14055		2002	0											<40					
01-20588		2001	40											370					
01-20590		2001	0	31	41	15	<1.0	<10	58	77	<1.0		<0.1	<40					
01-20591		2001	0	34	48	16	<1.0	<10	64	100	3.7		<0.1	<40					
01-20632		2001	0	29	39	13	<1.0	<10	55	71	1.5		<0.1	<40					
01-20634		2001	0	37	49	17	<1.0	<10	68	93	1.0		<0.1	<40					
01-20638		2001	50	22	9.3	5.4	<1.0	15	34	<20	<1.0		<0.1	1600					
01-20639		2001	0	21	21	8.3	<1.0	12	47	35	<1.0		<0.1	<40					
01-20665		2001	0	29	44	15	<1.0	10	64	89	0.5		<0.1						
01-20736		2001	0	24	29	12	<1.0	10	54	49	<1.0		<0.1	<40					
01-20737		2001	45	24	28	12	<1.0	11	54	49	<1.0		<0.1	<40					
01-20738		2001	0	27	33	13	<1.0	14	57	63	<1.0		<0.1	<40					
01-20739		2001	50	28	35	14	<1.0	19	64	63	<1.0		<0.1	<40					
01-20740		2001	0	25	36	11	<1.0	<10	44	58	<1.0		<0.1						
01-20741		2001	0	24	34	11	<1.0	<10	46	65	3.0		<0.1						
01-20744		2001	0	25	37	14	<1.0	<10	54	68	<1.0		<0.1						
00-22509		2000	0	22	35	11	<1.0	<10	42	63	<1.0		<0.1						
00-22510		2000	0	30	37	13	<1.0	11	52	68	<1.0		<0.1	<40					
00-22511		2000	0	29	34	12	<1.0	<10	49	61	<1.0		<0.1						
00-22512		2000	0	51	58	20	<1.0	25	130	100	<1.0		<0.1	<40					
00-22513		2000	0	32	41	14	<1.0	<10	54	75	<1.0		<0.1	100					

DYE-M LS NWS Landfill - Summary of Baseline and Background Soil Analytical Data

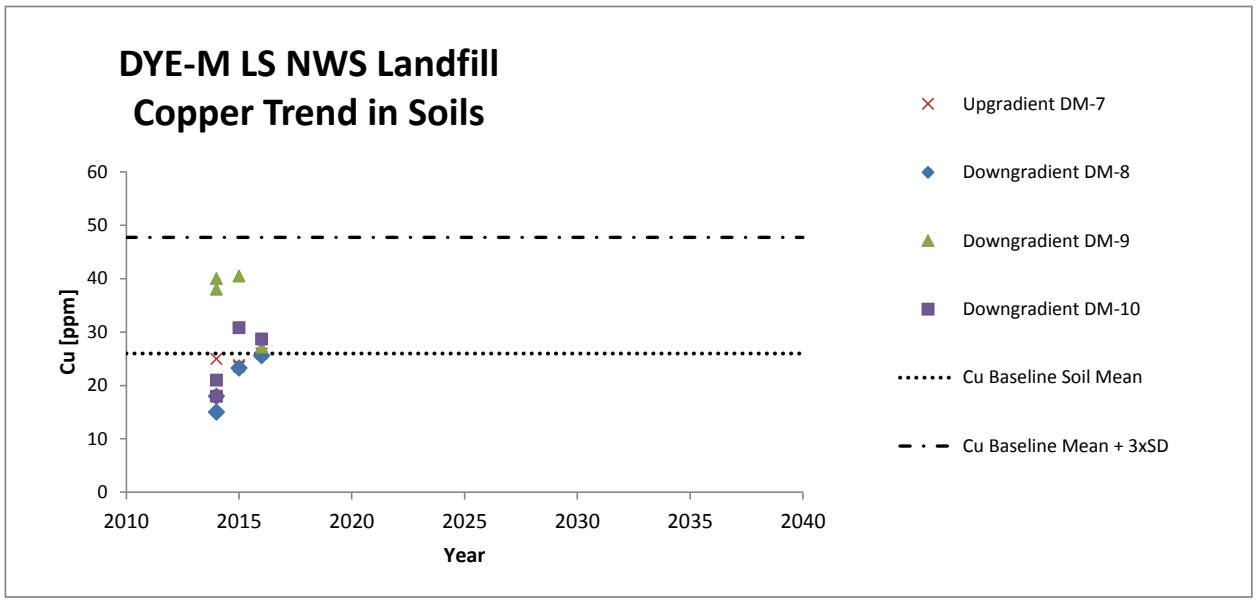
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
08-11581	DM-8		0-10	26	31	9.9	<1.0	<10	52	63	<1.0	<0.10	0.010	12			<10	<4.0	<9.0
08-11583	DM-8		30-40	21	28	11	<1.0	<10	48	56	1.8	<0.10	0.008	12			<10	<4.0	9.4
08-11585	DM-9		0-10	17	23	9.1	<1.0	<10	35	51	1.1	<0.10	0.007	26			<10	4.6	15
08-11587	DM-9		30-40	26	34	13	<1.0	<10	48	67	<1.0	<0.10	0.004	12			<10	<4.0	15
08-11589	DM-10		0-10	19	29	19	<1.0	<10	47	62	<1.0	<0.10	0.003	12			<10	<4.0	<9.0
08-11591	DM-10		30-40	18	28	19	<1.0	<10	44	74	<1.0	<0.10	0.003	12			<10	<4.0	<9.0
11-13006	DM-8		0-10	18	27	11	<1.0	<10	43	49	<1.0	<0.10	<0.050	28			<10	<4.0	<9.0
11-13008	DM-8		30-40	16	24	9.5	<1.0	<10	41	44	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-13010/11	DM-9		0-10	20	32	12	<1.0	<10	43	61	<1.0	<0.10	<0.050	28			<10	4.7	16
11-13012	DM-9		30-40	17	26	10	<1.0	<10	33	48	<1.0	<0.10	<0.050	15			<10	5.1	<9.0
11-13014	DM-10		0-10	23	33	13	<1.0	<10	45	64	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-13016	DM-10		30-40	25	34	16	<1.0	<10	51	60	<1.0	<0.10	<0.050	14			<10	4.8	<9.0
13-25172	DM-8		0-10	23	31	7.8	<1.0	<10	47	55	1.7	<0.10	<0.050	18			<10	13	21
13-25174	DM-8		25-35	18	25	6.5	<1.0	<10	35	45	0.9	<0.10	<0.050	18			<10	<4.0	<9.0
13-25176	DM-9		0-10	33	48	12	<1.0	<10	55	85	1.5	<0.10	<0.050	19			<10	14	18
13-25178	DM-9		25-35	46	66	18	<1.0	<10	77	120	2.1	<0.10	<0.050	7			<10	<4.0	<9.0
13-25180/81	DM-10		0-10	33	38	13	<1.0	<10	53	68	1.2	<0.10	<0.050	7			<10	<4.0	<9.0
13-25182	DM-10		25-35	27	31	11	<1.0	<10	43	53	1.2	<0.10	<0.050	7			<10	<4.0	<9.0
	N value			53	53	53	53	53	53	53	53	24	53	50			24	24	24
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.10	0.1	40			10	4	9

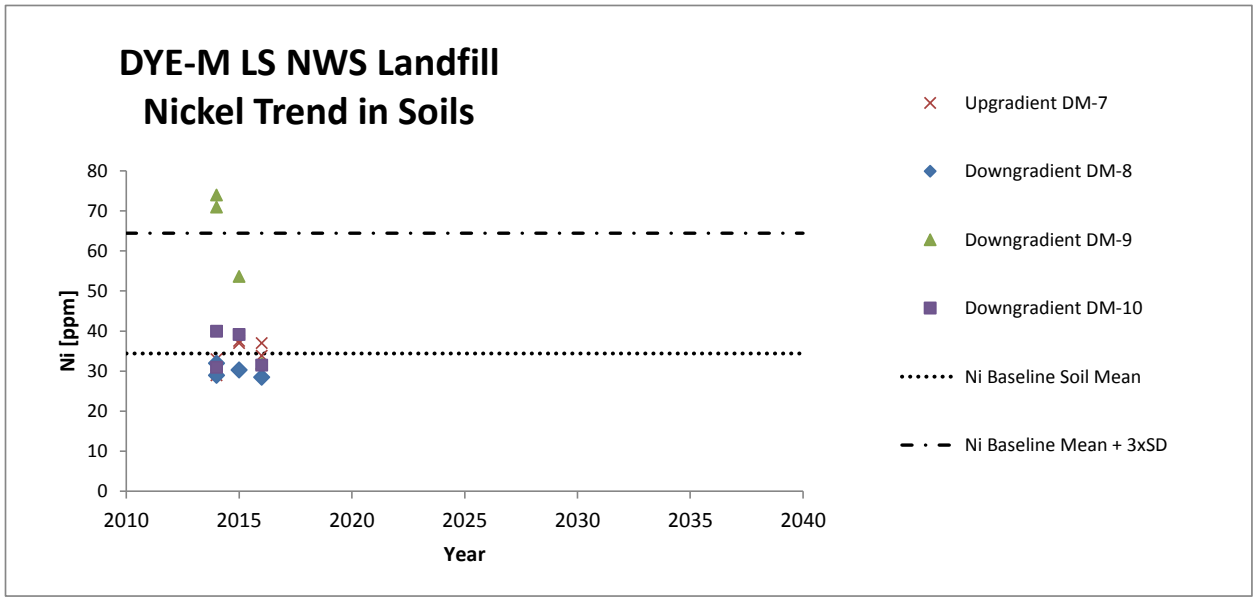
DYE-M LS NWS Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
	Arithmetic Mean			26	34	12	0.50	6.7	51	65	0.8	0.050	0.036	101			5	4	11
	Arithmetic Mean Corrected for Detection Limits			26	34	12	1.0	10	51	65	1.0	0.10	0.10	101			10	4	9
	Standard Deviation			7.2	10	3.6	0.0	4	15.5	20.6	0.66	0.000	0.017	276			0.0	3.7	11
	Minimum			12	9.3	2.5	0.50	5.0	25.0	10	0.500	0.050	0.0015	7			5.0	2.0	4.5
	Maximum			51	66	20	0.50	25	130	130	3.7	0.05	0.05	1600			5.0	14	55
	95% Confidence Limit			2.0	2.7			1.1	4.2		0.18	0.000	0.005	76				1.5	4.6
Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989		89	89	23	<1.0	<10	97	156	2.4	<0.5	0.004						
90-G315	2 km downstream BF304	1990		13	31	5.8	<1.0	<10	34	64	0.3	<0.5	0.024						
90-G320	100 m E of S end runway	1990		23	54	14	<1.0	<10	60	110	0.5	<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990		21	63	12	<1.0	<10	60	112	0.5	<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990		7.8	27	<5.0	<1.0	<10	30	46	<0.3	<0.5	<0.0002						
90-G325	5 km from crossroads	1990		32	47	18	<1.0	<10	74	95	0.3	<0.5	<0.0002						
00-25519	Gravel Borrow Area - background	2000		28	26	13	<1.0	<10	53	26	<1.0								
00-25520	Gravel Borrow Area - background	2000		14	18	7	<1.0	<10	28	<20	<1.0								
00-25521	Gravel Borrow Area - background	2000		16	19	8.5	<1.0	<10	41	<20	<1.0								
00-25524	West of glacier - background	2000		49	28	12	<1.0	12	98	94	<1.0								
00-25525	West of glacier - background	2000		60	34	13	<1.0	21	125	126	<1.0								

DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

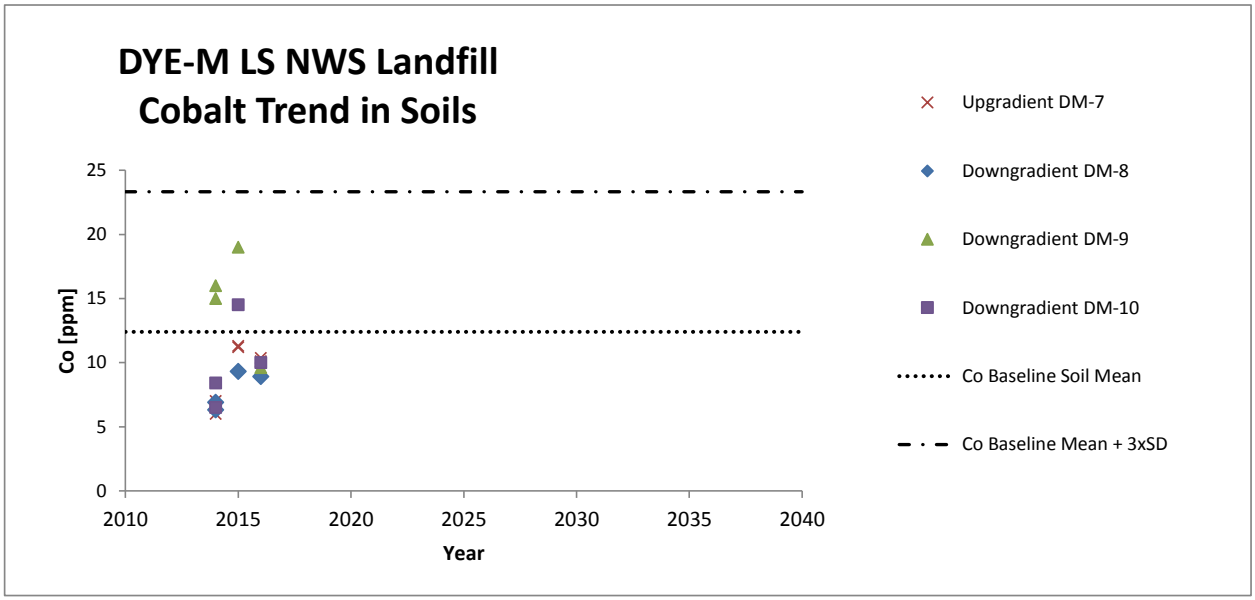


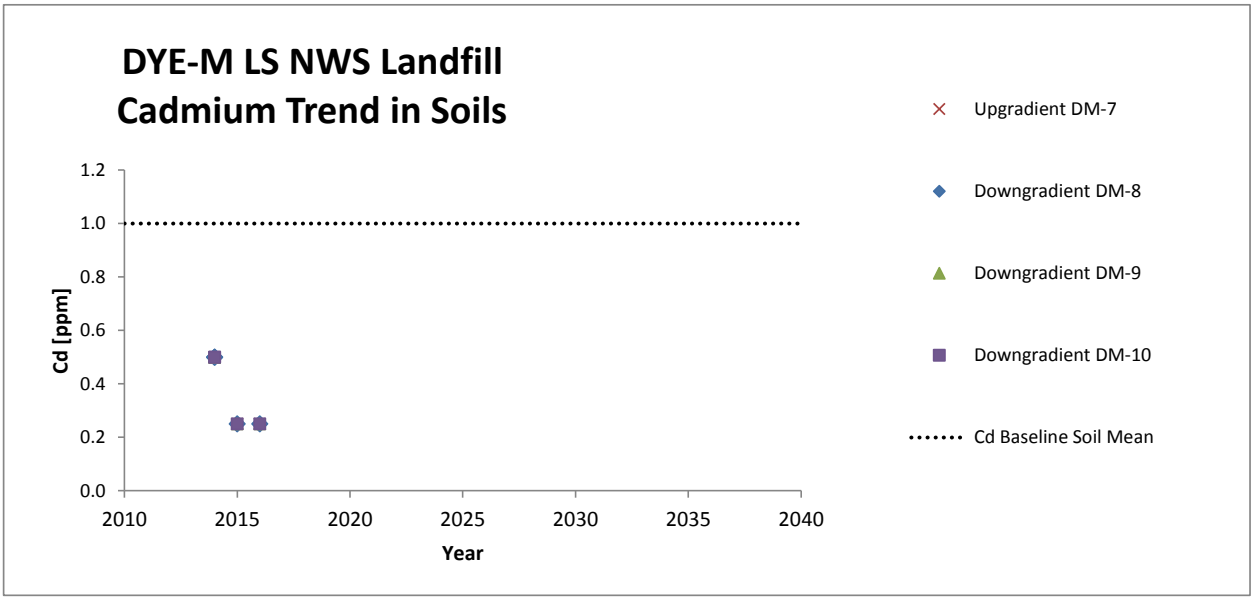


DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



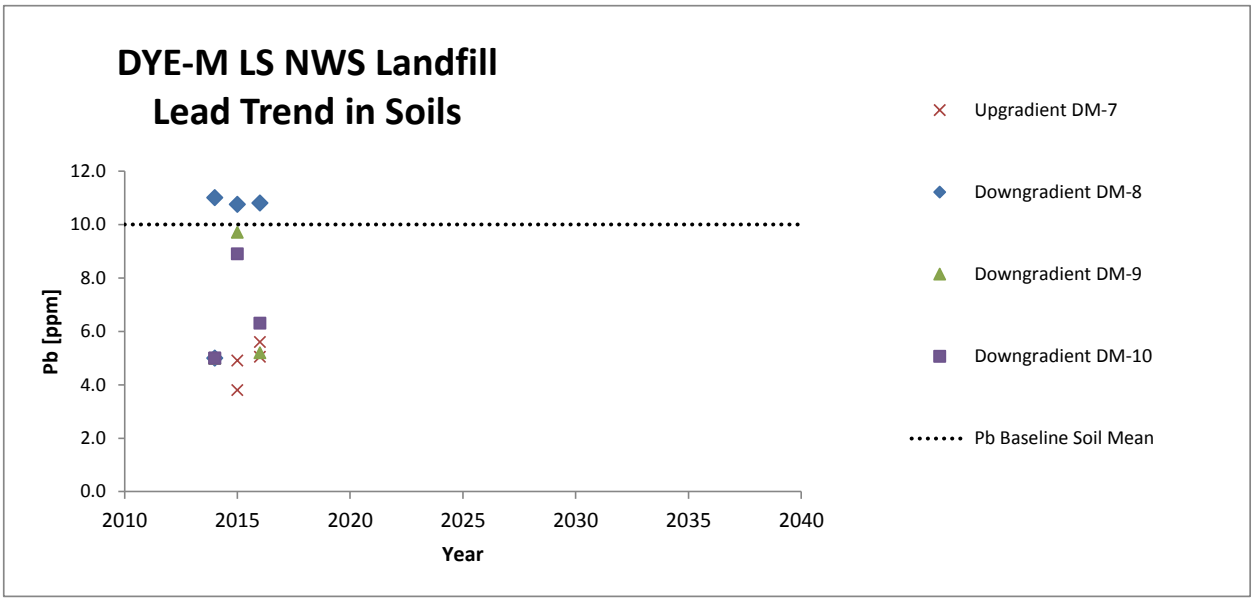


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
Cd Baseline SD = 0

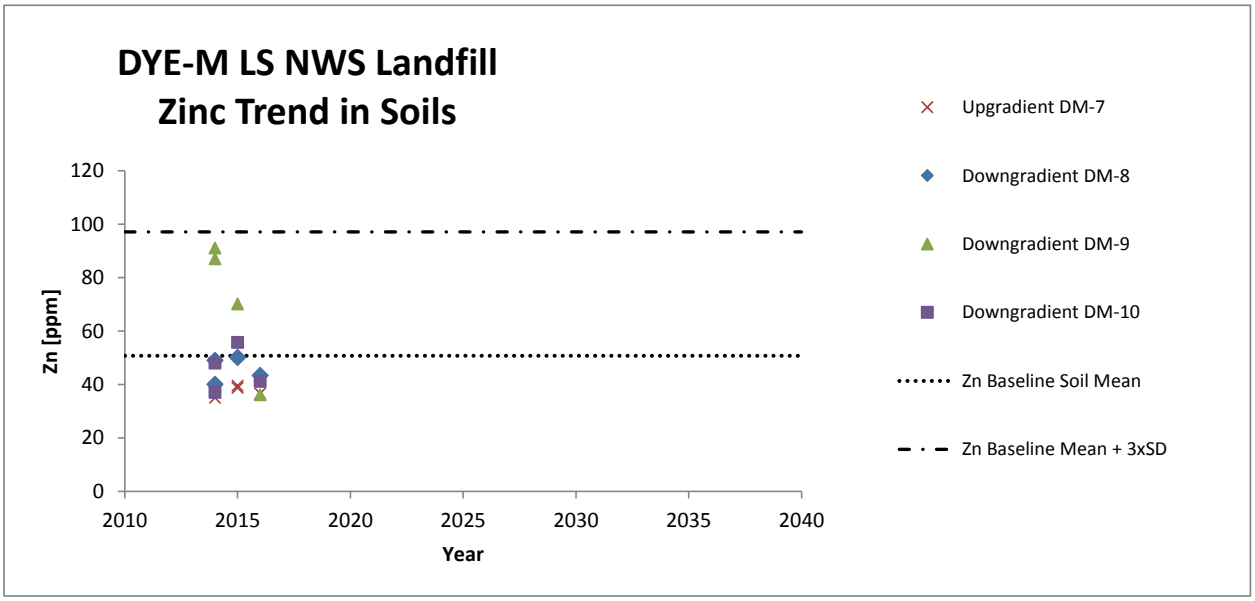
DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



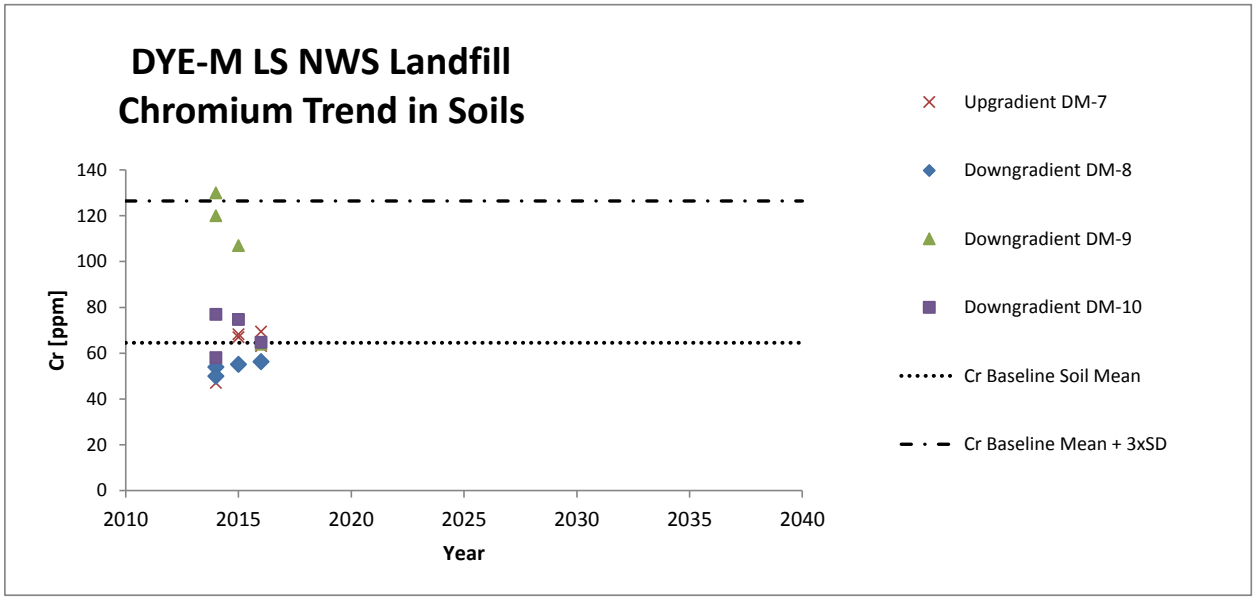
Pb Baseline Arithmetic Mean is equal to the detection limit

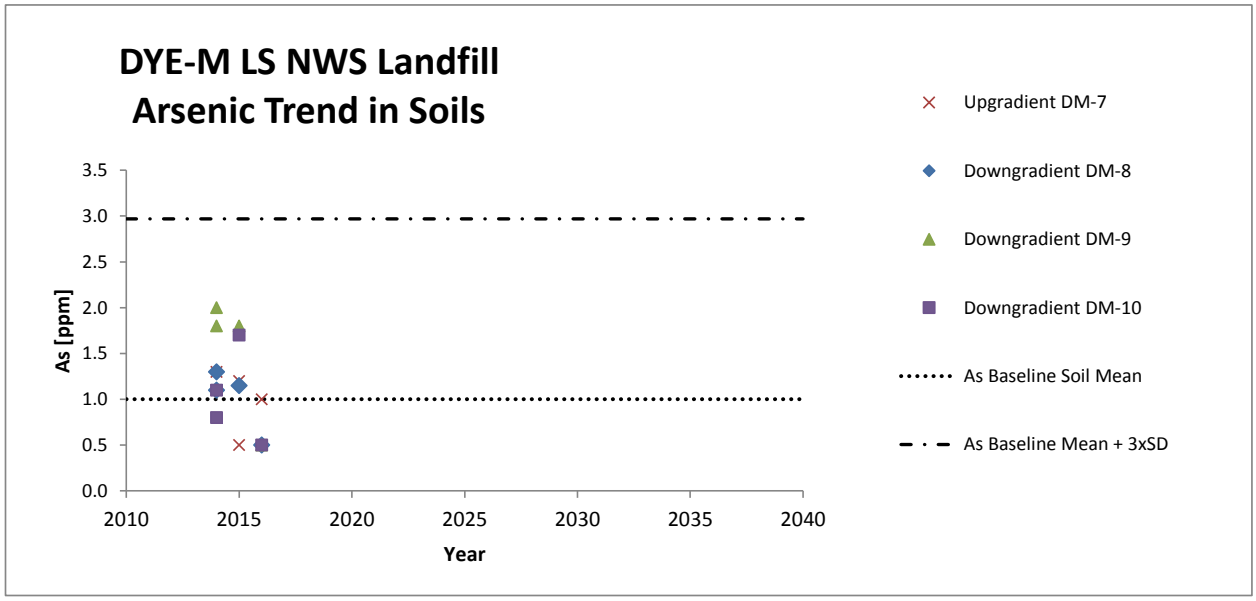


DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



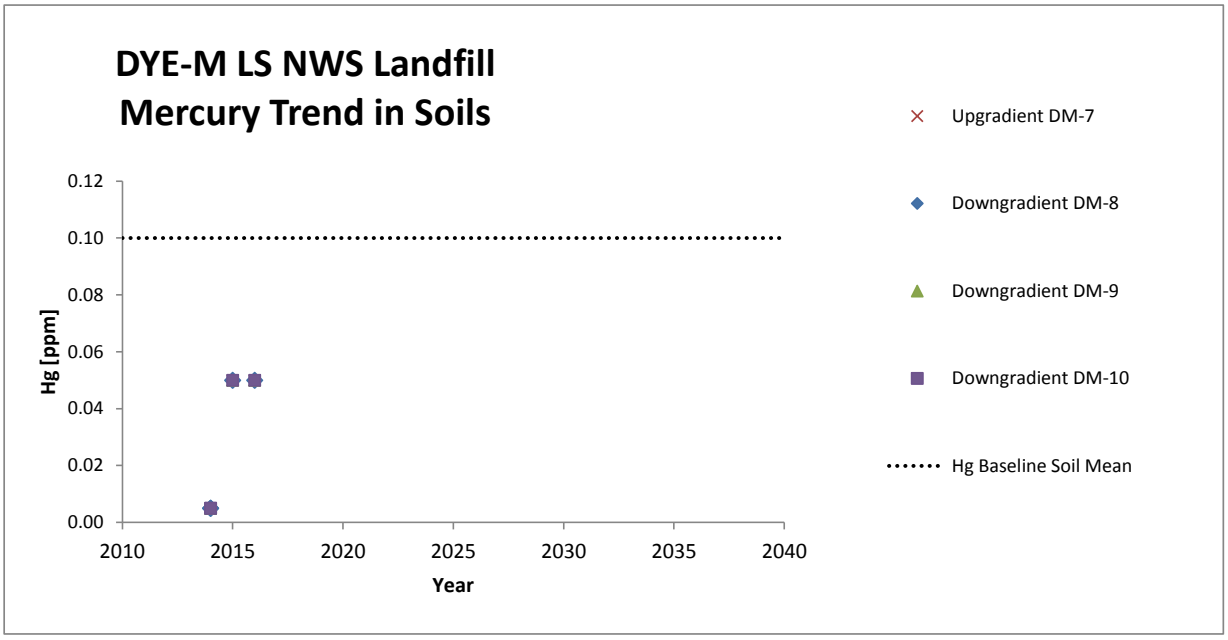


*As Baseline Arithmetic Mean is equal to the detection limit.

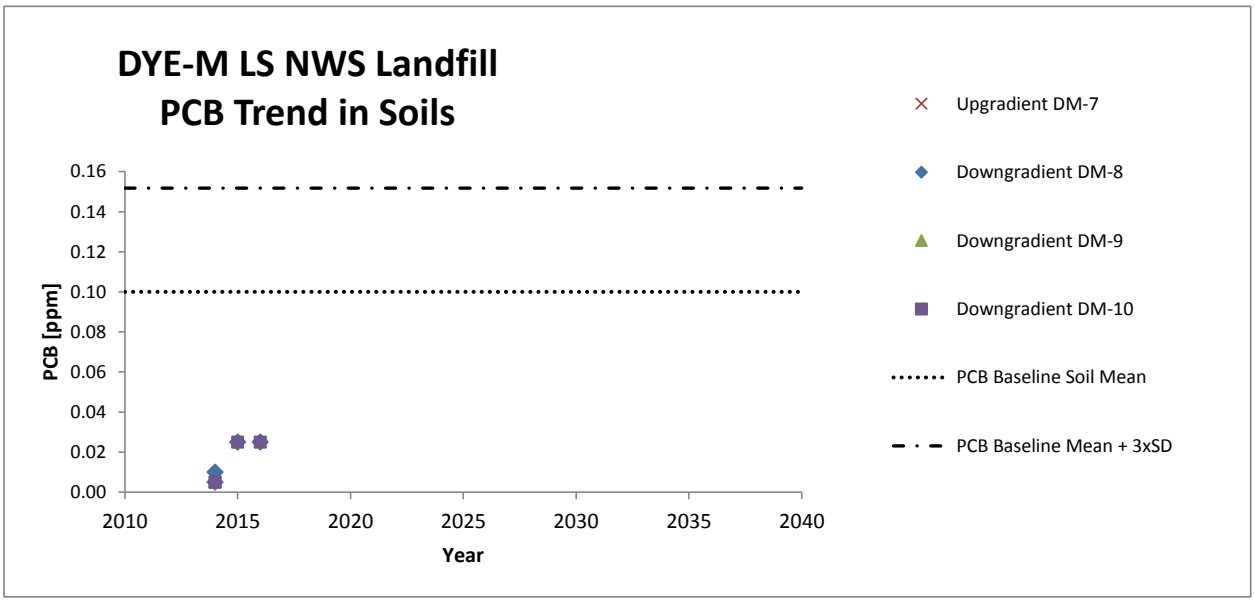
DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD is equal to zero

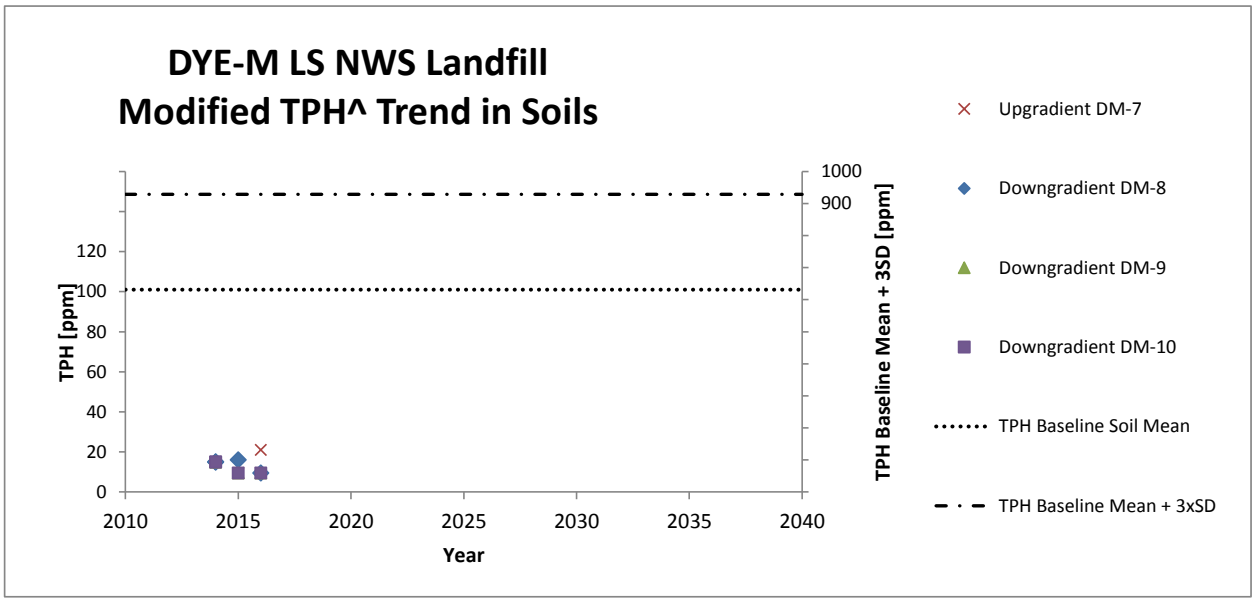


*PCB Baseline Arithmetic Mean is equal to the detection limit

DYE-M LS NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M -Upper Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic mean						60	141	20	1.0	10	70	90	1.0	0.5	0.002				N/A
Baseline Data - Arithmetic mean						**43**	**83**	**19**	**1.0**	**18**	**77**	**115**	**3.7**	**0.05**	**0.05**	**10**	**10**	**10**	**18**
Baseline Data - Standard Deviation						29	74	7.1	0.0	21	46	95	3.0	0.0	0.012	3.6	1.8	6.0	7.5
Baseline Data mean + 3xStandard Deviation						130	304	40	1.0	80	214	398	13	0.05	0.085	21	15	28	40
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup ***Site Specific*** *Tier II Criteria*						*296*	*2100*	*153*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and**
Upgradient																			
	BMW #12-02 surface																		
14-8413	BMW 12-02	2014	Year 1	Phase I	5-10	**82**	76	15	<1.0	11	**110**	**150**	**11**	0.019	<0.010	<10	<10	<10	15
Not sampled, frozen	BMW 12-02	2015	Year 2	Phase I															#N/A
MW12-02a	BMW 12-02	2016	Year 3	Phase I	0-15	20.5	33.3	12.2	<0.5	**29.3**	63.4	70.4	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	BMW #12-02 depth																		
14-8414	BMW 12-02	2014	Year 1	Phase I	30-35	**70**	**90**	17	<1.0	13	**100**	**160**	**7**	0.012	<0.010	<10	<10	<10	15
Not sampled, frozen	BMW 12-02	2015	Year 2	Phase I															#N/A
Not sampled - refusal	BMW 12-02	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Upper Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	BMW #07-22 surface																		
14-8424	BMW 07-22	2014	Year 1	Phase I	5-10	13	25	11	<1.0	**19**	52	26	1.6	<0.010	<0.010	<10	<10	<10	15
MW 07-22 (0-15)	BMW 07-22	2015	Year 2	Phase I	0-15	**71.6**	57.8	14.4	<0.5	10.6	**98.3**	112	3.5	<0.1	<0.05	<7	<4	<8	9.5
MW07-22a	BMW 07-22	2016	Year 3	Phase I	0-15	**99.4**	**97.6**	18.5	<0.5	13.2	**102**	**147**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	BMW #07-22 depth																		
14-8425	BMW 07-22	2014	Year 1	Phase I	45-50	10	36	13	<1.0	**30**	60	29	1.8	<0.010	<0.010	<10	<10	<10	15
MW 07-22 (15-30)	BMW 07-22	2015	Year 2	Phase I	15-30	**59.2**	76	15.9	<0.5	**18.4**	**89.6**	**142**	**3.9**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	BMW 07-22	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Upper Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	MW #07-23 surface																		
14-8415	MW 07-23	2014	Year 1	Phase I	5-10	**76**	**180**	**21**	<1.0	<10	44	100	**17**	<0.010	<0.010	<10	<10	<10	15
MW 07-23 (0-25)	MW 07-23	2015	Year 2	Phase I	0-25	**71.9**	**86**	15.9	<0.5	7.4	37.8	49.1	3.3	<0.1	<0.05	<7	<4	<8	9.5
MW07-23a	MW 07-23	2016	Year 3	Phase I	0-15	**52.5**	**125**	15.1	<0.5	6.2	27.9	63.2	**17.3**	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #07-23 depth																		
14-8417	MW 07-23	2014	Year 1	Phase I	45-50	**72**	**130**	**19**	<1.0	<10	40	87	**12**	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	MW 07-23	2015	Year 2	Phase I															#N/A
Not sampled - refusal	MW 07-23	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Upper Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW #08-24 surface																		
14-8418	MW 08-24	2014	Year 1	Phase I	5-10	27	47	10	<1.0	<10	40	66	1.4	<0.010	<0.010	<10	<10	<10	15
MW08-24 (0-15) (Dup A	MW 08-24	2015	Year 2	Phase I	0-15	31	54	13.5	0.5	13.8	61.1	76.9	1	<0.1	<0.1	**21**	<7	<29	**39**
MW08-24a	MW 08-24	2016	Year 3	Phase I	0-15	30.1	38.9	10.9	<0.5	10.1	37.7	57.6	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #08-24 depth																		
14-8420/21	MW 08-24	2014	Year 1	Phase I	30-35	27	45	11	<1.0	10	40	63	1.1	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	MW 08-24	2015	Year 2	Phase I															#N/A
Not sampled - refusal	MW 08-24	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M -Upper Site Tier II Disposal Facility - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW #08-25 surface																		
14-8422	MW 08-25	2014	Year 1	Phase I	5-10	31	77	16	<1.0	18	50	**150**	1.2	<0.010	<0.010	<10	<10	<10	15
MW 08-25 (0-15)	MW 08-25	2015	Year 2	Phase I	0-15	**65.2**	82.7	**22**	<0.5	**41.3**	**133**	**176**	2.9	<0.1	<0.05	<7	<4	<8	9.5
MW08-25a	MW 08-25	2016	Year 3	Phase I	0-15	**58.6**	**99.5**	**27.9**	<0.5	**42.2**	**111**	*260*	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW #08-25 depth																		
14-8423	MW 08-25	2014	Year 1	Phase I	40-45	**84**	**200**	**43**	<1.0	17	66	*710*	2.2	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	MW 08-25	2015	Year 2	Phase I															#N/A
Not sampled - refusal	MW 08-25	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M Upper Site Tier II Disposal Facility- Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
Baseline Data																	
Upgradient:																	
08-9798/99	BMW 07-22	2008	0-10	75	73	18	<1.0	12	94	130	11	<0.10	<0.0030	35	<10	4	26
08-9800	BMW 07-22	2008	30-40	82	74	20	<1.0	<10	120	140	1	<0.10	<0.0030	36	<10	8.1	23
11-13026/27	BMW07-22	2011	0-10	82	69	19	<1.0	14	100	140	9	<0.10	<0.0050	12	<10	<4.0	<9.0
11-13028	BMW07-22	2011	30-40	100	67	22	<1.0	11	130	140	4	<0.10	<0.0050	14	<10	4.6	<9.0
12-44898	BMW12-02	2012	0-10	15	54	15	<1.0	17	62	91	2	<0.10	<0.050	12	<10	<4.0	<9.0
12-44900/91	BMW12-02	2012	20-30	7	100	21	<1.0	30	83	290	3	<0.10	<0.050	16	<10	<4.0	9.1
12-44834/35	BMW07-22	2012	0-10	90	70	21	<1.0	15	110	140	11	<0.10	<0.050	15	<10	<10	<10
12-44836	BMW07-22	2012	20-30	95	68	23	<1.0	13	130	140	5	<0.10	<0.050	15	<10	<10	<10
13-25224	BMW 12-02	2013	0-10	15	61	15	<1.0	22	61	130	2	<0.10	<0.050	24	<10	6.9	12
13-25226	BMW 12-02	2013	30-40	7	220	34	<1.0	36	98	560	2	<0.10	<0.050	12	<10	<4.0	<9.0
13-25220/21	BMW 07-22	2013	0-10	74	73	15	<1.0	14	100	140	8	<0.10	<0.050	25	<10	7.2	13
13-25222	BMW 07-22	2013	30-40	78	69	14	<1.0	11	110	130	5	<0.10	<0.050	12	<10	<4.0	<9.0
Downgradient:																	
08-9802*	MW 07-23	2008	0-10	44	87	14	<1.0	<10	33	60	3.9	<0.10	<0.0030	20	<10	<4.0	13
08-9804	MW 07-23	2008	30-40	41	75	16	<1.0	<10	39	89	5.1	<0.10	<0.0030	19	<10	<4.0	12
09-21520/21	MW07-23	2009	0-10	57	78	17	<1.0	<10	34	72	8.8	<0.10	<0.0030	22	15	<4.0	<9.0
09-21522	MW07-23	2009	30-40	51	71	14	<1.0	<10	28	61	9.2	<0.10	<0.0030	20	13	<4.0	<9.0
09-21566	MW08-24	2009	0-10	11	33	12	<1.0	10	43	52	1.3	<0.10	<0.0030	23	<10	5.1	13
09-21568	MW08-24	2009	30-40	13	34	11	<1.0	<10	41	49	<1.0	<0.10	0.025	12	<10	<4.0	<9.0
09-21560	MW08-25	2009	0-10	53	130	29	<1.0	31	100	300	1.8	<0.10	<0.0030	32	<10	4.5	22
09-21564	MW08-25	2009	30-40	47	70	26	<1.0	40	160	150	3.1	<0.10	<0.0030	21	<10	4.1	12
11-13030	MW07-23	2011	0-10	47	69	15	<1.0	<10	29	69	5	<0.10	<0.0050	14	<10	4.5	<9.0
11-13032	MW07-23	2011	30-40	35	74	13	<1.0	<10	26	53	5.3	<0.10	<0.0050	14	<10	4.8	<9.0
11-13034	MW08-24	2011	0-10	13	27	12	<1.0	11	42	46	1.1	<0.10	<0.0050	14	<10	4.5	<9.0
11-13036	MW08-24	2011	30-40	12	30	11	<1.0	10	43	49	<1.0	<0.10	<0.0050	12	<10	<4.0	<9.0
11-13038/39	MW08-25	2011	0-10	9	36	18	<1.0	20	70	64	<1.0	<0.10	<0.0050	12	<10	<4.0	<9.0
11-13040	MW08-25	2011	30-40	6	35	19	<1.0	22	85	64	1	<0.10	<0.0050	12	<10	<4.0	<9.0
12-44838	MW07-23	2012	0-10	89	65	20	<1.0	<10	46	68	5.3	<0.10	<0.050	21	<10	<10	11
12-44840	MW07-23	2012	20-30	66	91	16	<1.0	<10	35	59	4.3	<0.10	<0.050	30	<10	<10	20
12-44842	MW08-24	2012	0-10	20	43	12	<1.0	11	40	57	1.2	<0.10	<0.050	15	<10	<10	<10
12-44844	MW08-24	2012	20-30	20	35	11	<1.0	11	37	47	1	<0.10	<0.050	34	24	<10	<10
12-44846	MW08-25	2012	0-10	51	73	24	<1.0	25	100	130	1.9	<0.10	<0.050	15	<10	<10	<10
12-44848/49	MW08-25	2012	20-30	49	65	31	<1.0	73.5	190	130	2.5	<0.10	<0.050	22	<10	<10	12
13-25236	MW 07-23	2013	0-10	44	390	40	<1.0	<10	52	100	3.1	<0.10	<0.050	12	<10	<4.0	<9.0
13-25238	MW 07-23	2013	30-40	42	320	30	<1.0	<10	46	91	4.7	<0.10	<0.050	12	<10	<4.0	<9.0
13-25232	MW 08-24	2013	0-10	14	40	10	<1.0	13	45	58	2	<0.10	<0.050	12	<10	<4.0	<9.0
13-25234	MW 08-24	2013	30-40	10	28	10	<1.0	11	50	42	1.4	<0.10	<0.050	12	<10	<4.0	<9.0
13-25228	MW 08-25	2013	0-10	42	82	18	<1.0	34	100	93	2.1	<0.10	<0.050	12	<10	<4.0	<9.0
13-25230/31	MW 08-25	2013	30-40	37	84	25	<1.0	110	210	140	2.6	<0.10	<0.050	12	<10	<4.0	<9.0
	N value			38	38	38	38	38	38	38	38	38	38	38	38	38	38
	Baseline Detection Limits			3	5	5	1	10	15	20	1	0	0	10	10	10	10
	Arithmetic Mean			43	83	19	0.50	18	77	115	3.7	0.050	0.0147	18	6	4	8
	Arithmetic Mean Corrected for Detection Limits			43	83	19	1.0	18	77	115	3.7	0.1	0.050	18	10	10	10
	Standard Deviation			29	74	7.1	0.00	21	46	95	2.97	0	0.012	7.5	3.6	1.8	6.0
	Minimum			6.3	27.0	9.9	0.0	10	26	42	1.0	0.00	0.0	12	13	4	9
	Maximum			100	390	40.0	0.0	110	210	560	11.0	0.00	0.0	36	24	8	26
	95% Confidence Limit			9.2	23.38			6.5	15	30.0	0.94	0.000	0.004	2.4	1.2	0.6	1.9

DYE-M Upper Site Tier II Disposal Facility- Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
Background Data																	
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004				
90-G315	2 km downstream BF304	1990										<0.5	0.024				
90-G320	100 m E of S end runway	1990										<0.5	<0.0002				
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001				
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002				
90-G325	5 km from crossroads	1990										<0.5	<0.0002				
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0						
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0						
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0						
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0						
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0						
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0						
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0						
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0						
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0						
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0						
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0						
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0						
03-26140	Upper Site - BU 4	2003	0-10	16	53	9	<1.0	<10	32	24	<1.0						
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0						
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0						
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0						
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4						
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1						
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1						
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0						
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6						
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0						
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0						
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0						
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8						
03-26172	Upper Site - BU 3	2003	0-10	59	34	7	<1.0	<10	89	94	<1.0						
03-26173	Upper Site - BU 3	2003	0-10	21	34	7	<1.0	<10	36	46	1.1						
03-26174	Upper Site - BU 3	2003	0-10	71	29	8	<1.0	11	106	120	1.4						
03-26175	Upper Site - BU 3	2003	0-10	76	27	9	<1.0	<10	117	119	<1.0						
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1						
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0						
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2						
03-26184	Upper Site - BU 4	2003	0-10	18	51	8	<1.0	12	39	33	1.4						
03-26185	Upper Site - BU 4	2003	0-10	17	17	5	<1.0	<10	44	<20	<1.0						
03-26186	Upper Site - BU 4	2003	0-10	19	43	9	<1.0	<10	46	57	<1.0						
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4						
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0						
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0						
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5						
03-26192	Upper Site - BU 3	2003	0-10	66	31	9	<1.0	<10	125	142	2.1						
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0						
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0						
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0						
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0						
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1						
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0						
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0						
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0						
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0						

DYE-M Upper Site Tier II Disposal Facility- Baseline and Background Soil Analytical Data

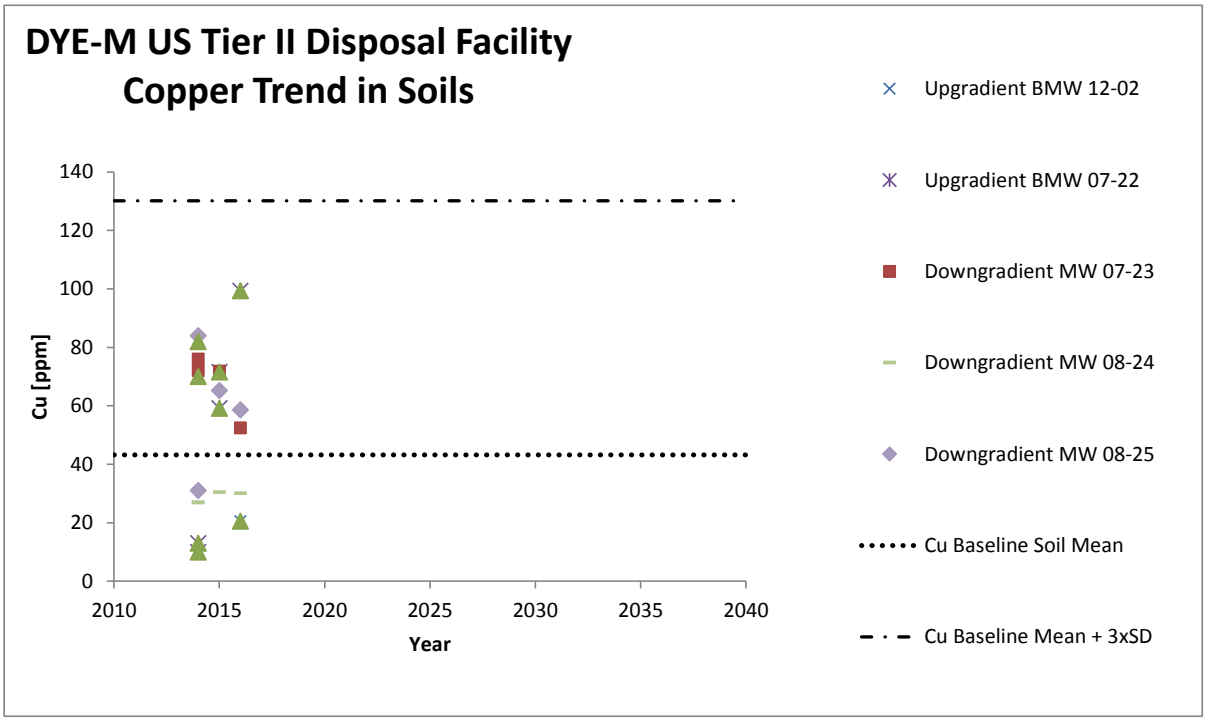
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0						
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6						
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0						
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0						
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0						
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0						
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0						
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0						
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3						
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3						
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0						
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0						
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0						
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9						
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9						
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3						
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2						
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0						
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0						
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0						
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0						
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4						
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1						
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0						
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0						
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0						
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0						
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0						
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0						
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0						
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0						
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0						
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0						
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0						
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7						
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0						
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0						
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0						
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0						
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0						
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0						
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0						
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0						
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0						
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0						
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1						
03-26262	Upper Site - BU 4	2003	0-10	26	46	9	<1.0	11	61	41	1.3						
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0						
03-26264	Upper Site - BU 4	2003	0-10	15	15	5	<1.0	<10	44	<20	<1.0						
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0						
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0						
03-26267	Upper Site - BU 4	2003	0-10	22	42	9	<1.0	10	63	60	<1.0						
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0						
03-26154	Upper Site - BU 3	2003	0-10	132	168	46	<1.0	21	175	151	<1.0						
03-26155	Upper Site - BU 3	2003	0-10	81	118	21	<1.0	17	100	92	<1.0						
03-26156	Upper Site - BU 3	2003	0-10	86	50	14	<1.0	<10	113	134	<1.0						

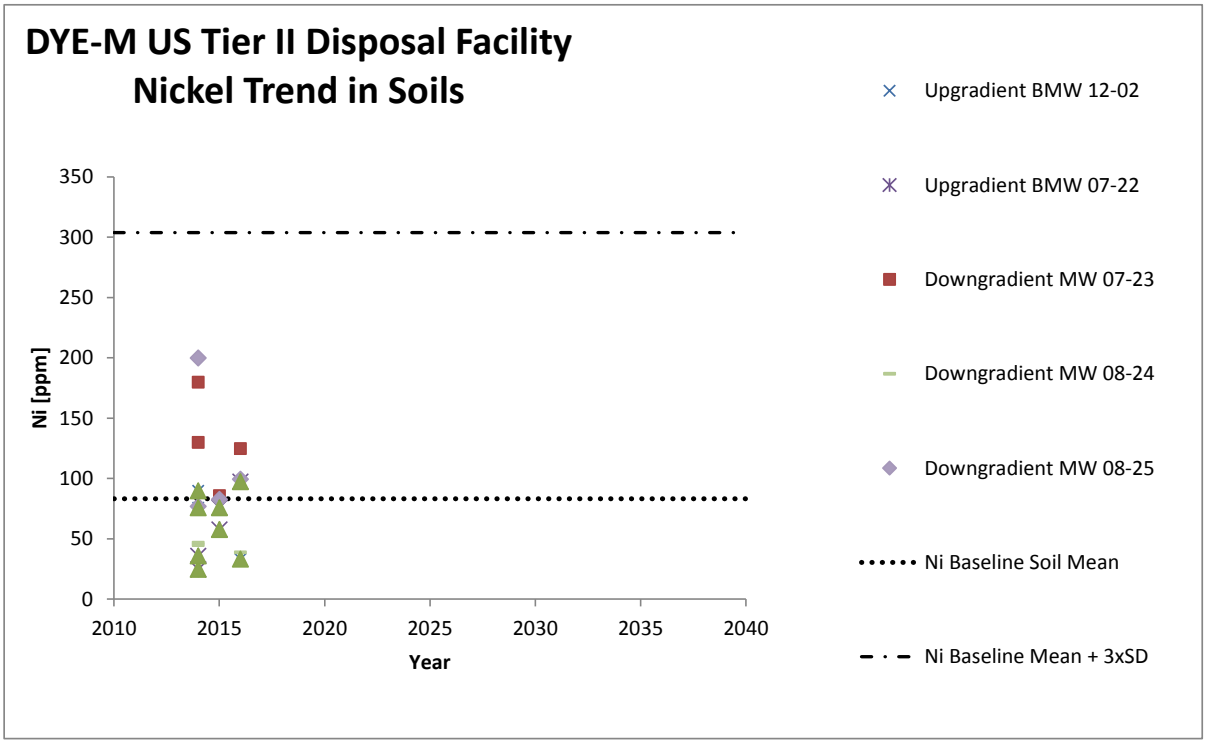
DYE-M Upper Site Tier II Disposal Facility- Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
03-26157	Upper Site - BU 3	2003	0-10	37	32	8	<1.0	<10	74	82	1.1						
03-26158	Upper Site - BU 1	2003	0-10	222	495	60	<1.0	<10	37	134	1.3						
03-26159	Upper Site - BU 1	2003	0-10	53	640	57	<1.0	<10	28	63	1.2						
	N value			108	108	108	108	108	108	108	108	6	6				
	Background Detection Limits			5.0	5.0	5.0	1.0	10	15	20	1.00	0.5	0.002				
	Arithmetic Mean			60	141	20	0.50	7.7	70	90	0.78	0.25	0.0047				
	Arithmetic Mean Corrected for Detection Limits			60	141	20	1.0	10	70	90	1.0	0.5	0.002				
	Standard Deviation			40	230	16	0.0	4.9	33	76	0.65	0.0	0.01				
	Minimum			9.9	13	2.5	0.50	5.0	23	10	0.50	0.25	0.00005				
	Maximum			222	1140	76	0.50	26	186	580	5.9	0.25	0.024				

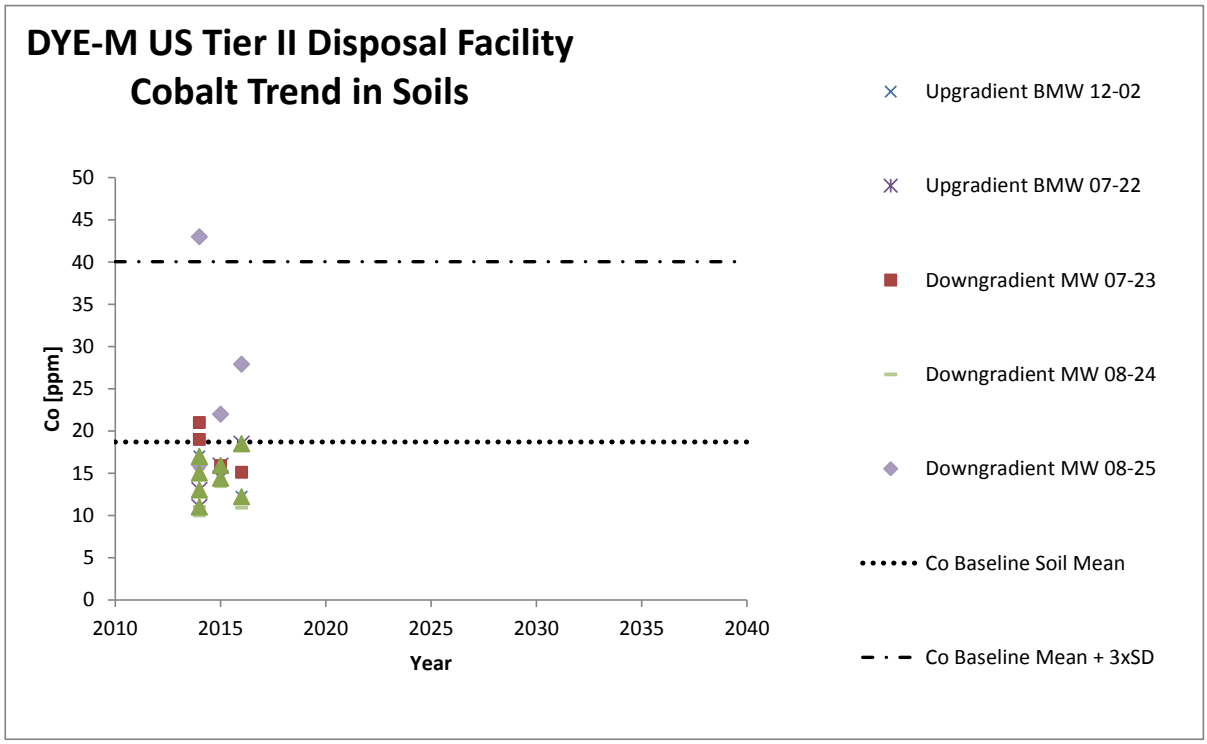
DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

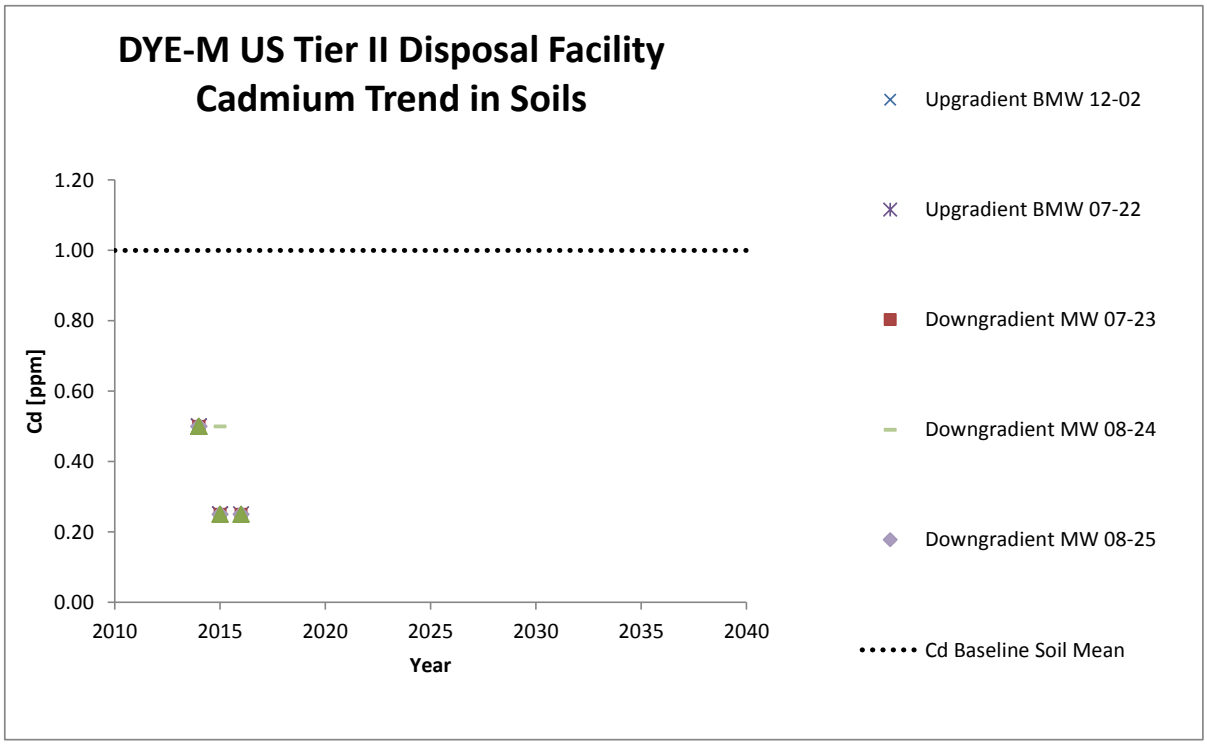
Where results are below detection, half of the detection limit has been used in the charts for the sample points.
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





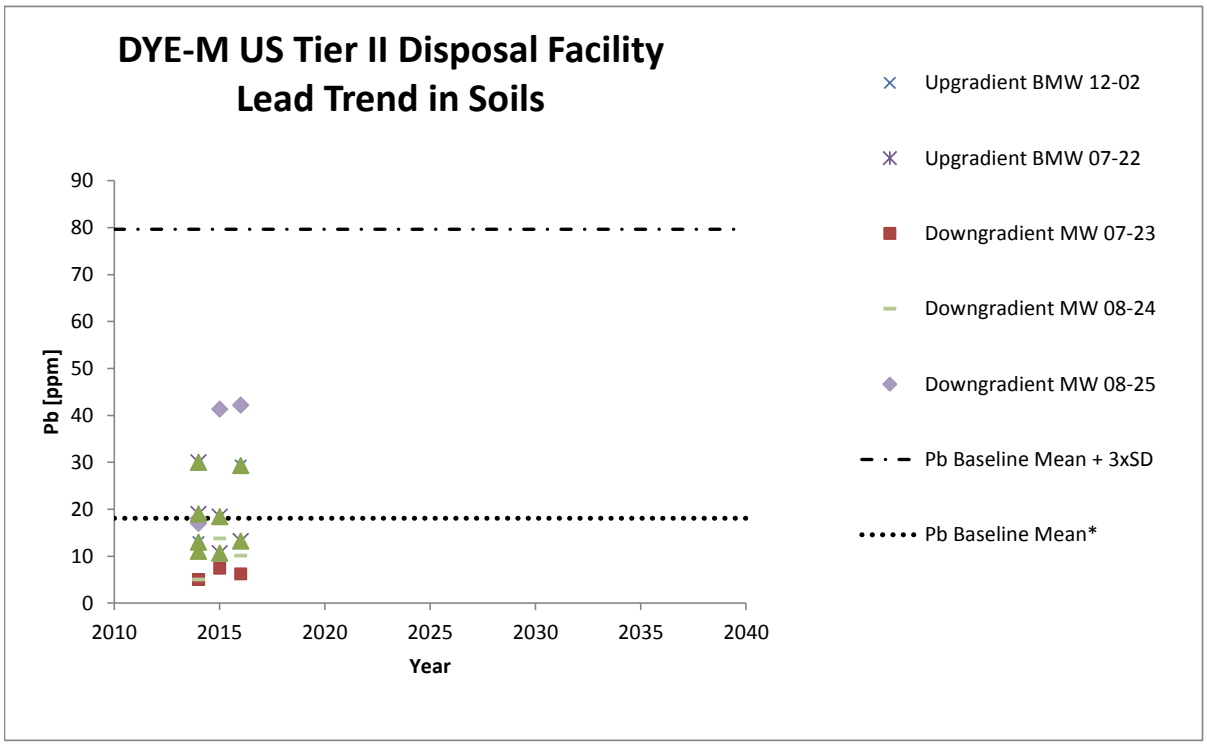
DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

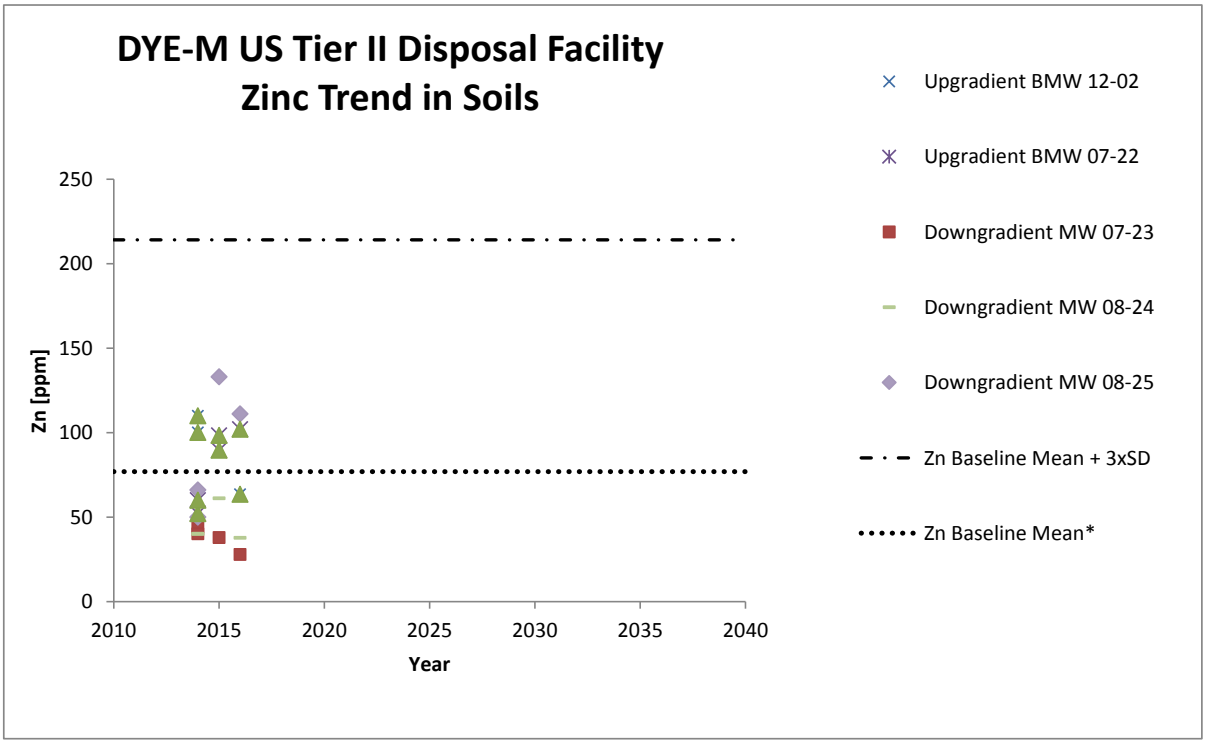




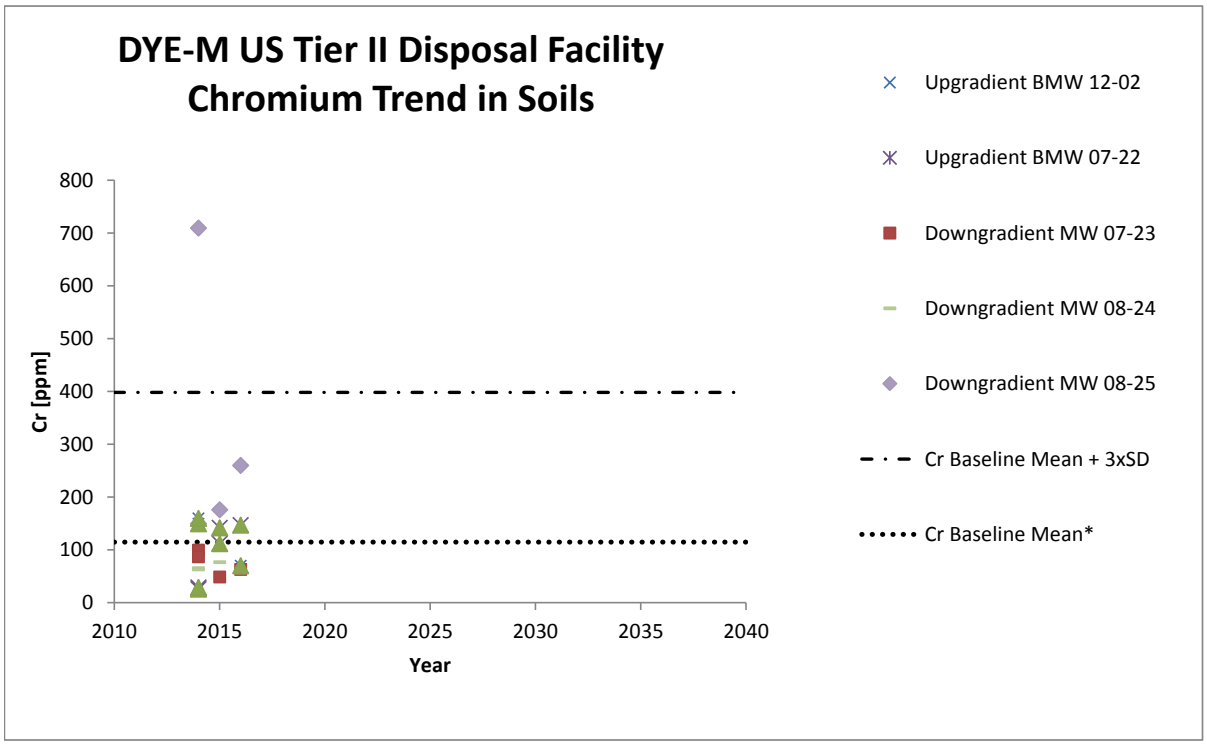
*Cd Baseline Mean is equal to the baseline detection limit.
Cd Baseline SD = 0

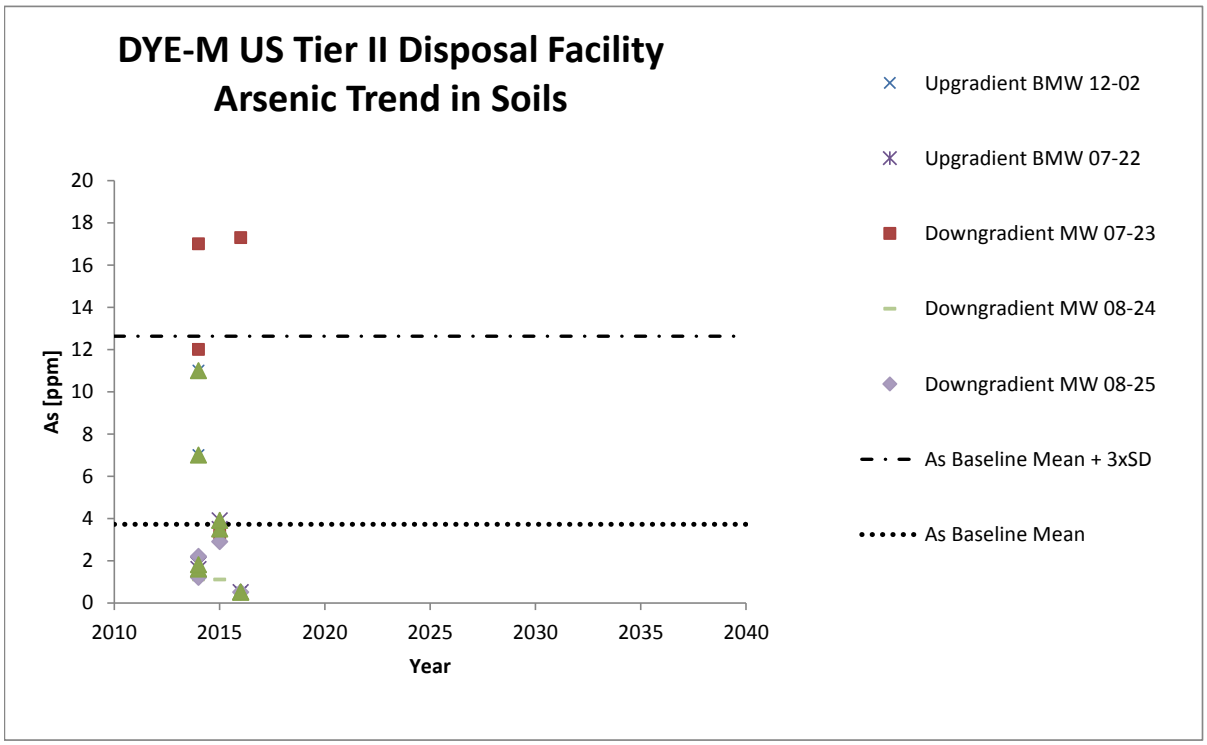
DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



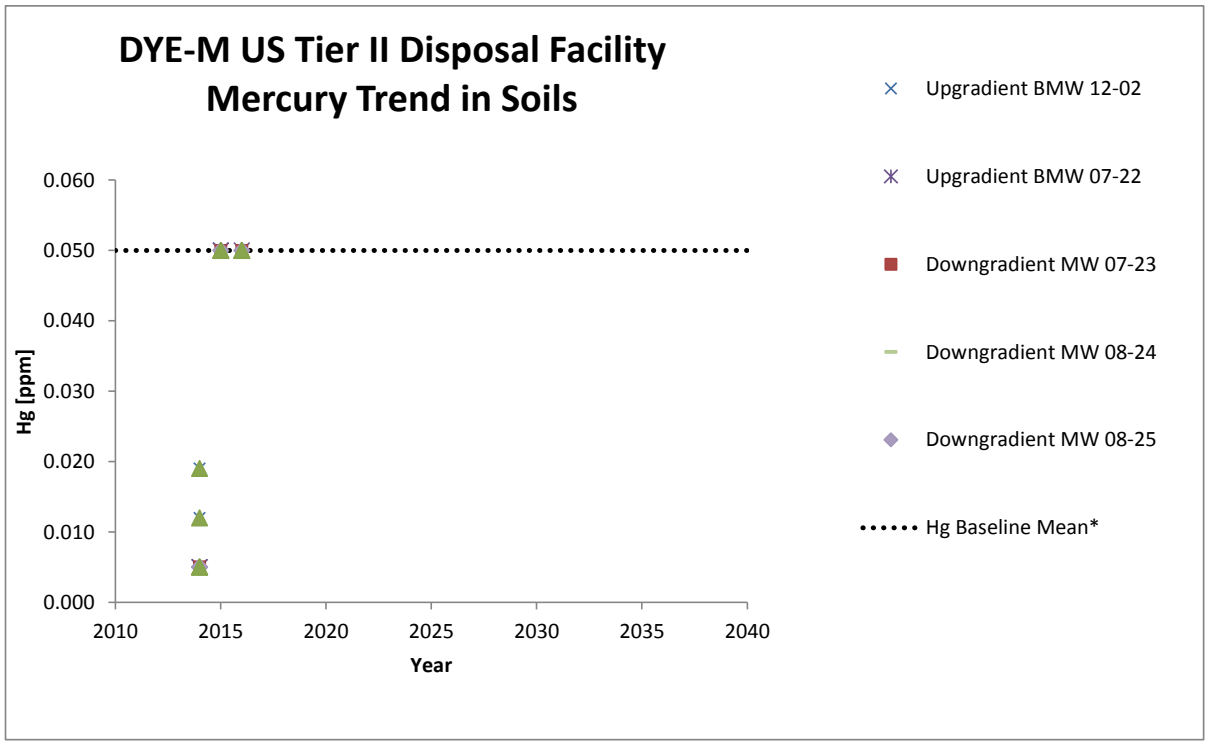


DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

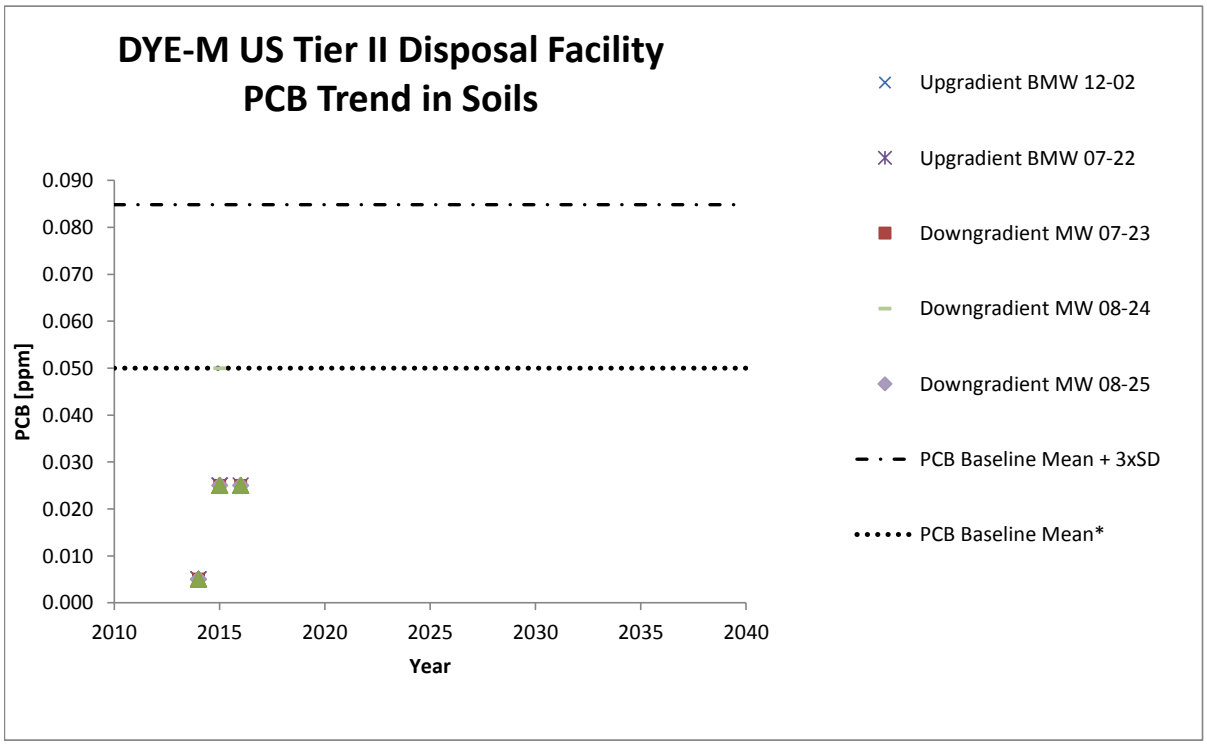




DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

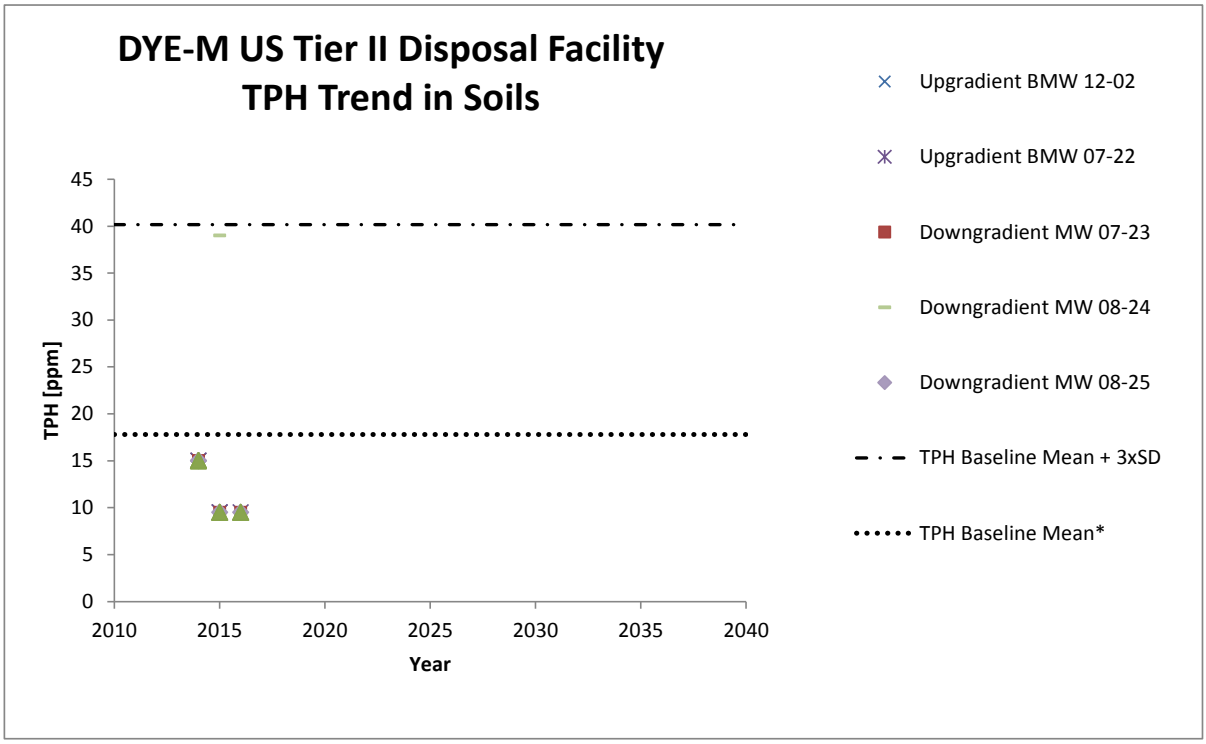


*Hg Baseline Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



*PCB Baseline Mean is equal to the detection limit

DYE-M Upper Site Tier II Disposal Facility Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M US Tier II Disposal Facility - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Baseline Data																		
Upgradient:																		
12-34978	BMW12-02	2012			<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.011	0.76	<0.0010	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
Downgradient:																		
08-9742	MW07-23	2008			0.036	0.16	0.008	<0.0010	<0.010	0.025	0.30	<0.0030	<0.00040	<0.000020	<0.050	<0.050	<1.0	0.6
09-21499	MW07-23	2009			0.094	0.073	0.015	<0.0010	0.013	0.11	0.08	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
09-21572	MW08-24	2009			0.12	0.41	0.0135	<0.0010	0.020	0.049	0.52	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12190/91	MW07-23	2011			<0.0050	<0.0050	<0.0030	<0.0010	<0.010	5.92	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12192	MW08-24	2011			0.007	<0.0050	<0.0030	<0.0010	<0.010	0.29	<0.0050	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34966	MW07-23	2012			<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.25	0.16	0.0057	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34967	MW08-24	2012			<0.0050	0.0100	<0.0030	<0.0010	<0.0050	0.23	0.41	0.007	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29589	MW08-24	2013			<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.16	0.17	0.002	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
		N value			9	9	9	9	9	9	9	9	9	9	9	9	9	9
		Arithmetic Mean			**0.083**	**0.21**	**0.003**	**0.0010**	**0.010**	**0.78**	**0.34**	**0.003**	**0.0002**	**0.0007**	**0.025**	**0.23**	**0.5**	**0.23**
		Arithmetic Mean Adjusted for Detection Limit			**0.005**	**0.005**	**0.003**	**0.001**	**0.010**	**0.78**	**0.34**	**0.003**	**0.0004**	**0.003**	**0.05**	**0.5**	**1.0**	**1.0**
		Standard Deviation			0.043	0.17	0.004	0.000	0.0	1.9	0.24	0.0022	0.000	0.001	0.000	0.0	0.0	0.1
		Arithmetic Mean + 3xStandard Deviation			0.13	0.53	0.014	0.001	0.033	6.6	1.1	0.010	0.0004	0.005	0.050	0.5	1.0	1.2
		Detection Limit			0.0050	0.005	0.0030	0.0010	0.010	0.0100	0.0050	0.003	0.0004	0.0030	0.0500	0.5	1.0	1.0
Monitoring Data																		
Upgradient - BMW 12-02																		
Not Sampled	BMW 12-02	2014	Year 1	Phase I														#N/A
Not Sampled, buried	BMW 12-02	2015	Year 2	Phase I														#N/A
Not sampled - frozen	BMW 12-02	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

Modified TPH TOTAL will appear when F1, F2, F3 fraction results are entered.

DYE-M US Tier II Disposal Facility - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Upgradient - BMW 07-22																		
Not Sampled	BMW 07-22	2014	Year 1	Phase I														#N/A
MW07-22	BMW 07-22	2015	Year 2	Phase I	**0.0062**	0.004	0.0009	<0.0001	0.0052	0.072	0.004	0.001	<0.0001	**N/A**	<0.025	<0.1	<0.1	0.1
Not sampled - dry	BMW 07-22	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 07-23																		
14-8183	MW07-23	2014	Year 1	Phase I	<0.0010	0.0025	<0.00030	<0.000090	<0.00050	0.02	<0.00050	<0.0010	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.2
Not sampled, frozen	MW07-23	2015	Year 2	Phase I														#N/A
MW07-23	MW07-23	2016	Year 3	Phase I	<0.0005	<0.001	<0.0005	<0.0001	<0.0001	0.407	<0.001	<0.001	<0.0001	<0.00010	<0.025	<0.100	<0.100	0.1
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

DYE-M US Tier II Disposal Facility - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Downgradient - MW 08-24																		
14-8184	MW08-24	2014	Year 1	Phase I	0.0036	0.004	<0.00030	<0.000090	<0.00050	<0.0030	0.001	0.0020	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.2
MW08-24	MW08-24	2015	Year 2	Phase I	**0.0242**	**0.031**	0.0023	<0.0001	0.0024	0.379	0.012	<0.001	<0.0001	**N/A**	<0.025	<0.177	<0.177	0.2
MW08-24	MW08-24	2016	Year 3	Phase I	**0.0166**	**0.04**	0.0023	<0.0001	0.0011	0.143	0.007	<0.001	<0.0001	**N/A**	<0.025	**N/A**	**N/A**	0.0
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 08-25																		
Not Sampled	MW 08-25	2014	Year 1	Phase I														#N/A
MW08-25	MW 08-25	2015	Year 2	Phase I	**0.0121**	**0.027**	0.0023	<0.0001	0.0034	**0.939**	0.01	<0.001	<0.0001	**N/A**	<0.025	<0.286	<0.286	0.3
Not sampled - frozen	MW 08-25	2016	Year 3	Phase I														#N/A
			Year 4	Phase I														#N/A
			Year 5	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

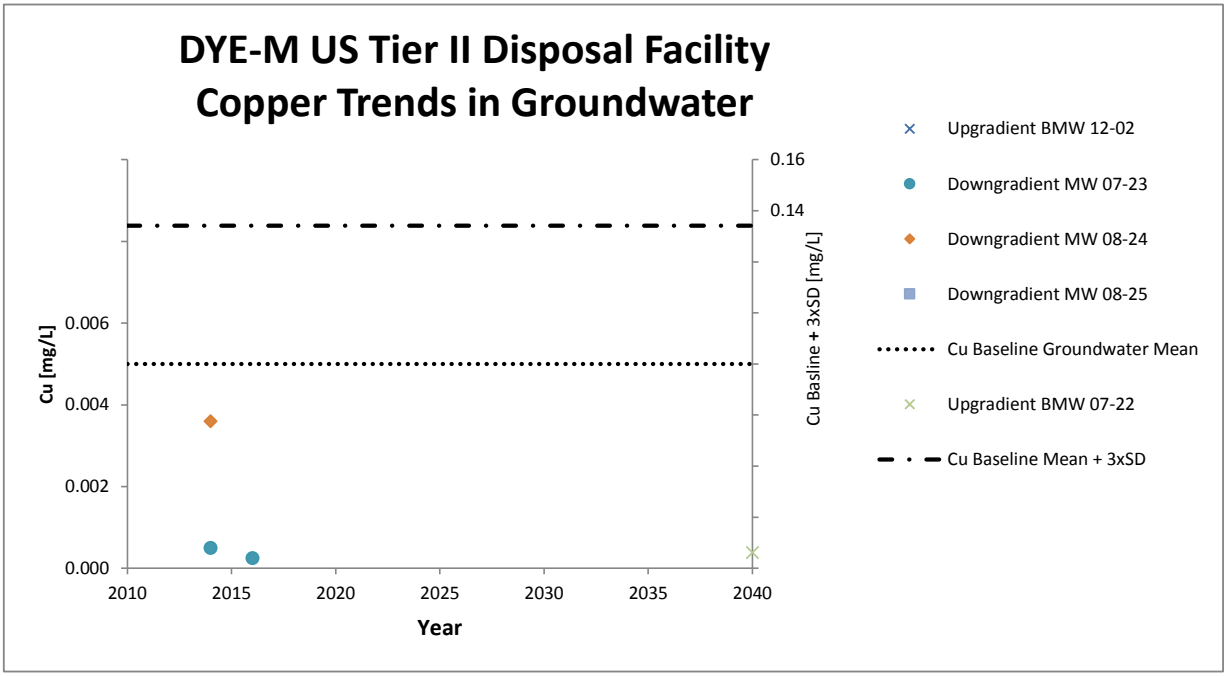
Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

blue highlight indicates dissolved metal results. No highlight indicates total metals.

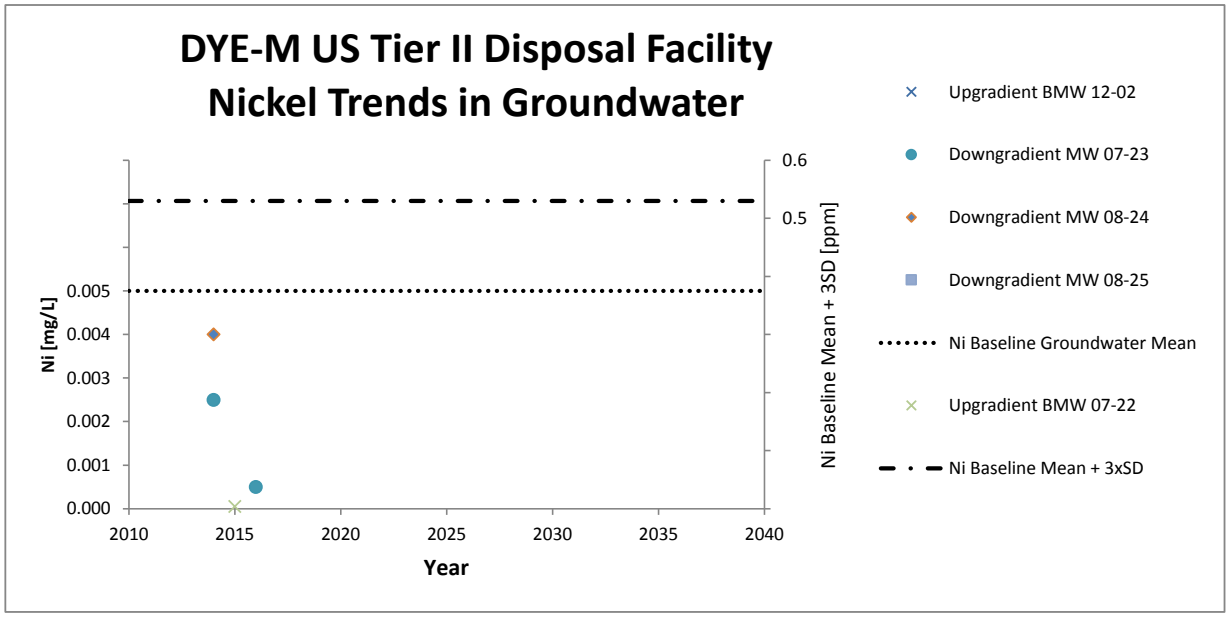
Dissolved metal results have not been included in the Baseline Arithmetic Mean

DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

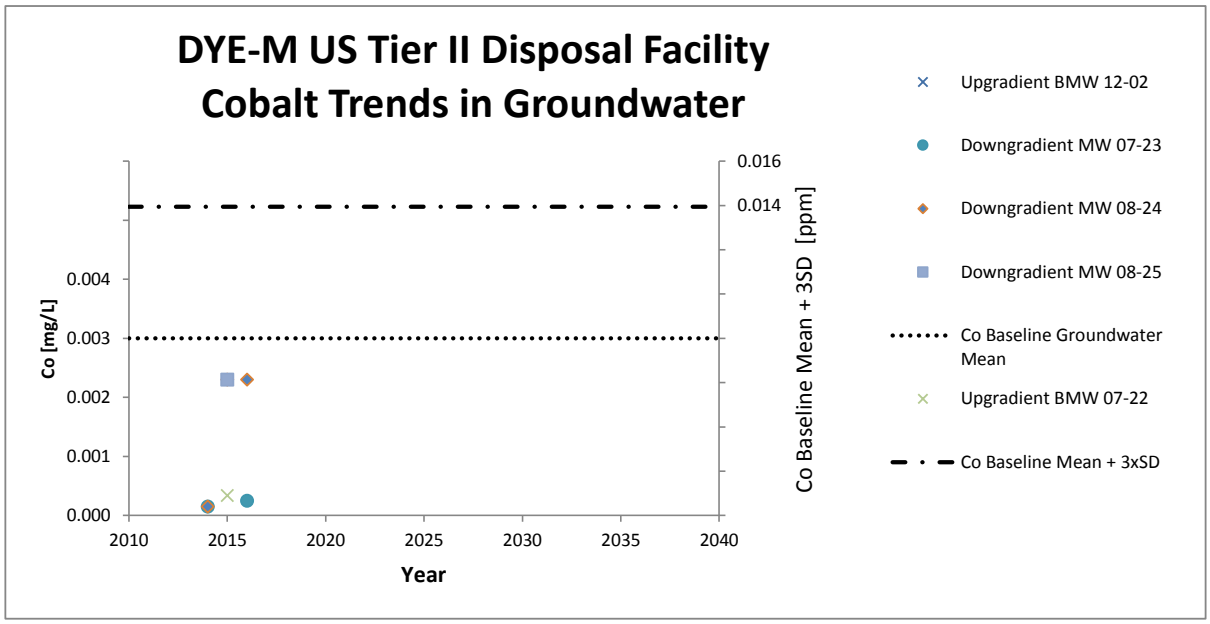


*Cu Baseline Mean is equal to the baseline detection limit

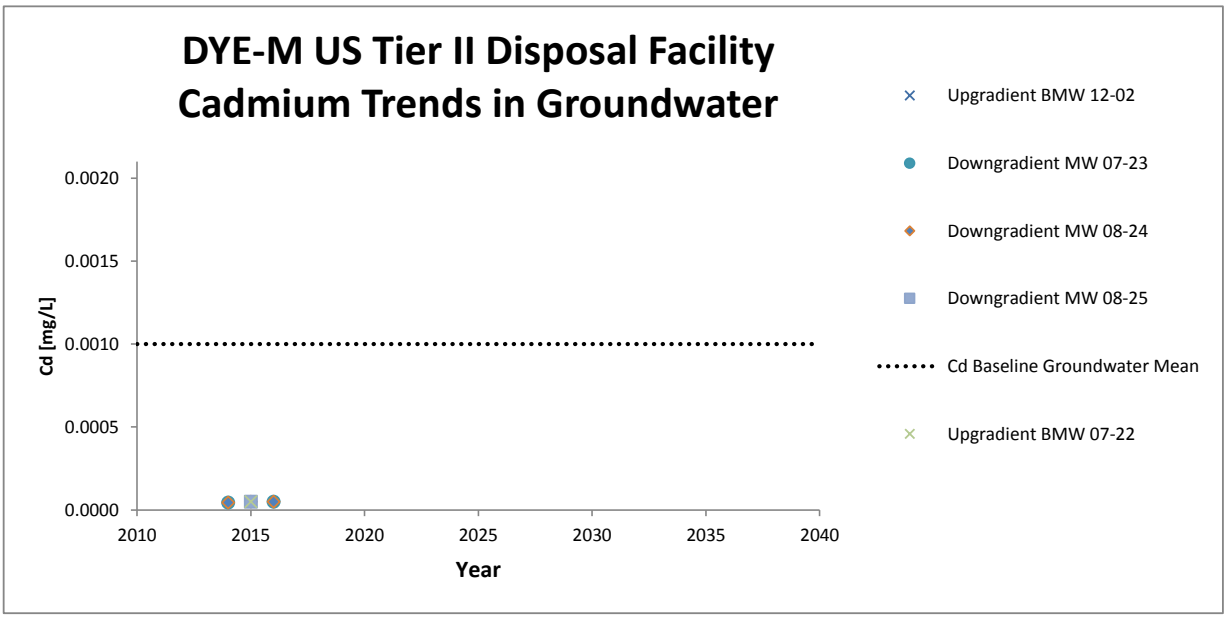


*Ni Baseline Mean is equal to the baseline detection limit

DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

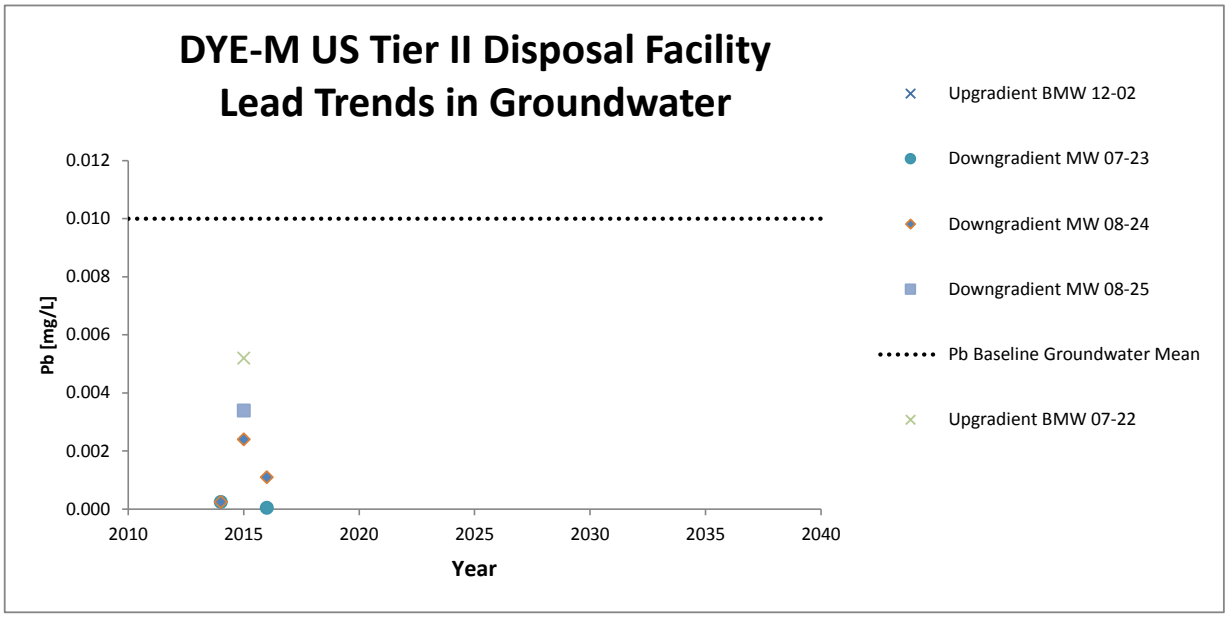


*Co Baseline Mean is equal to the baseline detection limit.

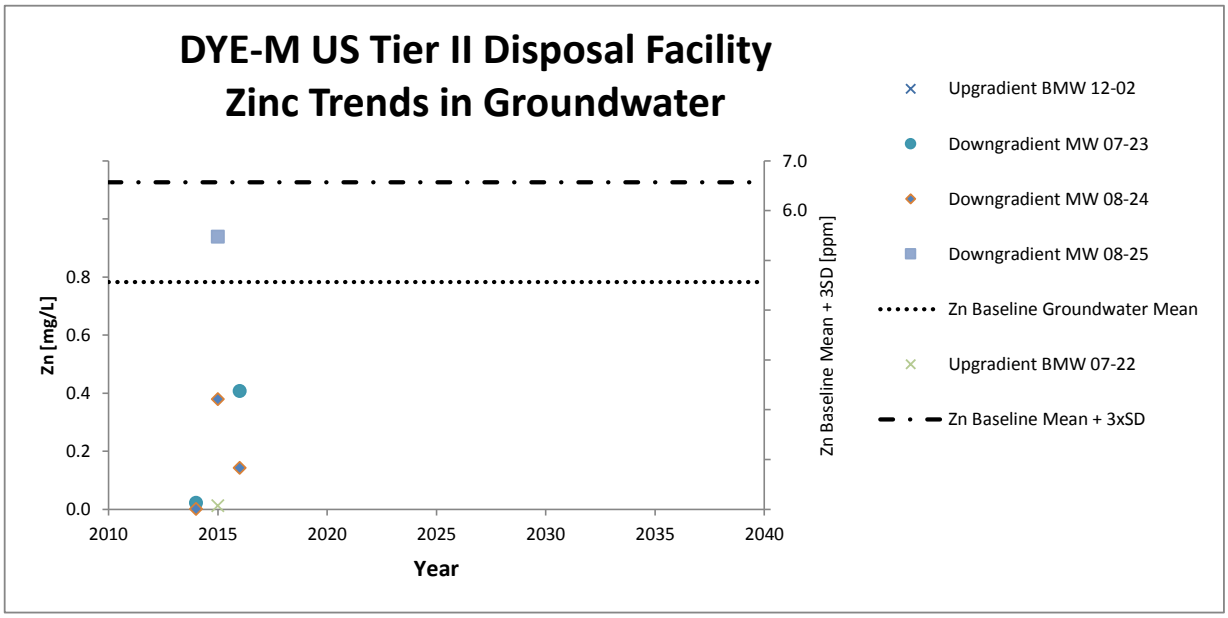


*Cd Baseline Mean is equal to the baseline detection limit.
*Cd Baseline Mean SD = 0

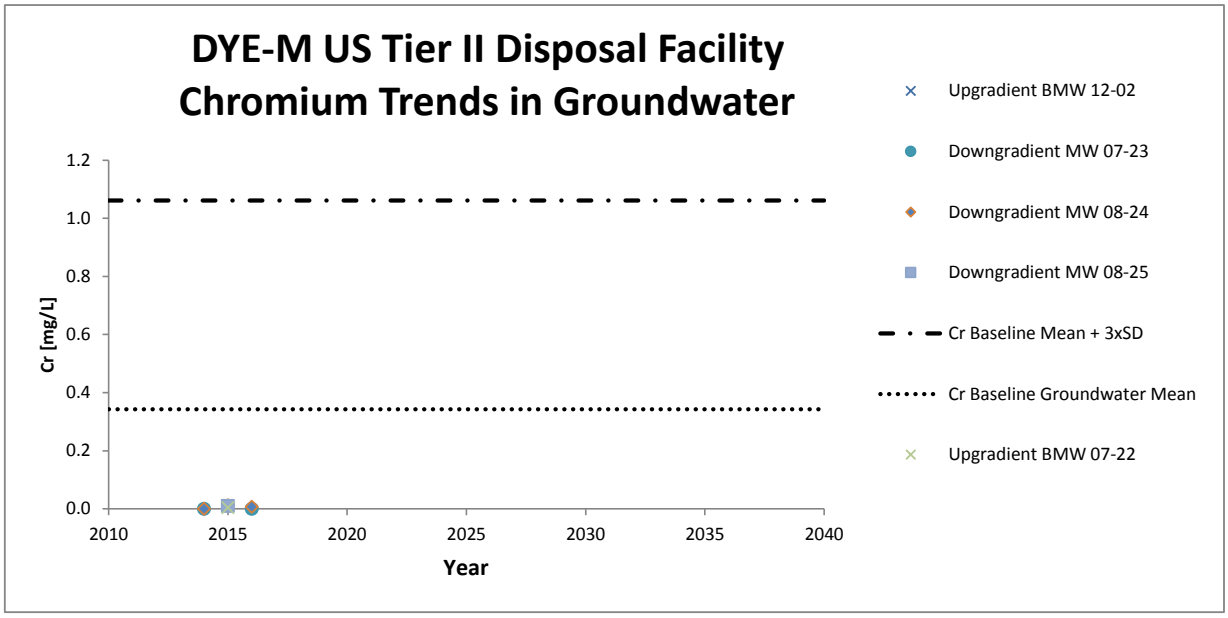
DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

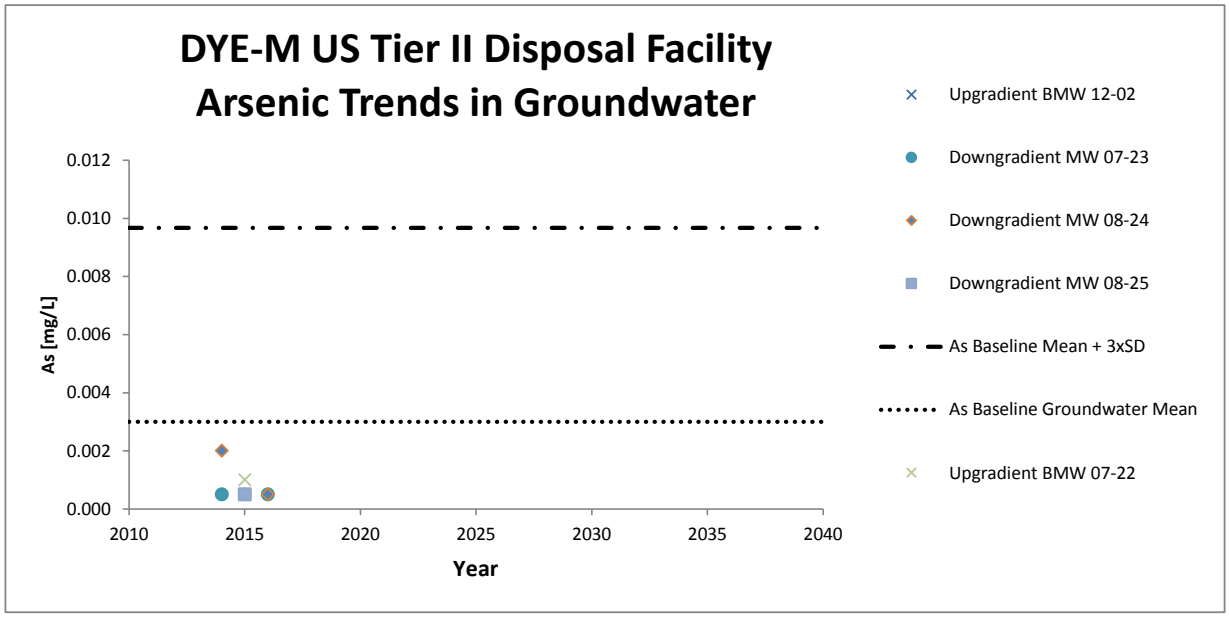


*Pb Baseline Mean is equal to the baseline detection limit.
*Pb Baseline SD=0



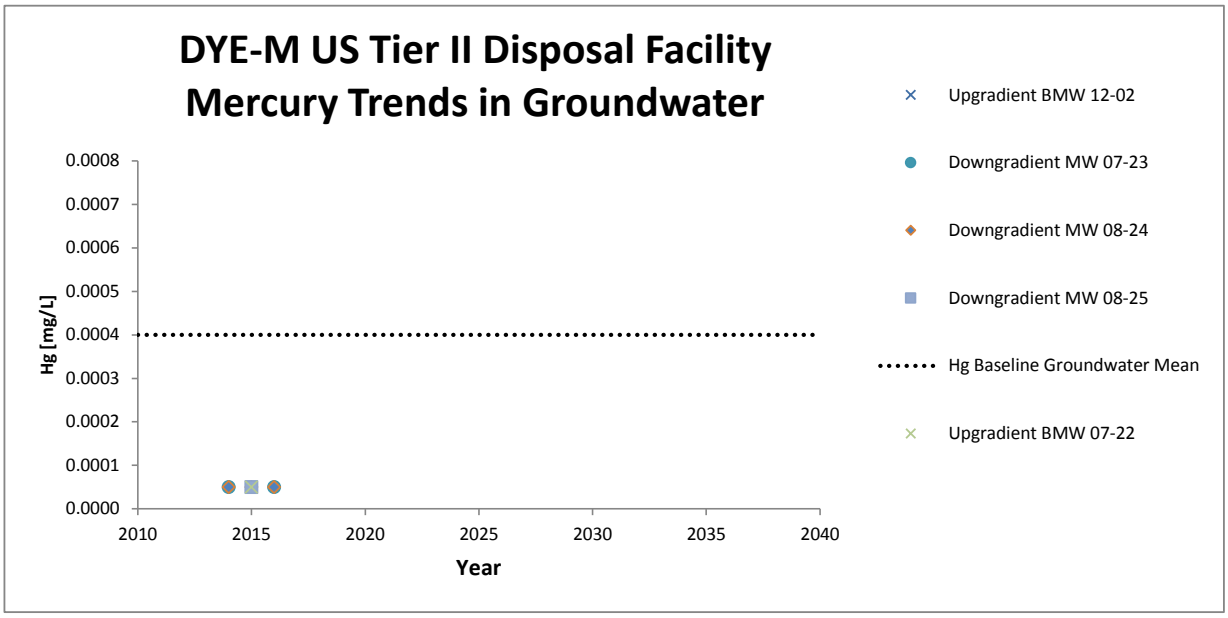
DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



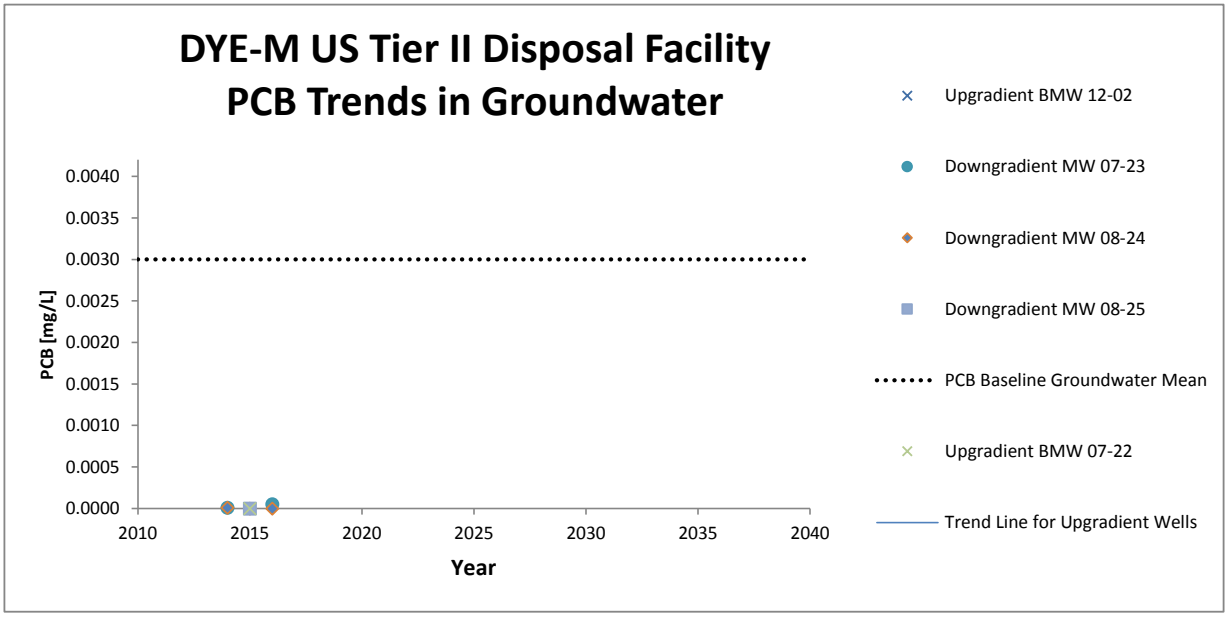


*As Baseline Mean is equal to the baseline detection limit.

DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

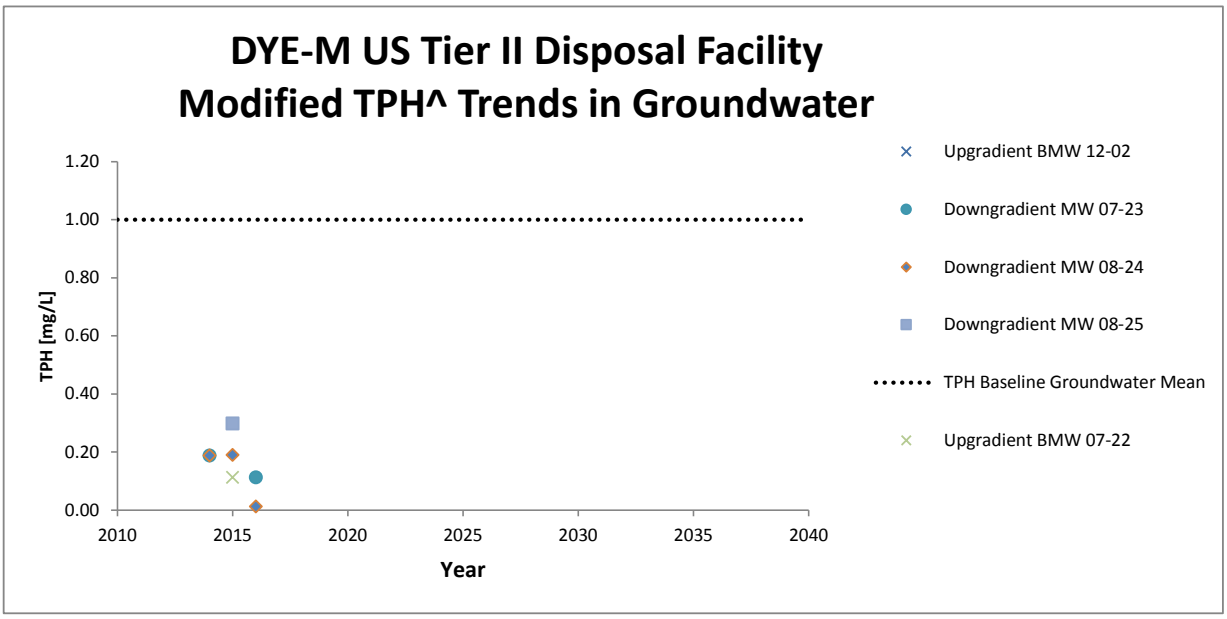


*Hg Baseline Mean is equal to the baseline detection limit.
*Hg Baseline SD = 0



*PCB Baseline Mean is equal to the baseline detection limit.
*PCB Baseline SD = 0

DYE-M US Tier II Disposal Facility Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



*TPH Baseline Mean is equal to the baseline detection limit.
^ modified TPH equals the sum of F1, F2 and F3 Hydrocarbon fractions

DYE-M US Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						60	141	20	1.0	10	70	90	1.00	0.50	0.002	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**27**	**65**	**14**	**1.0**	**10**	**57**	**41**	**1.0**	**0.10**	**0.05**	30	10	10	**216**
Baseline Data - Standard Deviation						16	38	5.8	0.0	7.7	30	24	0.37	0.0	0.093	3.8	1.7	256	416
Baseline Data Mean + 3xStandard Deviation						74	178	31	1.0	33	148	115	2.1	0.10	0.33	41	15	777	1464
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
*DEW Line Cleanup **Site Specific** Tier II Criteria & Hydrocarbon Action Level*						*296*	*2100*	*153*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																**TPH Sum will appear when F1, F2 and F3 fractions are entered.**			
Upgradient																			
	BMW 06-18 surface																		
14-8292	BMW 06-18	2014	Year 1	Phase I	5-10	25	62	12	<1.0	<10	44	33	0.77	<0.010	0.034	<10	<10	<10	15
Not sampled, buried	BMW 06-18	2015	Year 2	Phase I															#N/A
MW06-18a	BMW 06-18	2016	Year 3	Phase I	0-15	**34.5**	47.8	11.9	<0.5	**15.1**	48.2	34.1	<1.0	<0.1	**0.06**	<7	<4	**36**	42
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	BMW 06-18 depth																		
14-8293	BMW 06-18	2014	Year 1	Phase I	40-50	24	63	12	<1.0	<10	48	33	0.8	<0.010	<0.010	<10	<10	<10	15
Not sampled, buried	BMW 06-18	2015	Year 2	Phase I															#N/A
Not sampled - refusal	BMW 06-18	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	MW 06-19 surface																		
14-8294	MW 06-19	2014	Year 1	Phase I	5-10	19	**87**	13	<1.0	<10	36	36	0.85	<0.010	<0.010	<10	<10	<10	15
MW 06-19 (0-20)	MW 06-19	2015	Year 2	Phase I	0-20	18.9	**82.8**	13.4	<0.5	7.6	37.9	36.2	<1	<0.1	<0.05	<7	<4	<8	9.5
MW06-19a	MW 06-19	2016	Year 3	Phase I	0-15	23.7	**81.8**	**15**	<0.5	9.9	36.4	40.4	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 06-19 depth																		
14-8295	MW 06-19	2014	Year 1	Phase I	25-35	16	**82**	12	<1.0	<10	30	30	0.5	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	MW 06-19	2015	Year 2	Phase I															#N/A
Not sampled - refusal	MW 06-19	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 06-20 surface																		
14-8297	MW 06-20	2014	Year 1	Phase I	5-10	26	53	11	<1.0	<10	47	27	0.7	<0.010	<0.010	<10	<10	<10	15
MW 06-20 (0-20)	MW 06-20	2015	Year 2	Phase I	0-15	23.3	**67.2**	11.9	<0.5	5.7	34.6	28.1	**1.2**	<0.1	<0.05	<7	<4	<8	9.5
MW06-20a	MW 06-20	2016	Year 3	Phase I	0-15	**54.2**	**72.6**	**18.1**	<0.5	**10.8**	**67.1**	**42.5**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 06-20 depth																		
14-8298	MW 06-20	2014	Year 1	Phase I	40-45	**35**	**65**	13	<1.0	<10	56	33	0.9	<0.010	<0.010	<10	<10	<10	15
Not sampled, refusal	MW 06-20	2015	Year 2	Phase I															#N/A
Not sampled - refusal	MW 06-20	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Non Hazardous Waste Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	MW 07-21 surface																		
14-8300/01	MW 07-21	2014	Year 1	Phase I	5-10	16	49	8.8	<1.0	<10	34	24	0.56	<0.010	<0.010	<10	<10	<10	15
MW 07-21 (0-15)	MW 07-21	2015	Year 2	Phase I	0-15	25.8	**76**	14	<0.5	7.3	42.8	31.1	**1.1**	<0.1	<0.05	<7	<4	<8	9.5
MW07-21a	MW 07-21	2016	Year 3	Phase I	0-15	21.8	49.3	10.2	<0.5	6.5	32.5	22.8	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	MW 07-21 depth																		
14-8302	MW 07-21	2014	Year 1	Phase I	40-50	19	55	9.9	<1.0	<10	39	28	0.60	<0.010	<0.010	<10	<10	<10	15
MW 07-21 (30-40)	MW 07-21	2015	Year 2	Phase I	30-40	18.6	63.1	11	<0.5	5.7	30	23.6	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	MW 07-21	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-3522	3522	2001	0											<130					
01-3524	3522	2001	30											<130					
01-3537[1]	3536	2001	30											2800					
01-3685	3683	2001	55											46					
01-3644	3642	2001	40											190					
01-3645	3642	2001	55											370					
00-23696		2000	0											490					
00-23670/71		2000	0	27	47	11	<1.0	<10	60	69	<1.0			365					
00-23672		2000	0	44	63	19	<1.0	17	92	110	<1.0		<0.2						
00-23673		2000	0										<0.2						
01-3872	3870	2001	20											<40					
00-23697		2000	0											200					
00-23693		2000	0										0.28						
00-23698		2000	0										<0.2						
00-23699		2000	30										0.3						
00-23700/01		2000	0										<0.5						
00-23675		2000	0	36	56	13	<1.0	17	91	86	<1.0		0.31	<40					
00-23720/21		2000	0											<40					
00-23722		2000	0										<0.2						
00-23724		2000	0										< 0.5	<40					
00-23725		2000	30										<0.2						
00-23726		2000	0										<0.2						
00-23727		2000	0										<0.2						
00-23728		2000	0	67	240	31	<1.0	11	80	51	<1.0		0.32	<40					
00-23729		2000	0										0.45	1200					
00-23714		2000	0											460					
00-23715		2000	0										<0.2	370					
00-23716		2000	0										<0.2	<40					
00-23703		2000	0										<0.2	150					
00-23702		2000	0	58	180	24	<1.0	12	140	58	<1.0		<0.2	53					
00-23704		2000	0											120					
00-23690/91		2000	0										<0.2						
00-23676		2000	0										<0.2						
00-23677		2000	30										<0.2						
00-23679		2000	0										<0.2	<40					
00-23717		2000	0	58	220	27	<1.0	11	110	52	<1.0		<0.2						
01-3867	3865	2001	50											130					
00-23718		2000	0										0.3						
00-23719		2000	30										<0.2						
00-23723		2000	0										< 0.5	<40					
01-3687	3686	2001	20											170					
01-5430/31	5430	2001	0											<40					
07-30852	BMW 06-18	2007	0-10	35	60	15	<1.0	30	79	66	<1.0	<0.10	0.065	41			<10	4.0	32
07-30854	BMW 06-18	2007	25-35	13	26	8.5	<1.0	<10	33	<20	<1.0	<0.10	0.0036	527			<10	<4.0	520
08-9782*	BMW 06-18	2008	0-10	21	46	11	<1.0	<10	51	38	<1.0	<0.10	0.020	43			<10	<4.0	36
08-9784*	BMW 06-18	2008	30-40	14	48	10	<1.0	<10	31	20	<1.0	<0.10	<0.0030	107			<10	<4.0	100
09-21480	BMW 06-18	2009	0-10	20	40	10	<1.0	<10	46	38	<1.0	<0.10	0.0134	91			<10	7.7	78
09-21482	BMW 06-18	2009	30-40	15	30	8.1	<1.0	<10	36	28	1.2	<0.10	<0.0030	86			<10	4.5	76
11-12994/95	BMW06-18	2011	0-10	22	43	11	<1.0	19	53	42	<1.0	<0.10	<0.050	45			<10	4.4	36
11-12996	BMW06-18	2011	30-40	16	49	12	<1.0	<10	39	32	<1.0	<0.10	<0.050	22			<10	<4.0	15
12-44818	BMW06-18	2012	0-10	31	64	11	<1.0	22	76	61	0.98	<0.10	0.25	25			<30	<10	<10
12-44820	BMW06-18	2012	20-30	26	48	9.1	<1.0	14	52	38	<1.0	<0.10	<0.050	25			<30	<10	<10

DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
13-25240/41	BMW 06-18	2013	0-10	17	49	11	<1.0	<10	42	26	1.2	<0.10	0.10	55			<10	<4.0	48
13-25242	BMW 06-18	2013	30-40	18	46	11	<1.0	11	49	25	0.82	<0.10	<0.050	27			<10	<4.0	20
Downgradient:																			
01-3520/21	3519	2001	20											230					
01-3500/01	3500	2001	0											960					
01-3503	3500	2001	40											810					
01-3599	3598	2001	30											<40					
01-3635	3598	2001	50											<40					
00-24942		2000	0	24	41	12	<1.0	10	50	28	<1.0		<0.1	1900					
00-24943		2000	50	32	39	14	<1.0	<10	56	26	<1.0		<0.1	210					
01-3526	3525	2001	30											<130					
01-3586	3586	2001	0											130					
01-3588	3586	2001	55											<40					
00-23744		2000	0											1000					
00-23743		2000	0											840					
00-23730/31		2000	0											110					
01-3875	3874	2001	20											180					
01-3880/81	3879	2001	30											<40					
00-23706		2000	30	57	53	18	<1.0	15	110	130	<1.0								
00-23707		2000	0										<0.2						
00-23710/11		2000	0										0.3						
00-23712		2000	0											<40					
00-23713		2000	0											120					
00-23683		2000	0										<0.2						
00-23684		2000	0						130										
00-23685		2000	0										0.3						
01-19972	19970	2001	50											460					
01-19975	19974	2001	50											600					
01-19966	19965	2001	50											2200					
00-24937		2000	0	22	58	18	<1.0	21	75	57	<1.0		<0.1						
00-24938		2000	50	24	75	26	<1.0	19	100	89	<1.0		<0.1	<40					
01-19998	19997	2001	50											<40					
00-23732		2000	0	39	55	15	<1.0	15	97	80	<1.0			2000					
00-23733		2000	0	28	46	13	<1.0	15	75	58	<1.0			<40					
00-23734		2000	0	60	42	15	<1.0	12	120	130	<1.0		<0.2						
00-23739		2000	0	170					180										
00-23740/41		2000	0											450					
00-23742		2000	0											250					
01-19980/81	19980	2001	30											<40					
00-24939		2000	0	44	71	22	<1.0	21	66	37	1		<0.1						
00-24940		2000	50	82	67	33	<1.0	19	83	35	<1.0		<0.1						
00-24941		2000	50	80	66	33	<1.0	21	79	30	<1.0		<0.1						
01-3596	3595	2001	25											<40					
01-3538	3536	2001	50											960					
01-3532	3530	2001	20											<40					
01-3533	3530	2001	45											320					
07-30848	MW 06-19	2007	0-10	22	120	20	<1.0	<10	44	50	<1.0	<0.10	<0.0030	25			<10	4.3	16
07-30850	MW 06-19	2007	25-35	16	75	14	<1.0	<10	35	34	<1.0	<0.10	<0.0030	43			<10	<4.0	36
07-30856	MW 06-20	2007	0-10	21	51	13	<1.0	<10	45	24	<1.0	<0.10	<0.0030	44			<10	4.7	34
07-30858	MW 06-20	2007	25-35	12	22	8	<1.0	<10	32	<20	<1.0	<0.10	<0.0030	26			<10	<4.0	19
07-30860/61	MW 07-21	2007	0-10	16	59	12	<1.0	<10	30	28	<1.0	<0.10	<0.0030	40			<10	<4.0	33
07-30862	MW 07-21	2007	25-35	16	59	11	<1.0	<10	31	27	<1.0	<0.10	<0.0030	29			<10	<4.0	22
08-9794*	MW 06-19	2008	0-10	19	100	17	<1.0	<10	39	40	<1.0	<0.10	<0.0030	1413			<10	8.0	1400
08-9796*	MW 06-19	2008	30-40	17	89	15	<1.0	<10	36	38	<1.0	<0.10	0.0056	83			<10	<4.0	76
08-9790*	MW 06-20	2008	0-10	16	27	11	<1.0	<10	48	<20	<1.0	<0.10	<0.0030	277			<10	<4.0	270
08-9792*	MW 06-20	2008	30-40	18	55	12	<1.0	<10	38	25	<1.0	<0.10	<0.0030	32			<10	<4.0	25

DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
08-9786*	MW 07-21	2008	0-10	18	62	13	<1.0	<10	36	31	<1.0	<0.10	<0.0030	28			<10	<4.0	21
08-9788*	MW 07-21	2008	30-40	22	63	13	<1.0	<10	41	34	<1.0	<0.10	<0.0030	39			<10	4.9	29
09-21494	MW 06-19	2009	0-10	21	100	17	<1.0	<10	44	46	<1.0	<0.10	<0.0030	42			<10	<4.0	35
09-21496	MW 06-19	2009	30-40	18	89	15	<1.0	<10	38	40	<1.0	<0.10	<0.0030	39			<10	<4.0	32
09-21489	MW 06-20	2009	0-10	20	46	13	<1.0	<10	62	29	<1.0	<0.10	0.01	48			<10	<4.0	41
09-21491	MW 06-20	2009	30-40	19	45	11	<1.0	<10	35	22	<1.0	<0.10	<0.0030	29			<10	<4.0	22
09-21485/86	MW 07-21	2009	0-10	24	62	13	<1.0	<10	46	37	<1.0	<0.10	<0.0030	65			<10	4.4	56
09-21487	MW 07-21	2009	30-40	31	70	16	<1.0	<10	53	44	1.1	<0.10	<0.0030	21			<10	<4.0	14
11-12998	MW06-19	2011	0-10	13	68	12	<1.0	<10	28	29	<1.0	<0.10	<0.050	73			<10	5.4	63
11-13000	MW06-19	2011	30-40	12	57	11	<1.0	<10	23	24	<1.0	<0.10	<0.050	50			<10	4.4	41
11-13018	MW06-20	2011	0-10	16	40	10	<1.0	<10	36	20	<1.0	<0.10	<0.050	17			<10	<4.0	10
11-13020	MW06-20	2011	30-40	14	45	9.9	<1.0	<10	34	27	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-13022	MW07-21	2011	0-10	17	51	12	<1.0	<10	41	27	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-13024	MW07-21	2011	30-40	20	58	12	<1.0	<10	39	33	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
12-44822	MW06-19	2012	0-10	23	100	15	<1.0	<10	44	46	1.2	<0.10	<0.050	25			<30	<10	<10
12-44824	MW06-19	2012	20-30	17	63	12	<1.0	12	42	32	1.7	<0.10	<0.050	25			<30	<10	<10
12-44826	MW06-20	2012	0-10	25	52	11	<1.0	<10	45	27	1.3	<0.10	<0.050	25			<30	<10	<10
12-44828	MW06-20	2012	20-30	32	61	12	<1.0	<10	47	35	<1.0	<0.10	<0.050	25			<30	<10	<10
12-44830	MW07-21	2012	0-10	26	57	11	<1.0	<10	48	36	<1.0	<0.10	0.15	25			<30	<10	<10
12-44832/33	MW07-21	2012	20-30	25	77	13	<1.0	<10	44	41	1.1	<0.10	<0.050	25			<30	<10	<10
13-25244	MW 06-19	2013	0-10	12	58	13	<1.0	47	37	33	0.5	<0.10	<0.050	12			<10	<4.0	<9.0
13-25246	MW 06-19	2013	30-40	19	66	17	<1.0	10	46	37	2.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25248	MW 06-20	2013	0-10	16	40	9.5	<1.0	<10	40	22	0.46	<0.10	<0.050	14			<10	4.1	<9.0
13-25250/51	MW 06-20	2013	30-40	28	48	13	<1.0	<10	53	28	1.0	<0.10	<0.050	26			<10	<4.0	19
13-25252	MW 07-21	2013	0-10	20	51	10	<1.0	<10	33	29	0.8	<0.10	<0.050	16			<10	<4.0	9
13-25254	MW 07-21	2013	30-40	21	49	10	<1.0	<10	34	31	2.0	<0.10	<0.050	12			<10	<4.0	<9.0
	N value			66	65	65	65	65	67	65	65	48	86	105			48	48	48
	Baseline Detection Limits			3.0	5	5	1	10	15	20	1	0	0	10			10	10	10
	Arithmetic Mean			27	65	14	0.50	9.4	57	41	0.7	0.050	0.073	216			7	3	102
Arithmetic Mean Corrected for Detection Limits				27	65	14	1.0	10	57	41	1.0	0.10	0.05	216			30	10	10
	Standard Deviation			16	38	6	0.0	7.7	30	24	0.37	0.0	0.093	416			4	2	256
	Minimum			12	22	3	0.50	5.0	23	10	0.45	0.050	0.0015	11.5			5.0	2.0	5.0
	Maximum			82	240	33.0	0.50	47	180	130	2.2	0.05	0.45	2200			15	8	1400
	95% Confidence Limit			3.8	9.2			1.9	7.3		0.09	0.000	0.020	80			1	0	72

Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004						
90-G315	2 km downstream BF304	1990										<0.5	0.024						
90-G320	100 m E of S end runway	1990										<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002						
90-G325	5 km from crossroads	1990										<0.5	<0.0002						
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0								
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0								
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0								
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0								

DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0								
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0								
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0								
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0								
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0								
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0								
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0								
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0								
03-26140	Upper Site - BU 4	2003	0-10	16	53	9	<1.0	<10	32	24	<1.0								
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0								
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0								
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0								
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4								
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1								
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1								
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0								
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6								
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0								
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0								
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0								
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8								
03-26172	Upper Site - BU 3	2003	0-10	59	34	7	<1.0	<10	89	94	<1.0								
03-26173	Upper Site - BU 3	2003	0-10	21	34	7	<1.0	<10	36	46	1.1								
03-26174	Upper Site - BU 3	2003	0-10	71	29	8	<1.0	11	106	120	1.4								
03-26175	Upper Site - BU 3	2003	0-10	76	27	9	<1.0	<10	117	119	<1.0								
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1								
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0								
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2								
03-26184	Upper Site - BU 4	2003	0-10	18	51	8	<1.0	12	39	33	1.4								
03-26185	Upper Site - BU 4	2003	0-10	17	17	5	<1.0	<10	44	<20	<1.0								
03-26186	Upper Site - BU 4	2003	0-10	19	43	9	<1.0	<10	46	57	<1.0								
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4								
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0								
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0								
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5								
03-26192	Upper Site - BU 3	2003	0-10	66	31	9	<1.0	<10	125	142	2.1								
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0								
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0								
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0								
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0								
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1								
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0								
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0								
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0								
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0								
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0								
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6								
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0								
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0								
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0								
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0								
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0								

DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0								
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3								
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3								
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0								
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0								
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0								
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9								
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9								
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3								
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2								
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0								
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0								
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0								
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0								
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4								
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1								
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0								
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0								
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0								
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0								
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0								
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0								
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0								
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0								
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0								
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0								
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0								
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7								
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0								
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0								
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0								

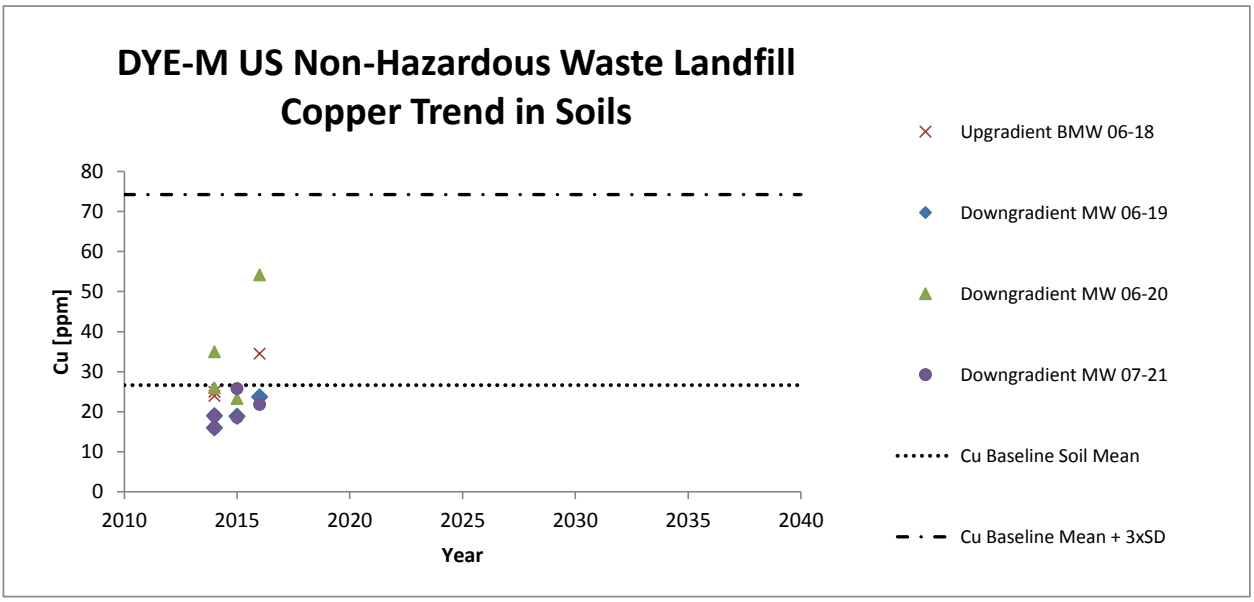
DYE-M US Non Hazardous Waste Landfill - Summary of Baseline and Background Soil Analytical Data

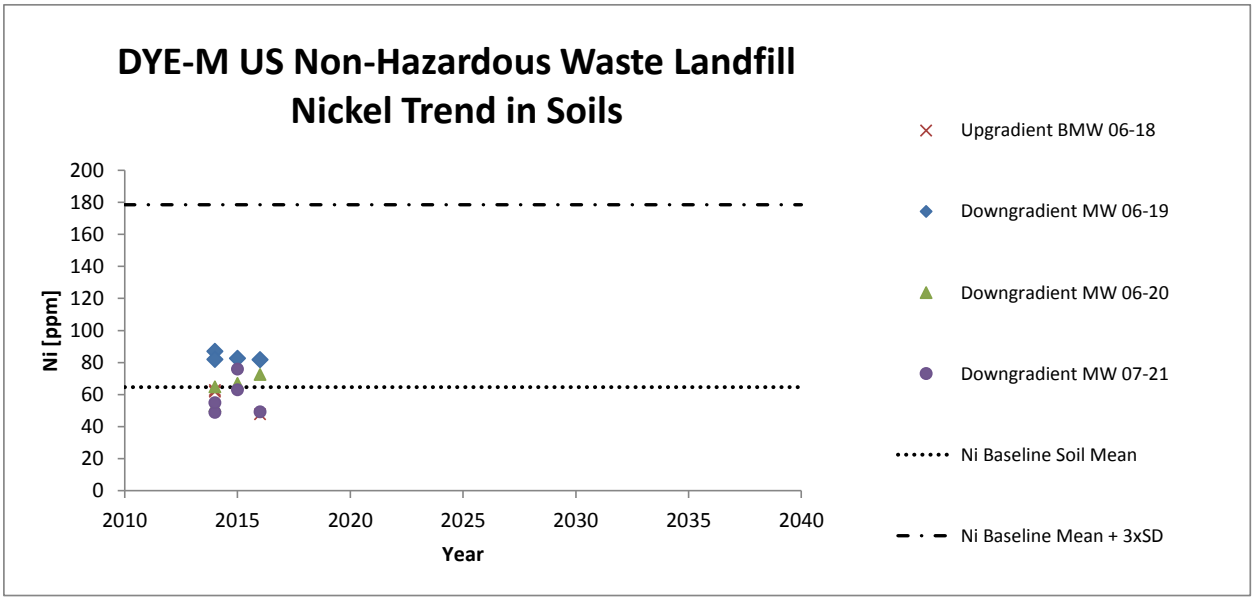
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0								
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0								
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0								
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0								
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0								
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0								
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0								
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1								
03-26262	Upper Site - BU 4	2003	0-10	26	46	9	<1.0	11	61	41	1.3								
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0								
03-26264	Upper Site - BU 4	2003	0-10	15	15	5	<1.0	<10	44	<20	<1.0								
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0								
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0								
03-26267	Upper Site - BU 4	2003	0-10	22	42	9	<1.0	10	63	60	<1.0								
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0								

DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

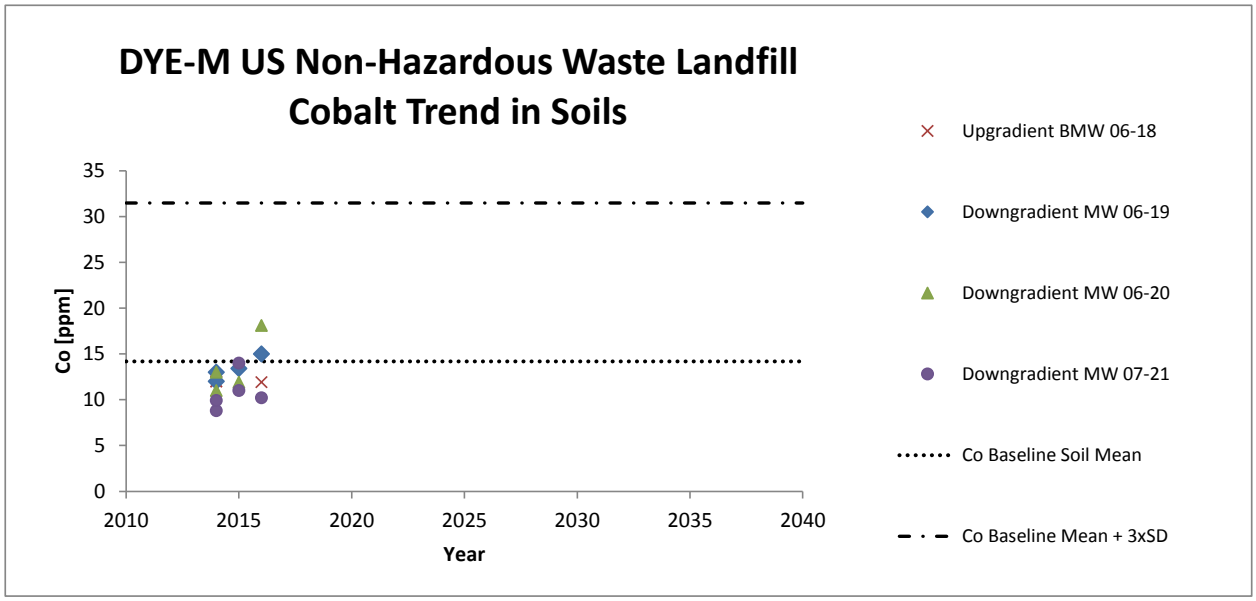
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

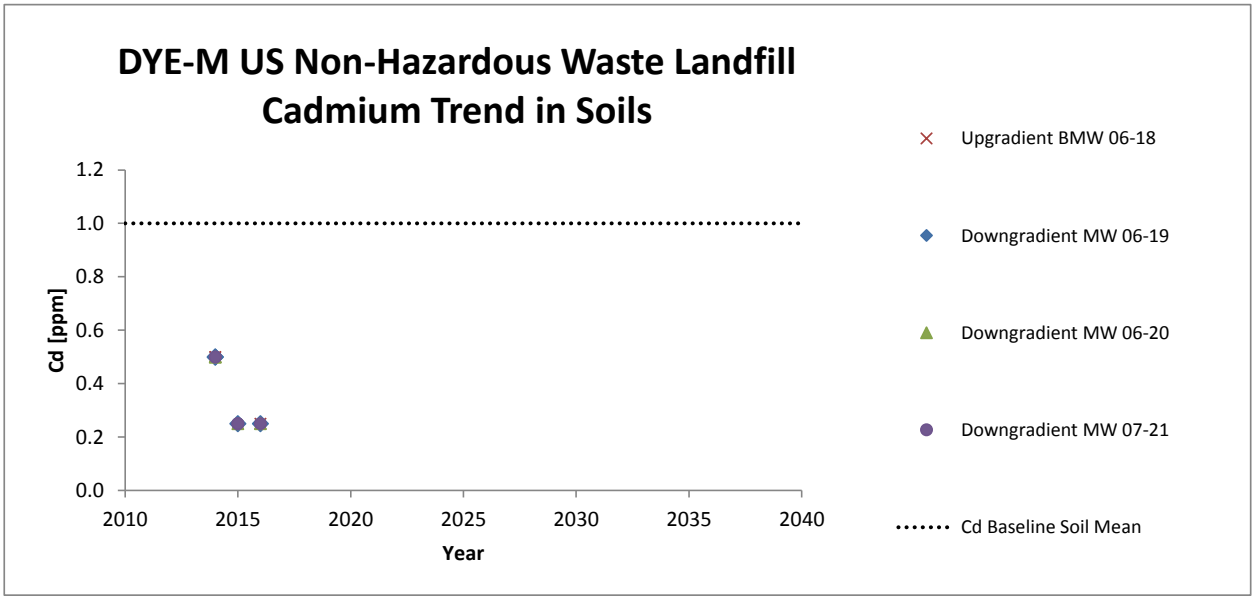
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





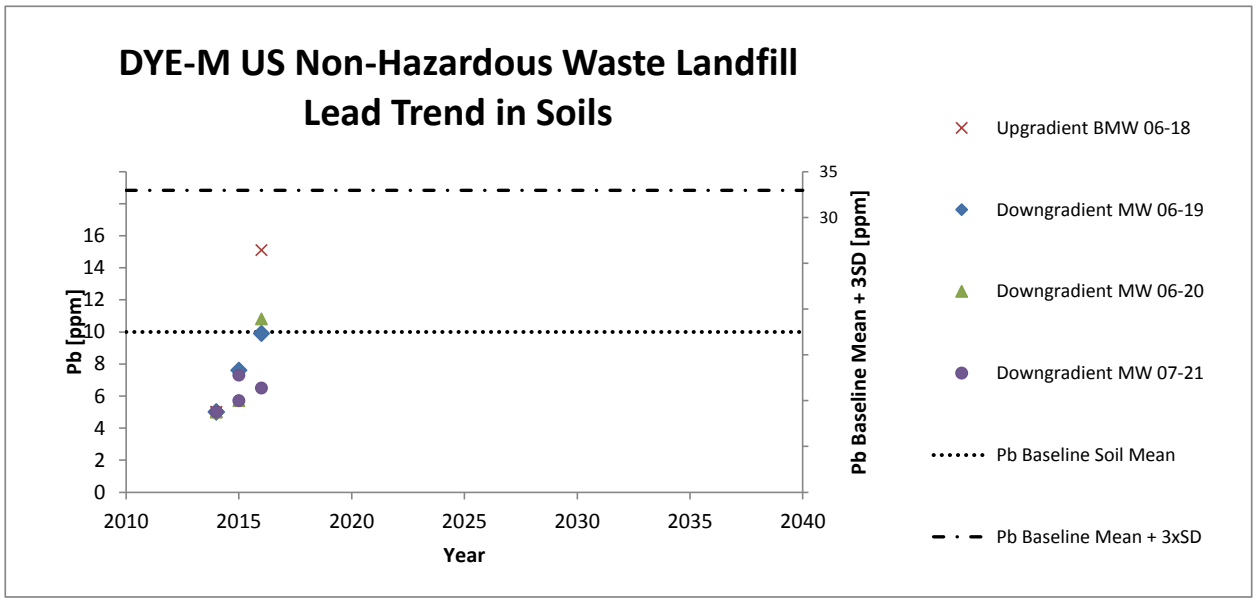
DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



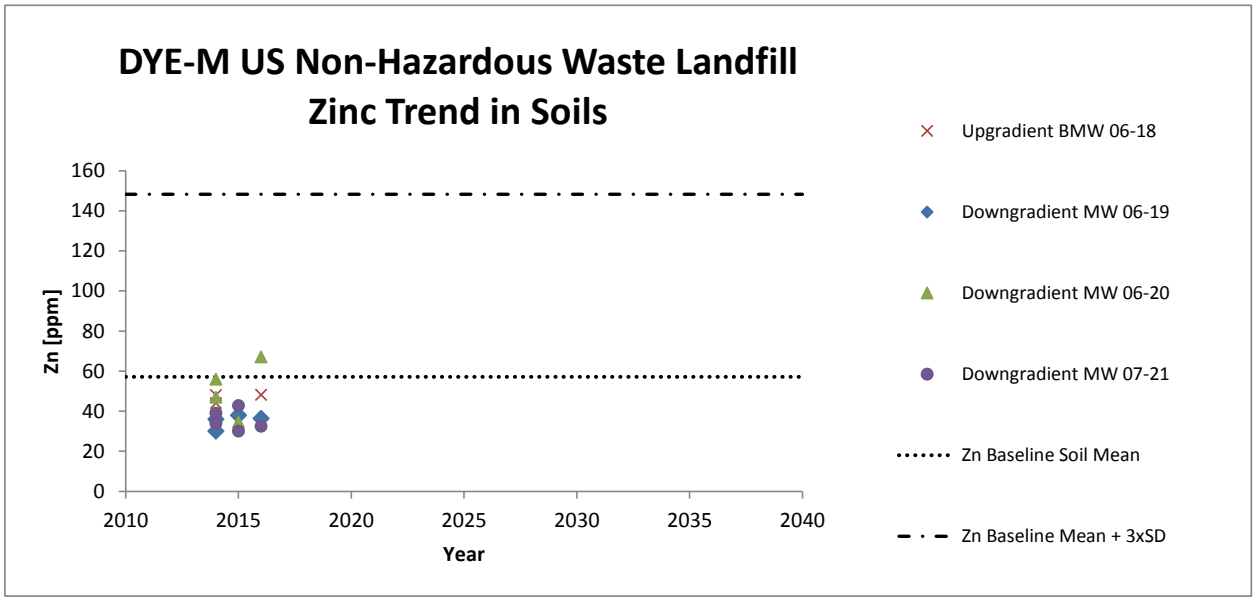


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.
*Cd Baseline SD = 0

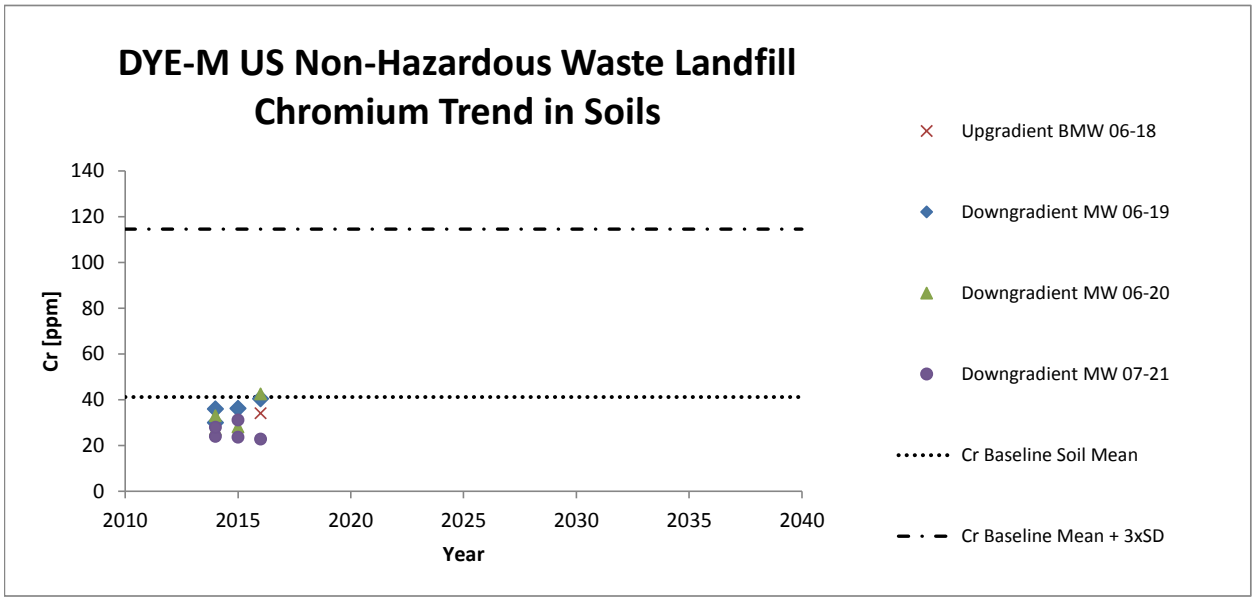
DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

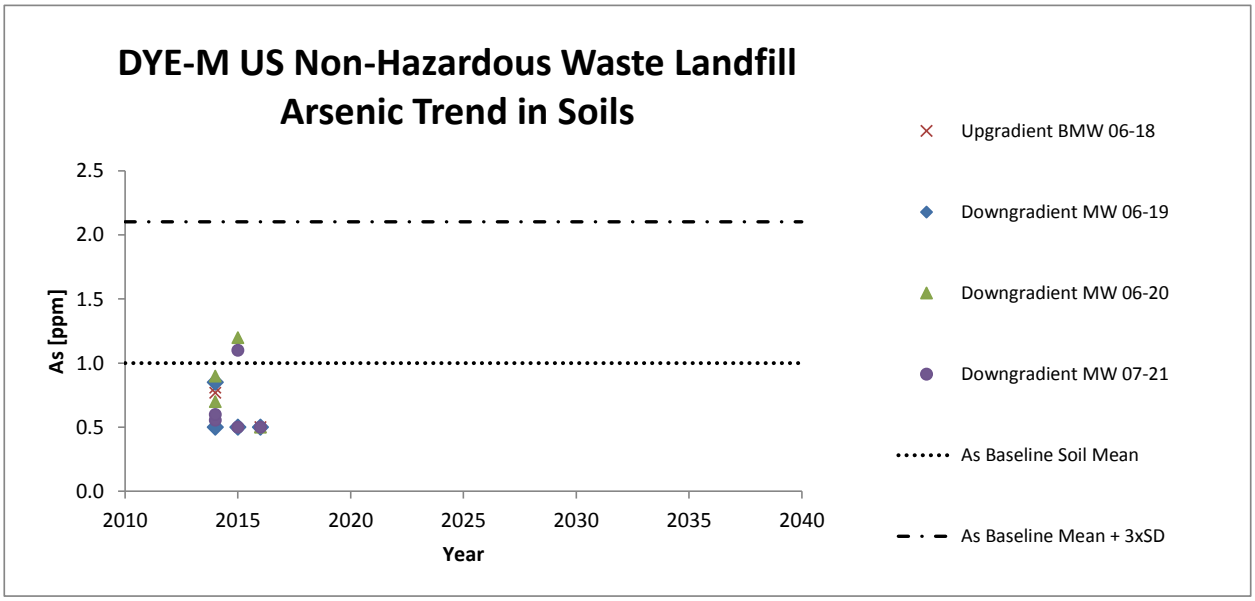


*Pb Baseline Arithmetic Mean equals the detection limit



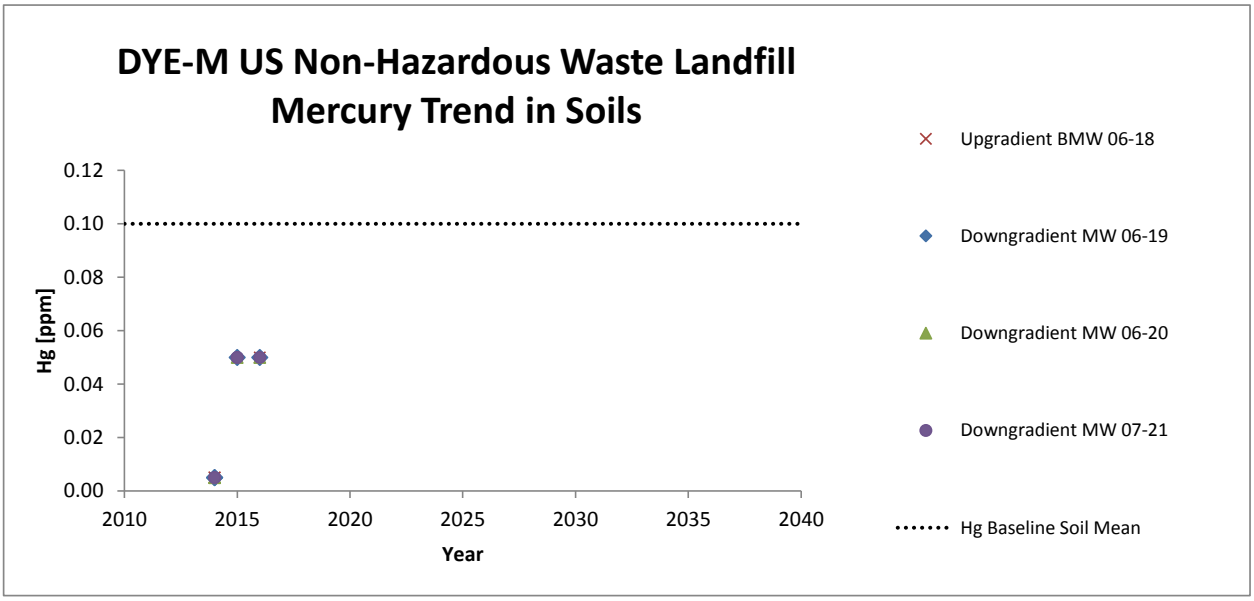
DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



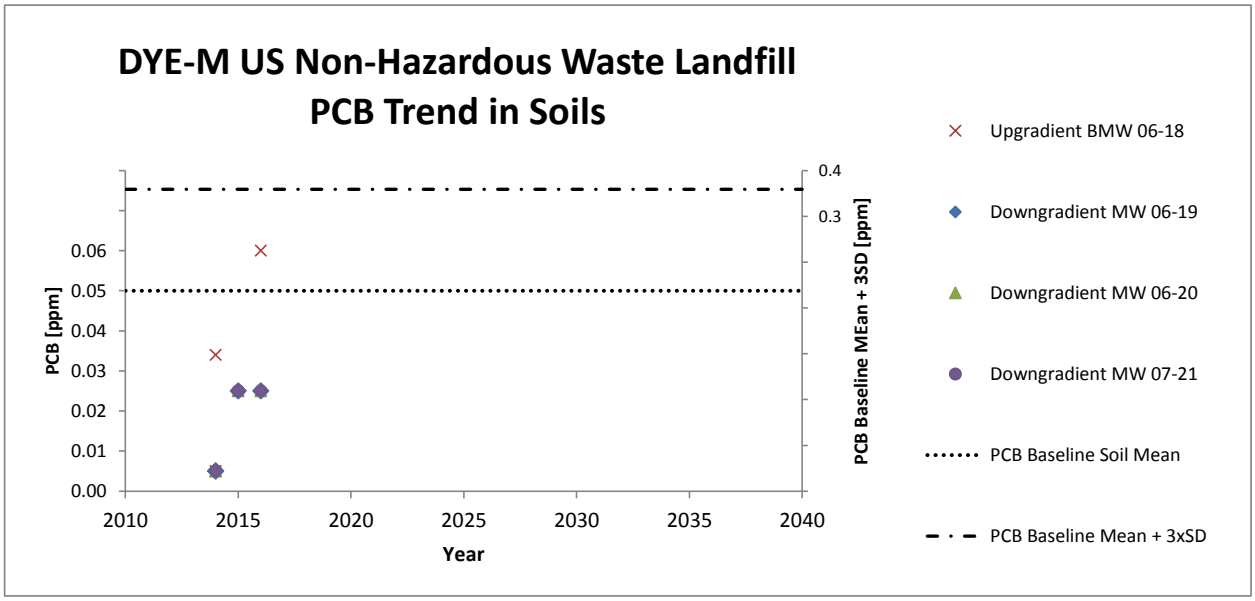


*As Baseline Arithmetic Mean equals the detection limit

DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

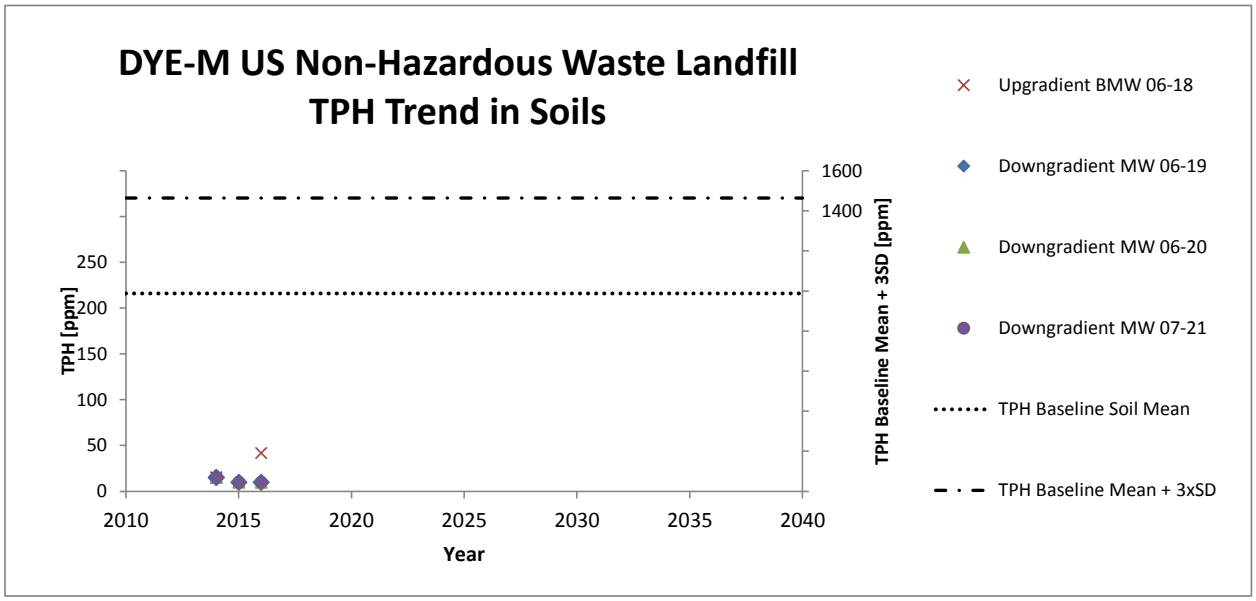


*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



*PCB Baseline Arithmetic Mean is equal to the baseline detection limit.

DYE-M US Non-Hazardous Waste Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M US Non-Hazardous Waste Landfill - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Baseline Data																		
Upgradient:																		
08-9739	BMW06-18				0.110	0.0888	0.029	<0.0010	0.041	0.71	0.088	0.0078	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
09-21484	BMW06-18				0.376	0.3910	0.086	0.00277	0.256	18	0.59	0.020	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34964	BMW06-18				<0.0050	0.0061	<0.0030	<0.0010	<0.0050	12	0.30	0.033	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
Downgradient:																		
08-9741	MW06-19				0.033	0.11	0.009	<0.0010	<0.010	0.049	0.19	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
08-9740	MW06-20				0.25	0.19	0.064	<0.0010	0.031	1.00	0.17	0.005	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
09-21497	MW06-19				0.22	0.19	0.074	0.0019	0.088	0.29	0.31	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
09-21493	MW06-20				0.50	0.35	0.130	0.0033	0.068	6.04	0.38	0.006	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12187	MW06-19				<0.0050	0.0089	<0.0030	<0.0010	<0.010	0.33	0.006	<0.0030	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
11-12189	MW07-21				<0.0050	<0.0050	<0.0030	<0.0010	<0.010	0.56	<0.0050	0.0059	<0.00040	<0.000020	<0.050	<0.50	<1.0	0.8
12-34965	MW06-19				<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.094	0.11	0.002	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
12-34963	MW06-20				<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	9.1	0.40	0.018	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29590/91	MW06-19				<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.095	0.078	<0.0010	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29592	MW06-20				<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	6.30	0.07	0.0048	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
13-29593	MW07-21				<0.0050	<0.0050	<0.0030	<0.0010	<0.0050	0.59	0.50	0.0210	<0.00040	<0.0030	<0.050	<0.50	<1.0	0.8
		N value			14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Arithmetic Mean				**0.25**	**0.22**	**0.07**	**0.002**	**0.082**	**4.0**	**0.27**	**0.009**	**0.0002**	**0.001**	**0.03**	**0.25**	**0.50**	**0.25**
Arithmetic Mean Corrected for Detection Limit					**0.005**	**0.22**	**0.003**	**0.001**	**0.005**	**4.0**	**0.27**	**0.009**	**0.0004**	**0.003**	**0.05**	**0.50**	**1.0**	**1.0**
	Standard Deviation				0.17	0.12	0.04	0.001	0.1	5.7	0.17	0.0098	0.0	0.0008	0.0	0.0	0.0	0.0
Arithmetic Mean + 3xStandard Deviation					0.52	0.59	0.13	0.005	0.28	21	0.79	0.039	0.0004	0.0053	0.05	0.50	1.00	1.0
	Detection Limit				0.005	0.005	0.003	0.001	0.010	0.010	0.005	0.003	0.0004	0.003	0.05	0.50	1.00	1.0
Monitoring Data																		
Upgradient - BMW 06-18																		
Not Sampled	BMW 06-18	2014	Year 1	Phase I														#N/A
Not Sampled, buried	BMW 06-18	2015	Year 2	Phase I														#N/A
Not sampled - dry	BMW 06-18	2016	Year 3	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A

Modified TPH TOTAL will appear when F1, F2, F3 fraction results are entered.

DYE-M US Non-Hazardous Waste Landfill - Summary of Monitoring Groundwater Analytical Data

Sample ID	Location	Date	Monitoring Year	Monitoring Phase	Cu (mg/L)	Ni (mg/L)	Co (mg/L)	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cr (mg/L)	As (mg/L)	Hg (mg/L)	Total PCB (mg/L)	F1 C_6-C_{10} (mg/L)	F2 C_{10}-C_{16} (mg/L)	F3 C_{16}-C_{34} (mg/L)	Modified TPH^ - Total C6-C34 (mg/L)
Downgradient - MW 06-19																		
Not Sampled	MW06-19	2014	Year 1	Phase I														#N/A
MW06-19	MW06-19	2015	Year 2	Phase I	0.0015	<0.001	<0.0005	<0.0001	<0.0001	0.201	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	0.1
MW06-19 (Dup Avg)	MW06-19	2016	Year 3	Phase I	<0.003	0.024	0.0007	<0.0001	<0.0001	<0.005	0.002	<0.001	<0.0001	<0.00005	<0.025	<0.1	<0.1	0.1
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 06-20																		
14-8180/81	MW06-20	2014	Year 1	Phase I	<0.0010	<0.0010	<0.00030	<0.000090	<0.00050	0.21	<0.00050	<0.0010	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.2
Not sampled, could not open well	MW06-20	2015	Year 2	Phase I														#N/A
Not sampled - did not recover	MW06-20	2016	Year 3	Phase I														#N/A
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A
																		#N/A
Downgradient - MW 07-21																		
14-8182	MW07-21	2014	Year 1	Phase I	<0.0010	<0.0010	<0.00030	<0.000090	<0.00050	<0.0030	<0.00050	<0.0010	<0.00010	<0.000020	<0.025	<0.10	<0.25	0.2
Not sampled, frozen	MW07-21	2015	Year 2	Phase I														#N/A
MW07-21	MW07-21	2016	Year 3	Phase I	0.0006	<0.001	<0.0005	<0.0001	0.0003	0.02	<0.001	<0.001	<0.0001	<0.00005	<0.025	<0.100	<0.100	0.1
			Year 7	Phase II														#N/A
			Year 10	Phase II														#N/A
			Year 15	Phase II														#N/A
			Year 25	Phase II														#N/A
																		#N/A
																		#N/A
																		#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

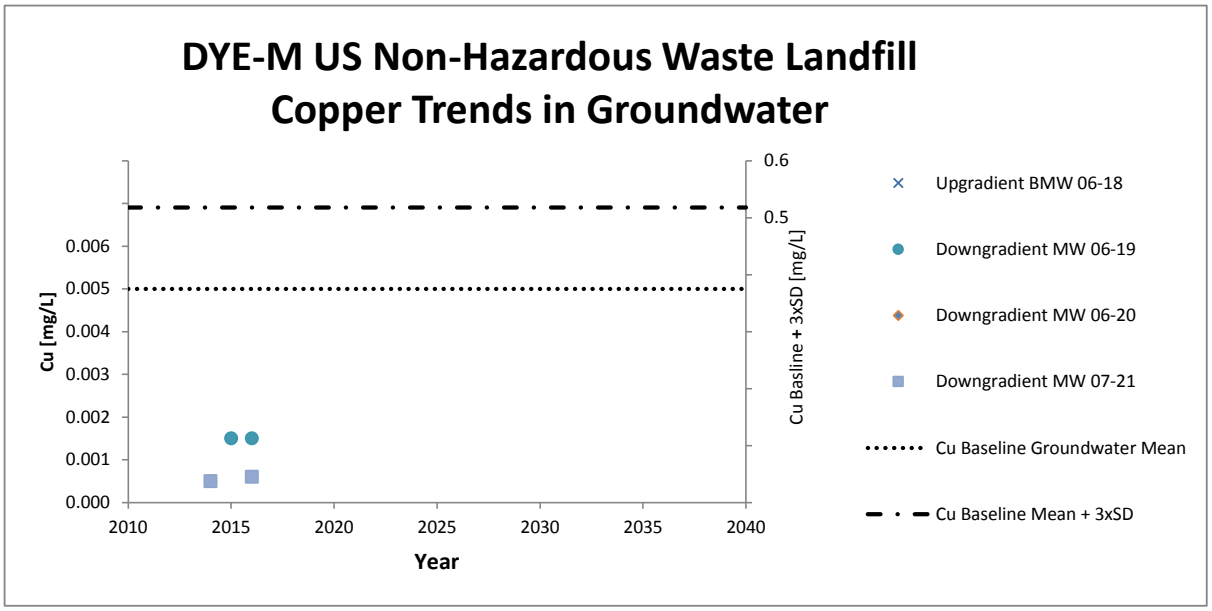
blue highlight indicates dissolved metal results. No highlight indicates total metals.

Dissolved metal results have not been included in the Baseline Arithmetic Mean

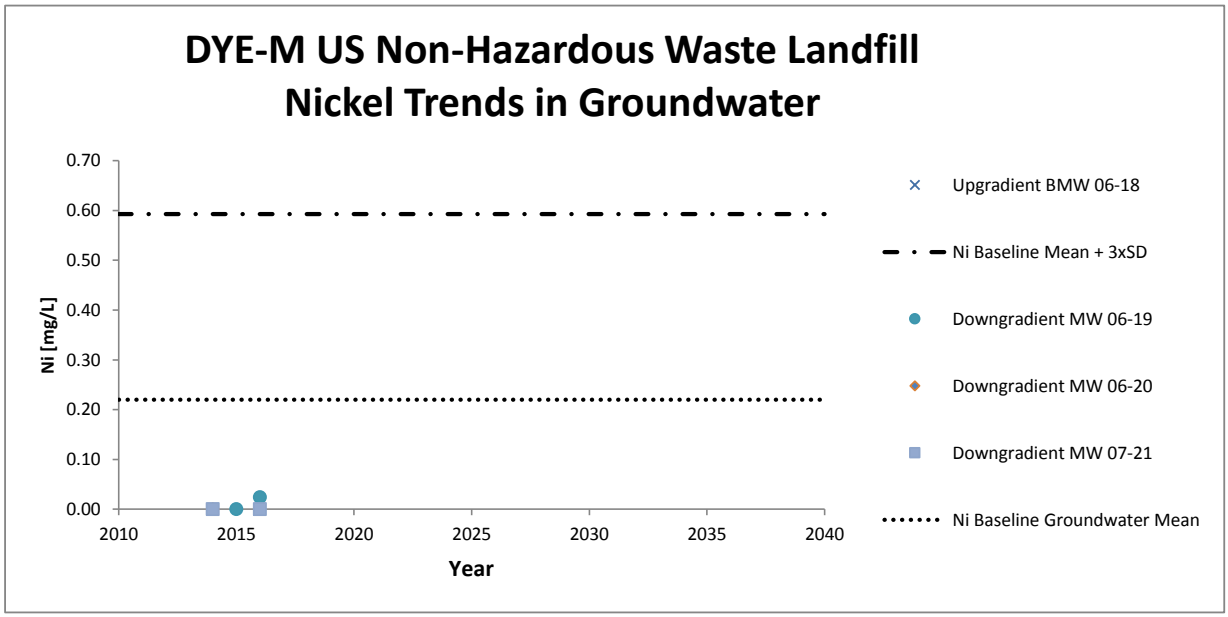
DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

Where results are below detection, half of the detection limit has been used in the charts for the sample points.

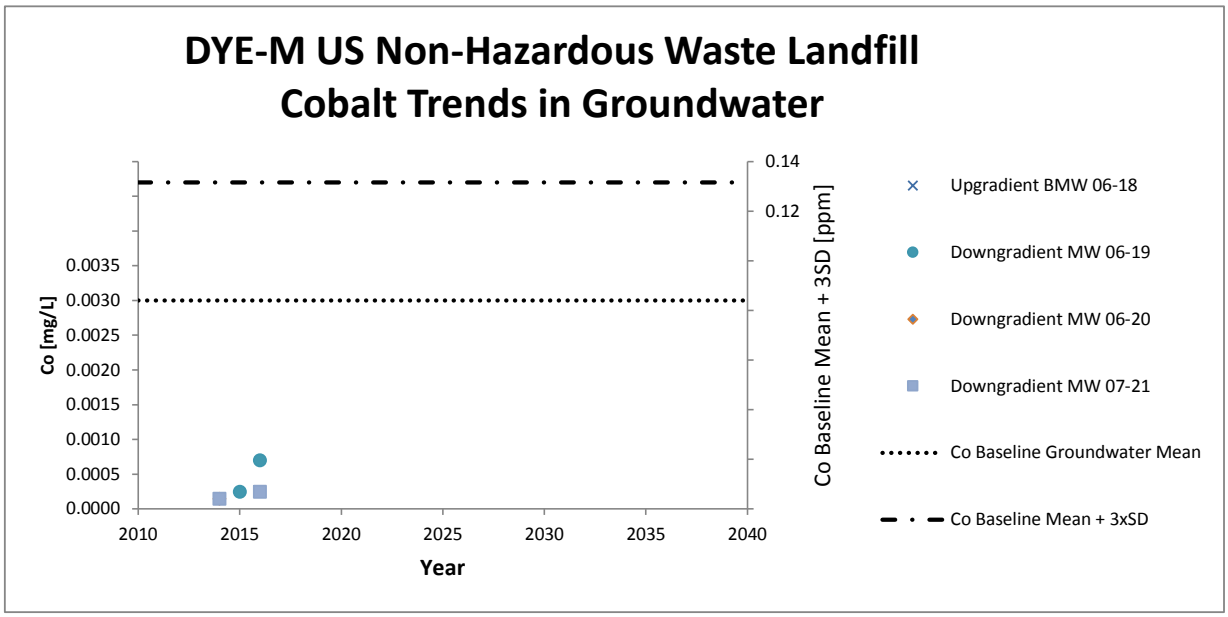
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.



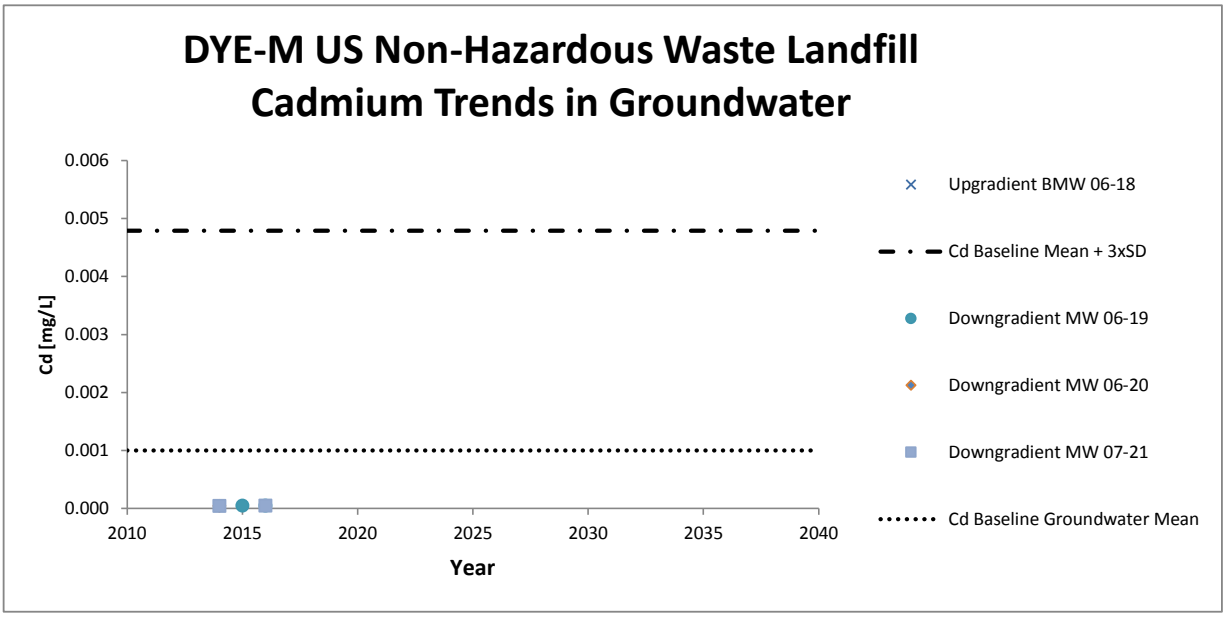
Cu Baseline Arithmetic Mean is equal to the detection limit.



DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

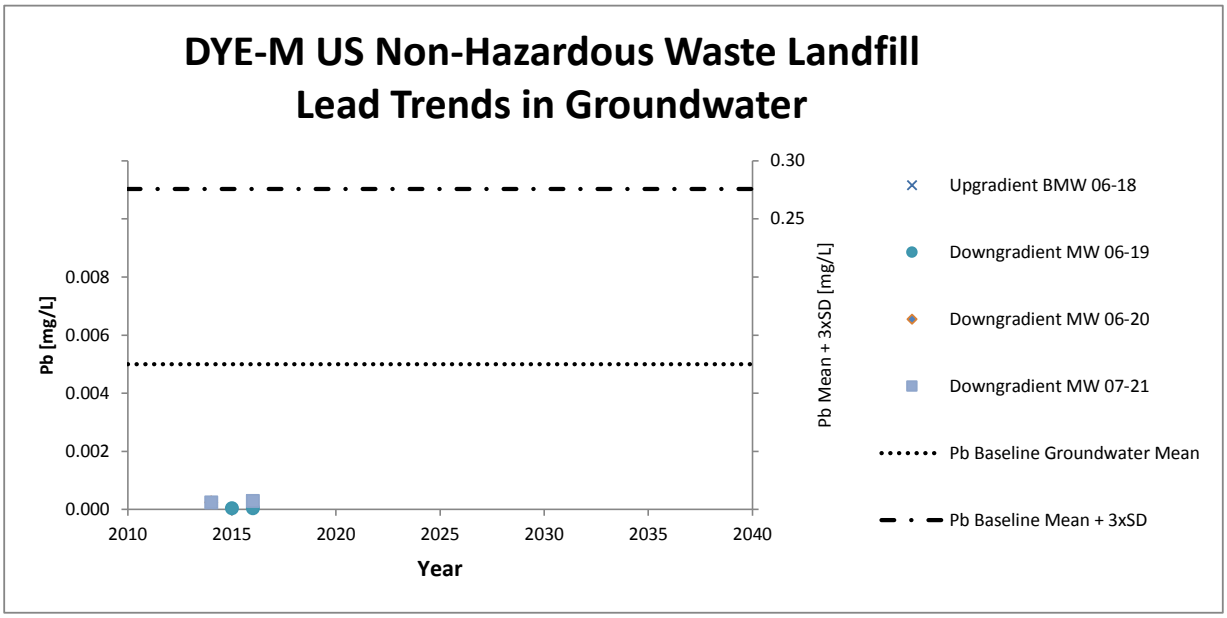


*Co Baseline Mean is equal to the baseline detection limit.

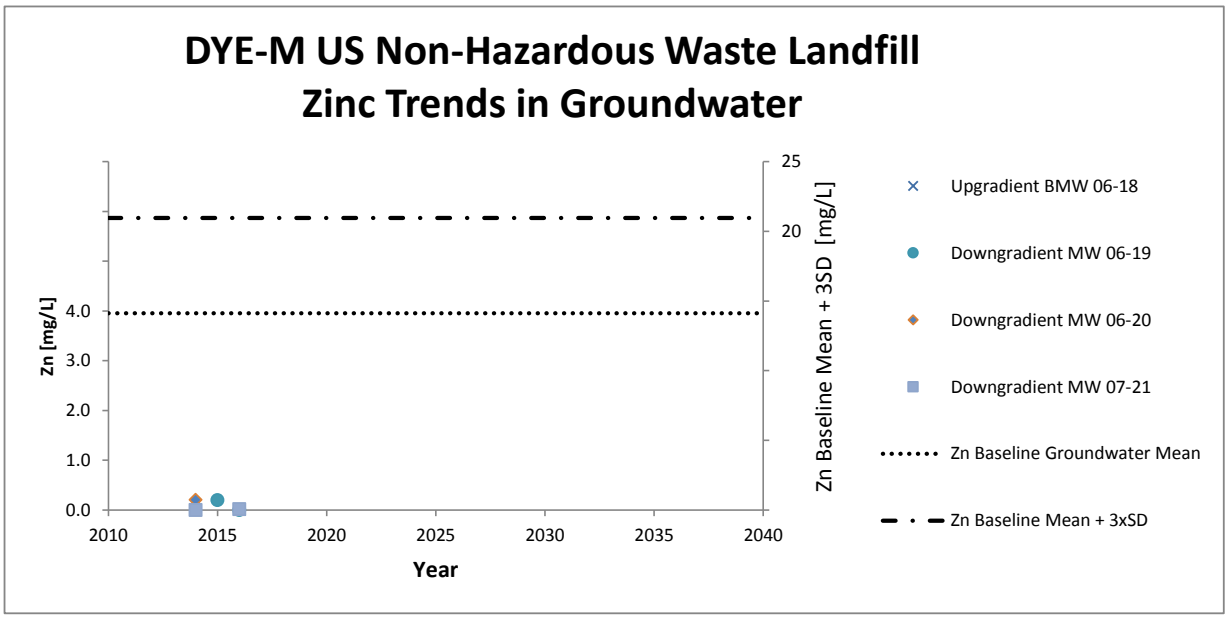


*Cd Baseline Mean is equal to the baseline detection limit.

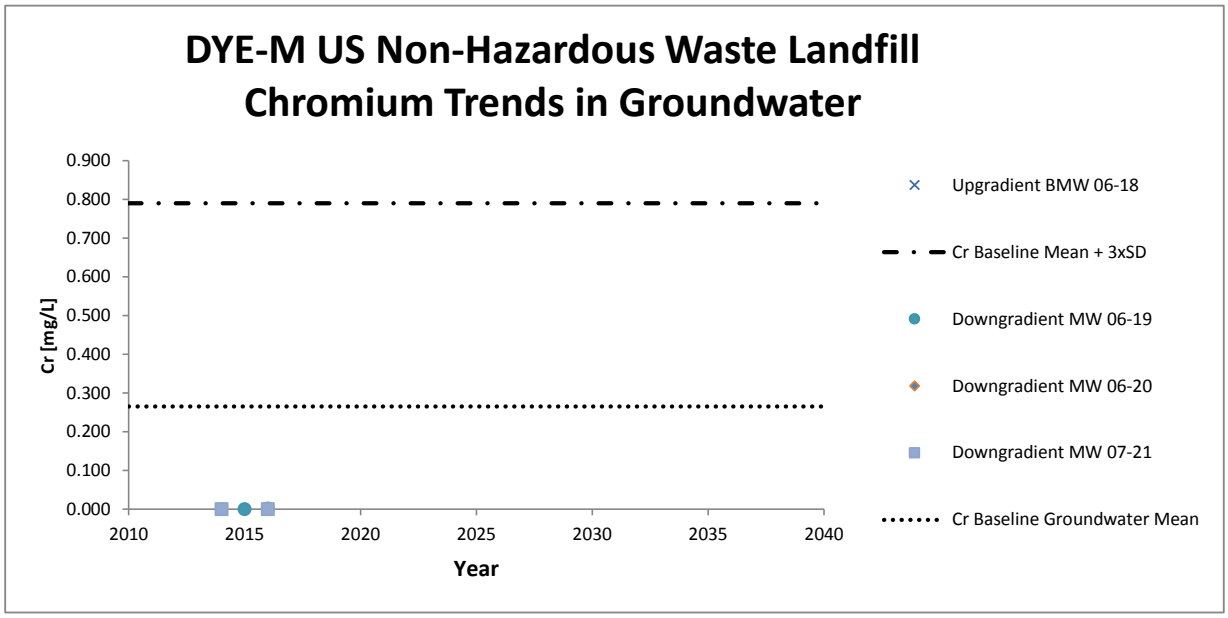
DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

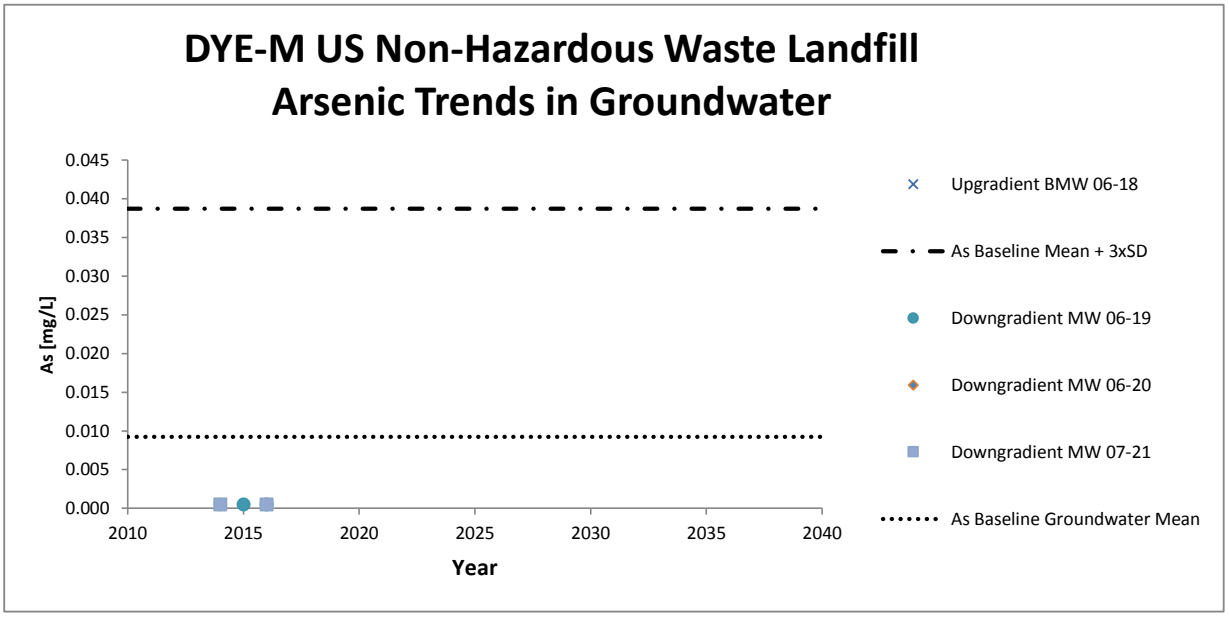


*Pb Baseline Mean is equal to the baseline detection limit.

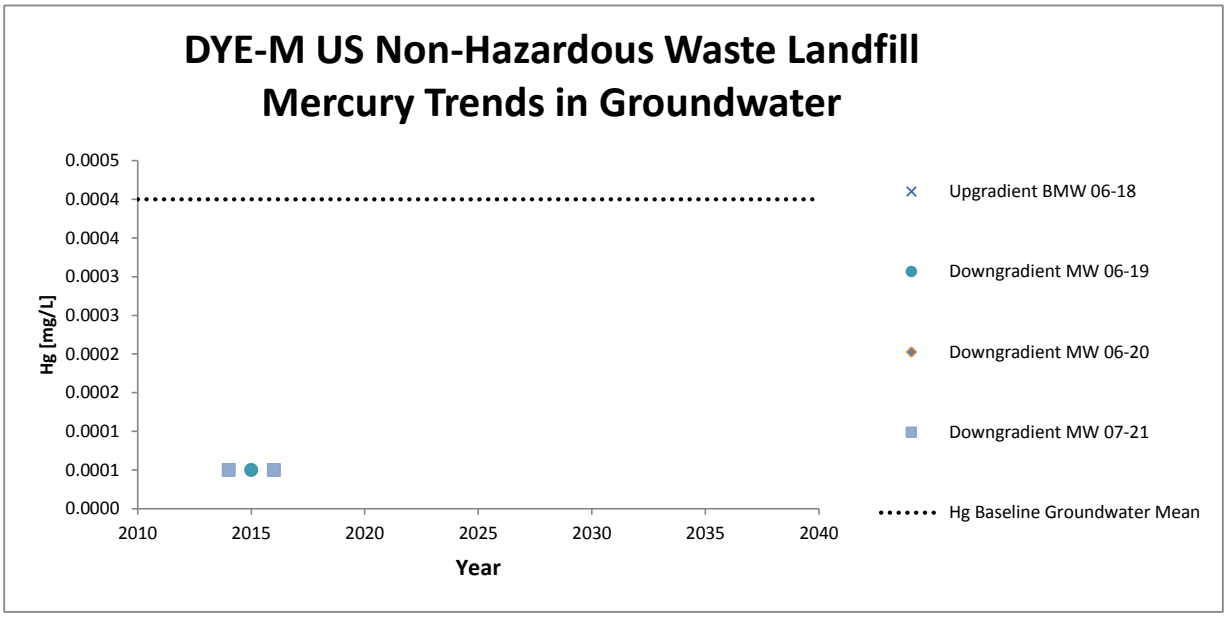


DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

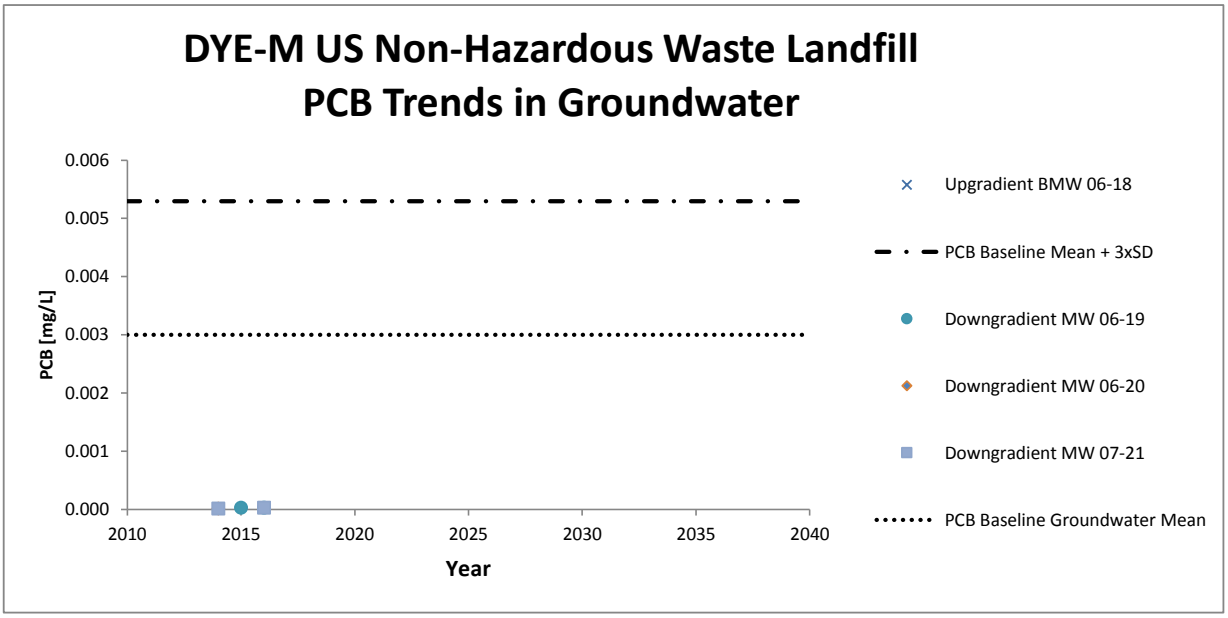




DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples

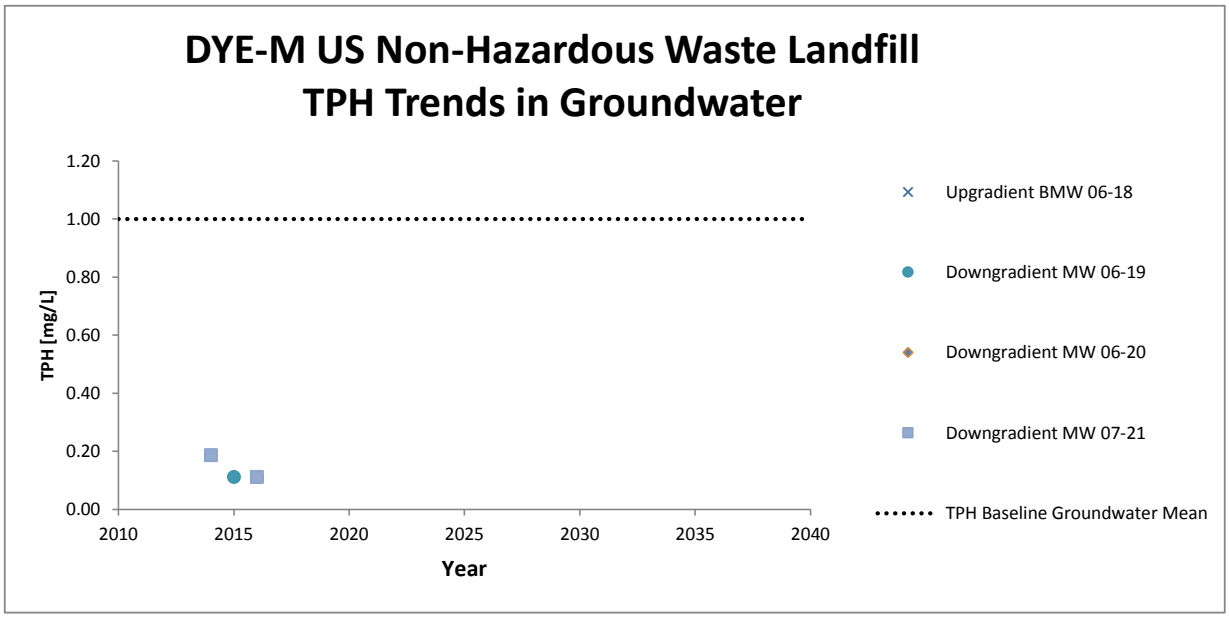


*Hg Baseline Mean is equal to the baseline detection limit.
*Hg Baseline SD = 0



*PCB Baseline Mean is equal to the baseline detection limit.

DYE-M US Non-Hazardous Waste Landfill Graphs of Trends for Inorganic Elements, PCBs and TPH in Groundwater Samples



*TPH Baseline Mean is equal to the baseline detection limit.
*TPH Baseline Mean SD = 0

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						60	141	20	1.0	10	70	90	1.0	0.5	0.0	N/A	N/A	N/A	N/A
Baseline Data - Arithmetic Mean						**25**	**55**	**10**	**1.0**	**10**	**63**	**20**	**1.0**	**0.10**	**0.10**	10	4.0	9.0	**252**
Baseline Data - Standard Deviation						15	70	4.3	0.09	8.4	30	35	0.57	0.0	0.15	0	10	10	503
Baseline Data Mean + 3xStandard Deviation						70	266	23	1.3	35	155	126	2.7	0.10	0.56	10	34	39	1760
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
*DEW Line Cleanup **Site Specific** Tier II Criteria & Hydrocarbon Action*						*296*	*2100*	*153*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-18 surface																		
14-8274	DM-18	2014	Year 1	Phase I	0-10	23	28	9.6	<1.0	**15**	59	**26**	**1.1**	<0.010	<0.010	<10	<10	<10	15
DM-18 (0-10)	DM-18	2015	Year 2	Phase I	0-10	**66.7**	**118**	**22.4**	<0.5	**16**	58.1	**131**	**4.4**	<0.1	<0.05	<7	<4	<8	10
DM-18a	DM-18	2016	Year 3	Phase I	0-15	**33.1**	43.7	**10.9**	<0.5	**14.7**	52.6	**40.1**	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-18 depth																		
14-8275	DM-18	2014	Year 1	Phase I	40-50	23	25	9.6	<1.0	**15**	**64**	**21**	**1**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-18	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-18	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	DM-19 surface																		
14-8277	DM-19	2014	Year 1	Phase I	0-10	17	24	6.4	<1.0	<10	42	**20**	0.6	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-19	2015	Year 2	Phase I															#N/A
DM-19a	DM-19	2016	Year 3	Phase I	0-15	12.7	16.5	4.7	<0.5	6.1	29	14.1	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-19 depth																		
14-8278	DM-19	2014	Year 1	Phase I	40-50	14	17	<5.0	<1.0	<10	36	<20	0.7	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-19	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-19	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-20 surface																		
14-8283	DM-20	2014	Year 1	Phase I	0-10	**34**	**61**	**12**	<1.0	<10	44	**25**	0.6	<0.010	<0.010	<10	<10	<10	15
DM-20 (0-15)	DM-20	2015	Year 2	Phase I	0-15	17.1	28.8	7.9	<0.5	**11.2**	48.2	**23.1**	**1.9**	<0.1	<0.05	<7	<4	<8	10
DM-20a	DM-20	2016	Year 3	Phase I	0-15	19.2	20.8	6.6	<0.5	**31.3**	47.3	13.9	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-20 depth																		
14-8284	DM-20	2014	Year 1	Phase I	30-40	16	13	<5.0	<1.0	**33**	59	<20	0.7	<0.010	<0.010	<10	<10	<10	15
DM-20 (15-30)	DM-20	2015	Year 2	Phase I	15-30	14.3	26.3	7.5	<0.5	**10.5**	43.7	**20**	<1	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	DM-20	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-21 surface																		
14-8285	DM-21	2014	Year 1	Phase I	0-10	15	18	8.2	<1.0	**13**	**92**	<20	**1.1**	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-21	2015	Year 2	Phase I															#N/A
DM-21a	DM-21	2016	Year 3	Phase I	0-15	18.8	21.1	9.6	<0.5	**14.7**	**86.7**	14.8	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-21 depth																		
14-8287	DM-21	2014	Year 1	Phase I	45-55	21	16	9.2	<1.0	**14**	**120**	<20	**1.6**	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-21	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-21	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-22 surface																		
14-8288	DM-22Old	2014	Year 1	Phase I	0-10	**31**	**72**	**13**	<1.0	**10**	**64**	**54**	**1.2**	<0.010	<0.010	<10	<10	<10	15
14-8233	DM-22	2014	Year 1	Phase I	5-10	**33**	48	7.9	<1.0	<10	44	**25**	0.9	<0.10	<0.050				#N/A
DM-22 (0-15)	DM-22	2015	Year 2	Phase I	0-15	**35.8**	34	**15.6**	<0.5	9.5	43.1	**23.7**	**1.9**	<0.1	<0.05	<7	<4	<8	10
DM-22b	DM-22	2016	Year 3	Phase I	0-15	**30.6**	34.9	**12.3**	<0.5	**10.3**	40	**20.7**	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-22 depth																		
14-8290/91	DM-22Old	2014	Year 1	Phase I	25-30	14	29	6.8	<1.0	<10	43	**25**	0.52	<0.010	<0.010	<10	<10	<10	15
14-8234	DM-22	2014	Year 1	Phase I	45-50	**28**	50	8	<1.0	<10	49	**27**	0.9	<0.10	<0.050				#N/A
DM-22 (40-50)	DM-22	2015	Year 2	Phase I	40-50	**54.1**	23.1	**19.3**	<0.5	5.9	28.8	13.9	<1	<0.1	<0.05	<7	<4	<8	10
DM-22a	DM-22	2016	Year 3	Phase I	30-40	**47.5**	21.4	**14.3**	<0.5	**14.2**	57.2	18.8	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-23 surface																		
14-8280/81	DM-23	2014	Year 1	Phase I	0-10	**43**	44	9.3	<1.0	**11**	**84**	**82**	**1.3**	<0.010	<0.010	<10	<10	<10	15
DM-23 (0-20)	DM-23	2015	Year 2	Phase I	0-20	17.1	52.1	9.9	<0.5	9.9	42.4	**35.5**	**1.1**	<0.1	<0.05	<7	<4	<8	10
DM-23a (Dup Avg)	DM-23	2016	Year 3	Phase I	0-15	14	39	9	<0.5	7	46	**30**	<1	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-23 depth																		
14-8282	DM-23	2014	Year 1	Phase I	25-35	20	33	7	<1.0	<10	46	**27**	0.7	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-23	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-23	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

#N/A represents a function that automatically calculates modified TPH value for charts.

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
Baseline Data																				
Upgradient:																				
97-6898		1997	0	39	110	20	<1.0	13	82	180	1.1		<0.5	<40						
01-5300/01	5300	2001	0	26	64	14	<1.0	11	57	43	<1.0		<0.1							
01-5301	5300	2001	0	29	63	15	<1.0	11	56	43	<1.0		<0.1							
00-23259	23259	2000	0	41	61	17	<1.0	13	60	57	<1.0		<0.1							
00-23260/1	23259	2000	30	24	34	14	<1.0	10	63	36	<1.0		<0.1							
00-23122		2000	0	48	45	17	1.0	15	68	72	<1.0		0.10	<40						
00-23123		2000	30	24	37	11	<1.0	<10	39	38	<1.0		<0.1	<40						
08-11819	DM-18		0-10	34	76	15	<1.0	14	65	85	1.4	<0.10	0.13	40			<10	<4.0	33	
08-11821/22	DM-18		30-40	27	58	14	<1.0	16	57	59	<1.0	<0.10	0.01	63			<10	37	21	
11-12878	DM-18		0-10	43	84	16	<1.0	<10	41	84	2.9	<0.10	<0.050	42			<10	16	21	
11-12880	DM-18		30-40	20	33	8	<1.0	16	63	37	<1.0	<0.10	<0.050	60			<10	37	18	
13-25148	DM-18		0-10	48	140	18	<1.0	11	45	150	2.6	<0.10	<0.050	34			<10	12	17	
13-25150/51	DM-18		30-40	56	140	18	<1.0	<10	42	140	2.7	<0.10	<0.050	12			<10	<4.0	<9.0	
Downgradient:																				
01-5413	5413	2001	0	60	55	11	<1.0	39	110	130	<1.0		<0.1							
01-5416	5416	2001	0	81	44	11	<1.0	11	140	130	<1.0		<0.1							
01-5417	5416	2001	30																	
01-5249	5249	2001	0	26	28	11	<1.0	14	89	48	<1.0		<0.7							
01-5250/51	5249	2001	30											375						
01-5252	5249	2001	55	21	16	10	<1.0	<10	77	35	<1.0		<0.1	<40						
01-5243	5243	2001	0	33	36	12	<1.0	19	93	45	1.3		0.1							
01-5246	5246	2001	0										0.1							
01-5247	5246	2001	40											1100						
97-6899		1997	0	33	40	10	<1.0	44	140	55	0.8		0.7	1000						
97-6900		1997	0	23	30	7	<1.0	13	100	42	0.5		<0.5							
01-5419	5419	2001	0	42	37	11	<1.0	14	68	56	<1.0		<0.1							
01-5420/21	5419	2001	30	32	26	11	<1.0	<10	51	25	<1.0		<0.1							
00-23547		2000	0	69	26	11	1.1	42	150	39	2.6		0.3							
01-5258		2001	0										0.3							
01-5256		2001	0										<0.2							
01-5259		2001	0										0.3							
01-5260/61		2001	0										<0.1							
01-5406	5406	2001	0	13	25	6	<1.0	<10	39	<20	<1.0		<0.1							
01-5262		2001	0										<0.1							
01-5263		2001	0										<0.1							
01-5264		2001	0										<0.1							
01-5295	5295	2001	0										<0.2							
01-5296	5295	2001	50										0.4	220						
01-5253	5253	2001	0										0.7							
01-5409	5409	2001	0	12	22	6	<1.0	12	43	<20	<1.0		<0.1							
00-23549		2000	0	14	20	8	<1.0	<10	53	<20	<1.0		<0.1							
00-23550/51		2000	30	12	20	7	<1.0	<10	41	<20	<1.0		<0.1							
01-5288	5288	2001	0	25	22	9	<1.0	<10	68	21	<1.0		<0.1							
01-5290/91	5288	2001	50	36	31	12	<1.0	<10	99	31	<1.0		<0.1							
01-5292	5292	2001	0	18	29	11	<1.0	12	65	27	<1.0		<0.1							
01-5285	5285	2001	0	16	22	8	<1.0	<10	57	<20	<1.0		<0.1							
01-5287	5285	2001	55	17	30	10	<1.0	15	63	25	<1.0		<0.1							
00-23552		2000	0	12	16	8	<1.0	<10	52	<20	<1.0		0.1							
01-5265	5265	2001	0	12	19	7	<1.0	<10	53	<20	<1.0		0.1							
01-5268	5268	2001	0	23	30	11	<1.0	12	83	29	<1.0		<0.1							
00-23264	23552	2000	30										<0.1							
01-5277	5277	2001	0	27	29	15	<1.0	<10	45	<20	<1.0		<0.1							
00-23553		2000	0	25	22	17	<1.0	<10	61	20	<1.0		<0.1							
00-23554		2000	30	28	28	16	<1.0	<10	64	23	<1.0		<0.1							
01-5280/81	5280	2001	0	32	21	15	<1.0	<10	35	<20	<1.0		<0.1							
97-7768		1997	0										<0.5	<40						
97-7769		1997	0											1900						
97-7742		1997	0	37	140			12	67											
97-7744		1997	0	58	440			<10	40				<0.5	<40						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
97-7745		1997	0																	
97-7749		1997	0	30	160			14	59				<0.5	87						
97-7752		1997	0	40	100			11	77					<40						
97-7754		1997	0	44	230			10	40				<0.5	890						
97-5937	7748	1997	30											<40						
97-5939	7743	1997	20											<40						
97-7743		1997	0	23	100			<10	49					120						
00-23342		2000	0										0.8	1100						
00-23344		2000	0											970						
00-23347		2000	0											<130						
00-23348		2000	0											270						
00-23349		2000	0										<0.1							
00-23126	7750	2000	30	11	38	7	<1.0	<10	23	<20	<1.0		<0.1	620						
97-7753		1997	0											<40						
97-7760/61		1997	0	50	370			25	170		<0.2		<0.5	1600						
01-20650/51		2001	0										<0.5							
01-4903		2001	0										<0.5							
01-4904		2001	0										0.1							
01-4905		2001	0	20	42	10	<1.0	<10	61	29	<1.0									
01-4906		2001	0										<0.1							
01-4907		2001	0	20	42	10	<1.0	<10	61	29	<1.0									
01-4908		2001	0	23	7	5	<1.0	11	39	<20	1.2									
01-20649		2001	0										<0.5							
00-23352		2000	0										<0.1							
00-23353		2000	0										<0.1							
00-23355		2000	0										<0.5	1100						
00-23356		2000	0											<130						
00-23358		2000	0										<0.1							
00-23359		2000	0										<0.1							
01-4909	4909	2001	0	31	160	20	<1.0	22	69	60	<1.0		0.2							
97-7647		1997	0	24	31	7	<1.0	<10	130	62	0.3		0.7	<40						
97-7652		1997	0											99						
97-7649		1997	0											<40						
97-7659		1997	0											<40						
97-7662		1997	0						130					<40						
97-7665		1997	0										<0.5	<40						
97-7653		1997	0										<0.5	<40						
97-7656		1997	0											1100						
97-7657		1997	0										<0.5	<40						
01-4914	4913	2001	50											2200						
01-4916[1]	4916	2001	0											14000						
01-4917[1]	4916	2001	40	23	7	5	<1.0	11	39	<20	1.2		<0.1	3500						
01-4922[1]	4922	2001	0	12	24	7	<1.0	22	77	23	<1.0		<0.1	8800						
97-5869	7659	1997	40											<40						
00-23369		2000	0											770						
00-23368		2000	0											<40						
97-5869	7659	1997	40											<40						
97-5874	7650	1997	30	11	17	5.0	<1.0	<10	37	<20	0.3		<0.5	160						
97-5875	7650	1997	40	8	14	<5.0	<1.0	<10	32	<20	0.2		<0.5							
97-7650/51		1997	0											2100						
01-4918	4918	2001	0	20	23	7.6	<1.0	<10	41	28	<1.0		<0.1							
00-23362		2000	0											<40						
00-23363		2000	0											<40						
00-23367		2000	0											<40						
00-23372		2000	0											590						
97-7672		1997	0						120					<40						
97-7748[1]	usla-2	1997	0											2600						
97-7762[1]	just E of usla-4	1997	0	38	220			14	100				<0.5	4900						
97-7664[1]	W of usla-4	1997	0											3200						
97-7666[1]	usla-3	1997	0	13	25	6	<1.0	17	130	38	<0.2		<0.5	6900						
00-23360/61[1]	usla-3	2000	0											5300						
97-5876	7666	1997	30											<40						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
01-4943	4943	2001	0	24	64	12	<1.0	<10	41	40	<1.0		<0.1							
01-4944	4943	2001	40										<0.2	170						
01-4946	4946	2001	0	24	110	17	<1.0	<10	37	52	<1.0		<0.1							
01-4947	4946	2001	40	58	84	18	<1.0	<10	41	54	<1.0		<0.1							
08-11823	DM-19		0-10	16	27	8.5	<1.0	<10	48	23.0	<1.0	<0.10	<0.0030	18			<10	<4.0	11.0	
08-11825	DM-19		30-40	9.0	13	5.2	<1.0	<10	32	<20	<1.0	<0.10	<0.0030	20			<10	<4.0	13.0	
08-11827	DM-20		0-10	7.9	13	<5.0	<1.0	11	30	<20	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
08-11829	DM-20		30-40	9.8	15	5.3	<1.0	14	34	<20	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
08-11831	DM-21		0-10	13	23	9.3	<1.0	<10	49	<20	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
08-11833	DM-21		30-40	14	17	10	<1.0	<10	80	<20	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
08-11835	DM-22Old		0-10	13	44	9.7	<1.0	<10	42	31	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
08-11837	DM-22Old		30-40	14	42	10	<1.0	<10	36	48	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0	
11-12882	DM-19		0-10	14	20	8.0	<1.0	<10	41	<20	<1.0	<0.10	0.28	12			<10	<4.0	<9.0	
11-12884	DM-19		20-30	14	20	7.4	<1.0	<10	38	20.0	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
11-12886	DM-20		0-10	8.8	20	6.4	<1.0	<10	36	<20	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
11-12888	DM-20		30-40	7.3	12	<5.0	<1.0	<10	30	<20	<1.0	<0.10	<0.050	29			<10	<4.0	22	
11-12890	DM-21		0-10	15	31	11	<1.0	<10	62	<20	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
11-12892	DM-21		30-40	19	26	13	<1.0	11	87	<20	1.3	<0.10	<0.050	12			<10	<4.0	<9.0	
11-12894/95	DM-22Old		0-10	15	49	15	<1.0	<10	66	57	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
11-12896	DM-22Old		20-30	17	39	11	<1.0	<10	47	38	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25152	DM-19		0-10	15	21	<5.0	<1.0	<10	33	<20	0.6	<0.10	<0.050	32			<10	10	17	
13-25154	DM-19		20-30	13	19	<5.0	<1.0	<10	32	<20	0.9	<0.10	<0.050	54			<10	13	36	
13-25156	DM-20		0-10	21	22	5.1	<1.0	11	41	<20	0.9	<0.10	<0.050	46			<10	12	29	
13-25158	DM-20		30-40	15	19	7.3	<1.0	39	69	<20	2.4	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25160/61	DM-21		0-10	19	27	7.0	<1.0	<10	47	<20	1.3	<0.10	<0.050	22			<10	12	<9.0	
13-25162	DM-21		30-40	19	26	8.7	<1.0	<10	58	<20	1.4	<0.10	<0.050	12			<10	<4.0	<9.0	
13-25164	DM-22Old		0-10	16	47	9.2	<1.0	<10	61	57	0.9	<0.10	<0.050	59			<10	24	30	
13-25166	DM-22Old		20-30	18	49	11	<1.0	<10	64	50	1.0	<0.10	<0.050	12			<10	<4.0	<9.0	
	N value			86	86	78	78	86	88	78	79	30	109	87			30	30	30	
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.1	0.10	40			10	4	9	
	Arithmetic Mean			25	55	10	0.51	10	63	36	0.7	0.050	0.09	252			5	7	12	
	Arithmetic Mean Corrected for Detection Limits			25	55	10	1.0	10	63	20	1.0	0.10	0.10	252			10	4	9	
	Standard Deviation			15	70	4.3	0.1	8	30	35	0.57	0.000	0.15	503			0	10	10	
	Minimum			7	7	2.5	0.50	5.0	23	10	0.10	0.050	0.00	12			5	2	5	
	Maximum			81	440	20	1.10	44	170	180	2.9	0.05	0.80	2200			5	37	36	
	95% Confidence Limit			3.2	15	1.0		1.8	6.4	8	0.13	0.000	0.029	105.6				3.5	3.6	
Background Data																				
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004							
90-G315	2 km downstream BF304	1990										<0.5	0.024							
90-G320	100 m E of S end runway	1990										<0.5	<0.0002							
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001							
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002							
90-G325	5 km from crossroads	1990										<0.5	<0.0002							
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0									
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0									
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0									
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0									
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0									
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0									
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0									
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0									
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0									
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0									
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0									
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0									
03-26140	Upper Site - BU 4	2003	0-10	16	53	8.5	<1.0	<10	32	24	<1.0									
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0									
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0									

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0									
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4									
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1									
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1									
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0									
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6									
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0									
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0									
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0									
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8									
03-26172	Upper Site - BU 3	2003	0-10	59	34	7.1	<1.0	<10	89	94	<1.0									
03-26173	Upper Site - BU 3	2003	0-10	21	34	7.2	<1.0	<10	36	46	1.1									
03-26174	Upper Site - BU 3	2003	0-10	71	29	8.0	<1.0	11	106	120	1.4									
03-26175	Upper Site - BU 3	2003	0-10	76	27	8.7	<1.0	<10	117	119	<1.0									
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1									
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0									
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2									
03-26184	Upper Site - BU 4	2003	0-10	18	51	8.0	<1.0	12	39	33	1.4									
03-26185	Upper Site - BU 4	2003	0-10	17	17	5.3	<1.0	<10	44	<20	<1.0									
03-26186	Upper Site - BU 4	2003	0-10	19	43	8.7	<1.0	<10	46	57	<1.0									
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4									
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0									
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0									
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5									
03-26192	Upper Site - BU 3	2003	0-10	66	31	8.6	<1.0	<10	125	142	2.1									
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0									
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0									
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0									
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0									
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1									
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0									
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0									
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0									
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0									
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0									
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6									
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0									
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0									
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0									
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0									
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0									
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0									
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3									
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3									
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0									
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0									
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0									
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9									
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9									
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3									
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2									
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0									
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0									
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0									
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0									
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4									
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1									
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0									
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0									
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0									
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0									
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0									
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0									

DYE-M US NWS Landfill - Summary of Monitoring Soil Analytical Data

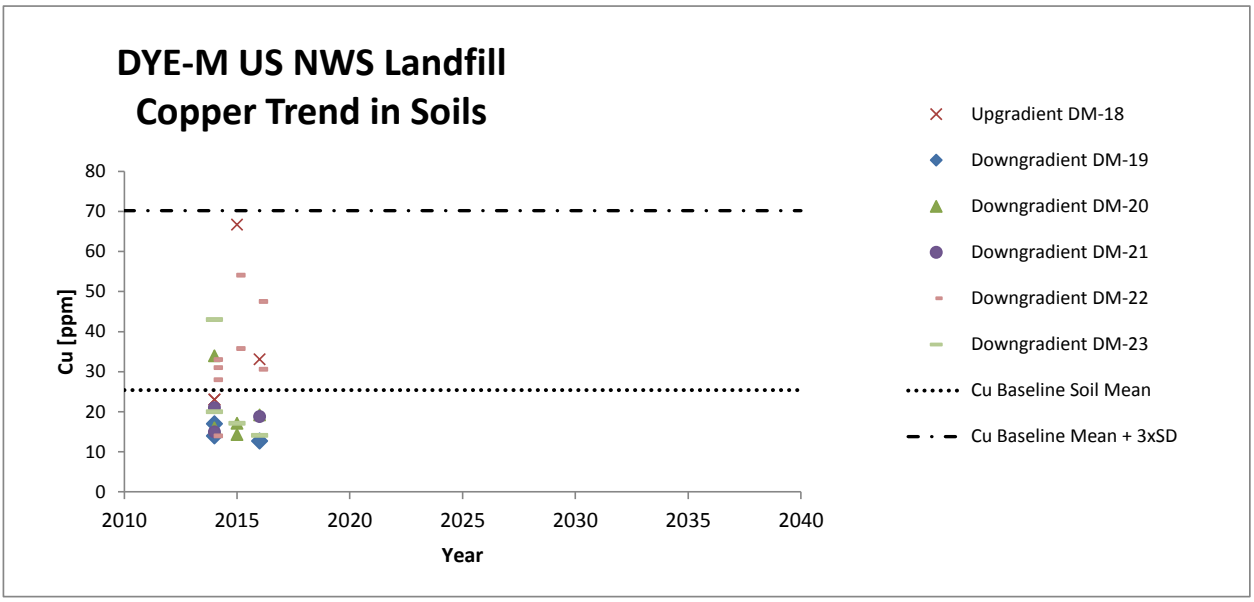
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Total C6-C34 (mg/kg)
															% Fuel Oil	% Lube Oil				
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0									
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0									
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0									
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0									
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0									
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7									
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0									
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0									
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0									
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0									
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0									
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0									
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0									
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0									
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0									
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0									
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1									
03-26262	Upper Site - BU 4	2003	0-10	26	46	9.1	<1.0	11	61	41	1.3									
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0									
03-26264	Upper Site - BU 4	2003	0-10	15	15	5.1	<1.0	<10	44	<20	<1.0									
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0									
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0									
03-26267	Upper Site - BU 4	2003	0-10	22	42	9.0	<1.0	10	63	60	<1.0									
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0									
03-26154	Upper Site - BU 3	2003	0-10	132	168	46	<1.0	21	175	151	<1.0									
03-26155	Upper Site - BU 3	2003	0-10	81	118	21	<1.0	17	100	92	<1.0									
03-26156	Upper Site - BU 3	2003	0-10	86	50	14	<1.0	<10	113	134	<1.0									
03-26157	Upper Site - BU 3	2003	0-10	37	32	8.3	<1.0	<10	74	82	1.1									
03-26158	Upper Site - BU 1	2003	0-10	222	495	60	<1.0	<10	37	134	1.3									
03-26159	Upper Site - BU 1	2003	0-10	53	640	57	<1.0	<10	28	63	1.2									
	N value			108	108	108	108	108	108	108	108	6	6							
	Background Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.5	0.002							
	Arithmetic Mean			60	141	20	0.5	7.7	70	90	0.78	0.250	0.005							
	Arithmetic Mean Corrected for Detection Limits			60	141	20	1.0	10	70	90	1.0	0.5	0.002							
	Standard Deviation			40	230	16	0	4.9	33	76	0.65	0.000	0.010							
	Minimum			9.9	13	2.5	0.5	5.0	23	10	0.5	0.250	0.0001							
	Maximum			222	1140	76	0.5	26	186	580	5.90	0.250	0.024							
	95% Confidence Limit			7.6	43	3.0		0.9	6.3	14.3	0.1	#NUM!	0.0							

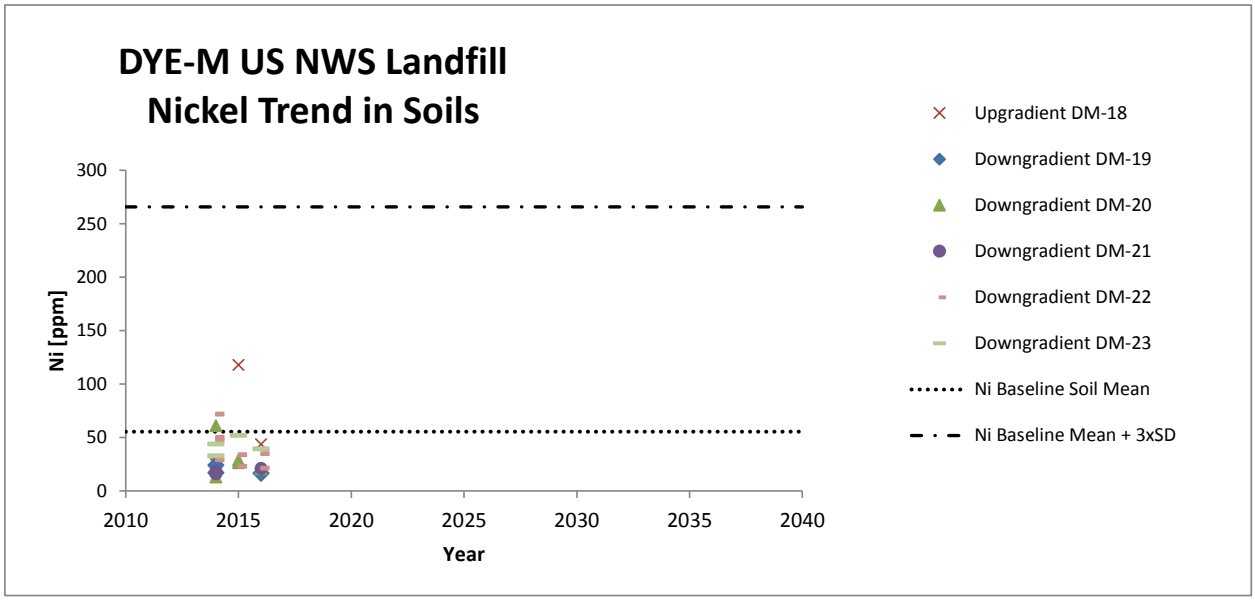
[1]sample results not included in calculation of Baseline Arithmetic Mean.

DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

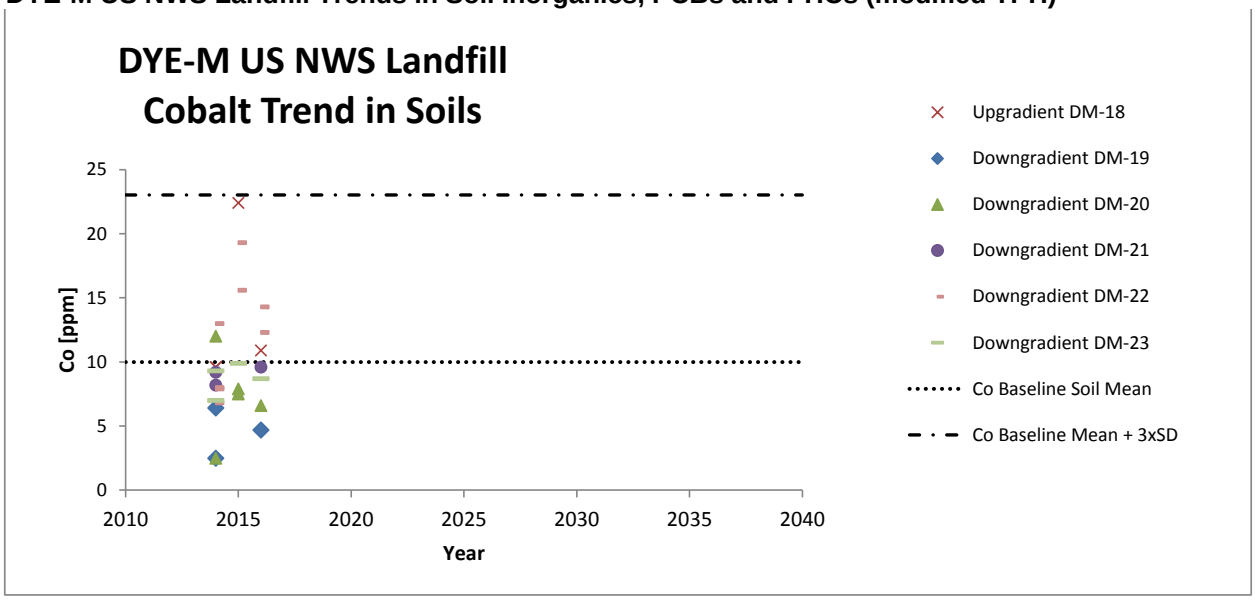
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

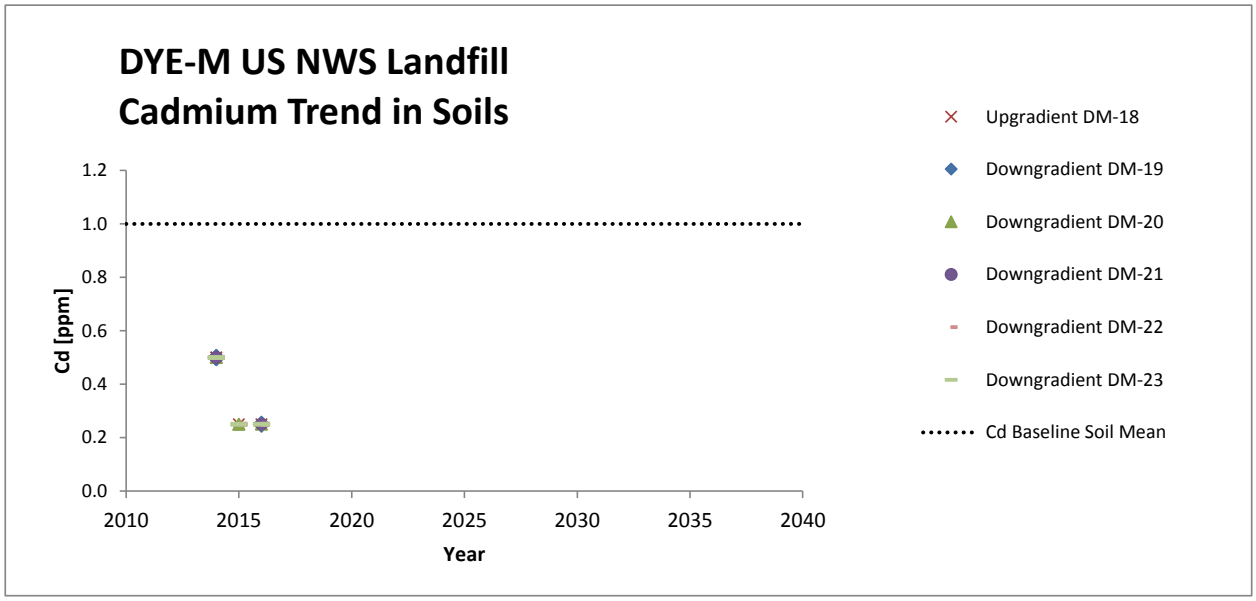
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





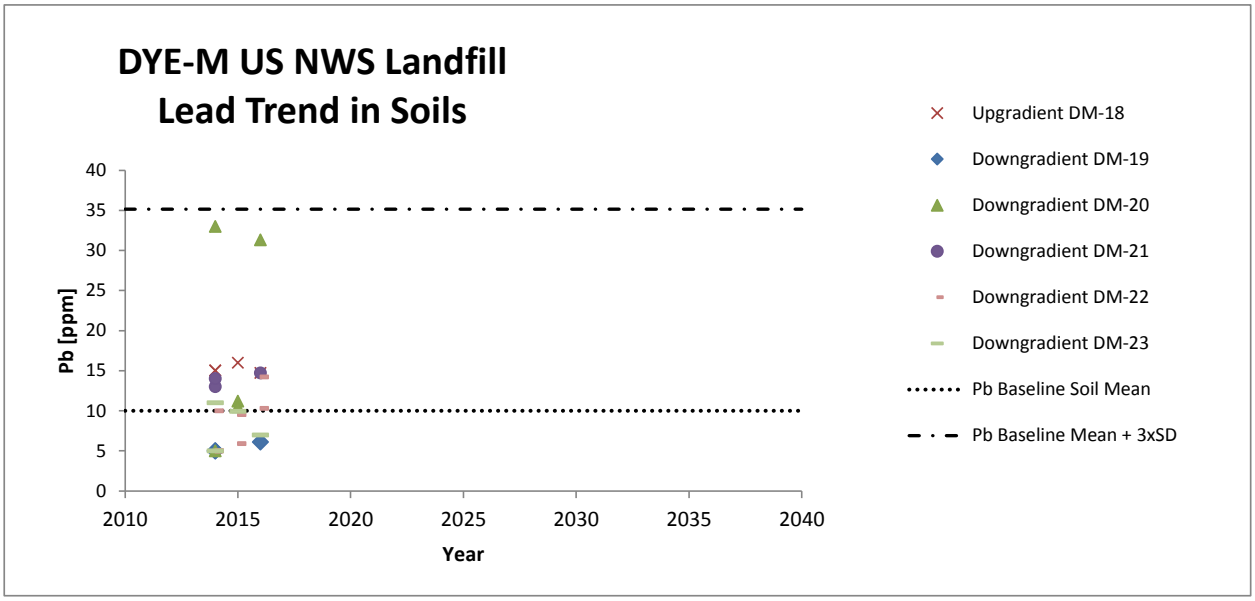
DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



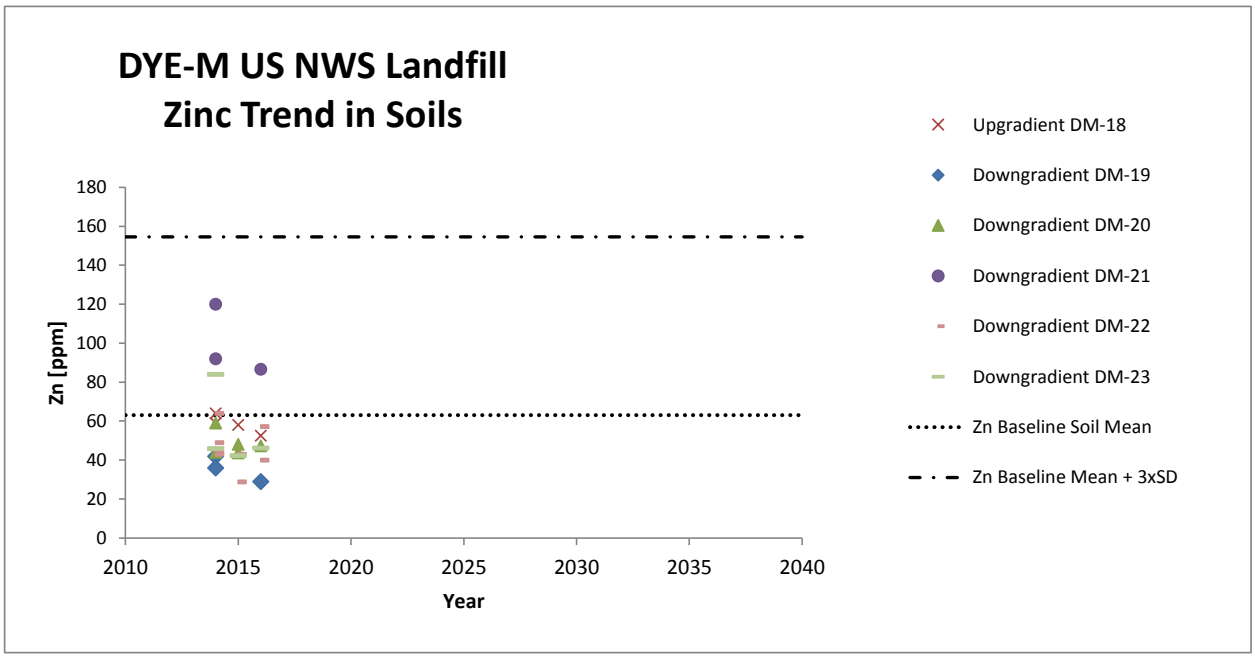


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.

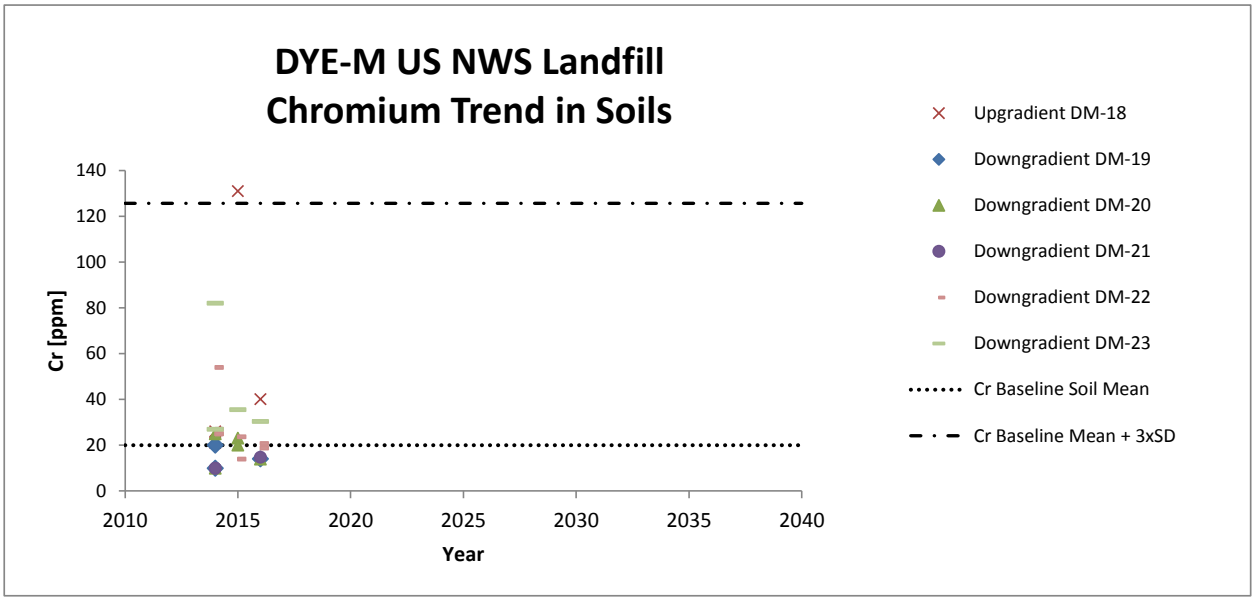
DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



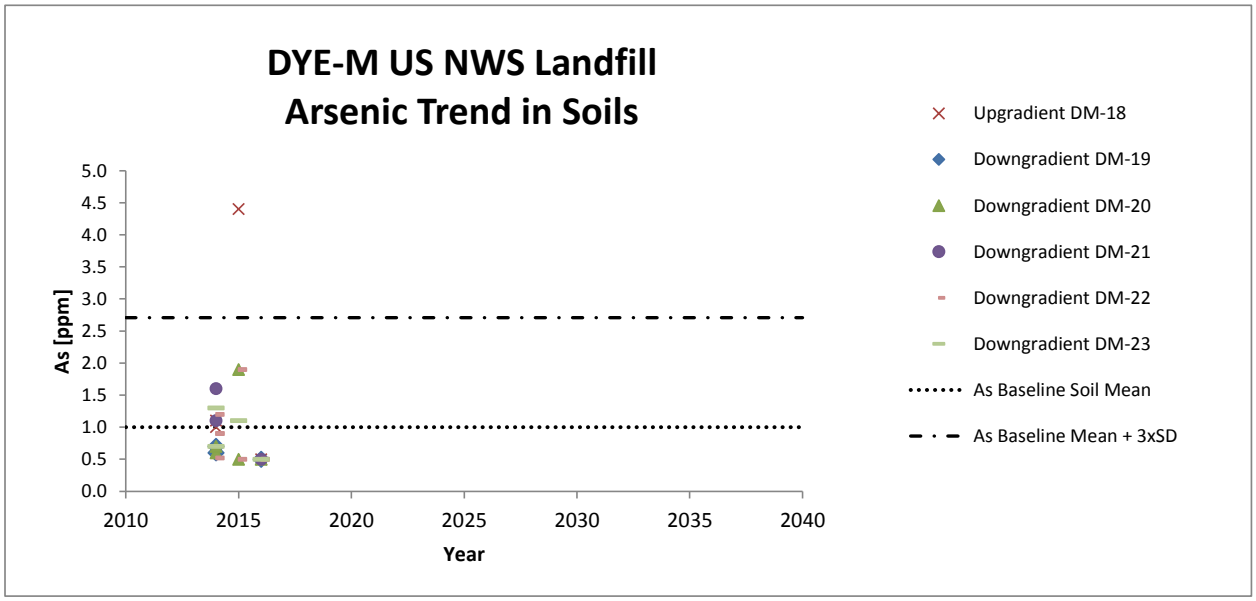
*Pb Baseline Arithmetic Mean is equal to the baseline detection limit.



DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

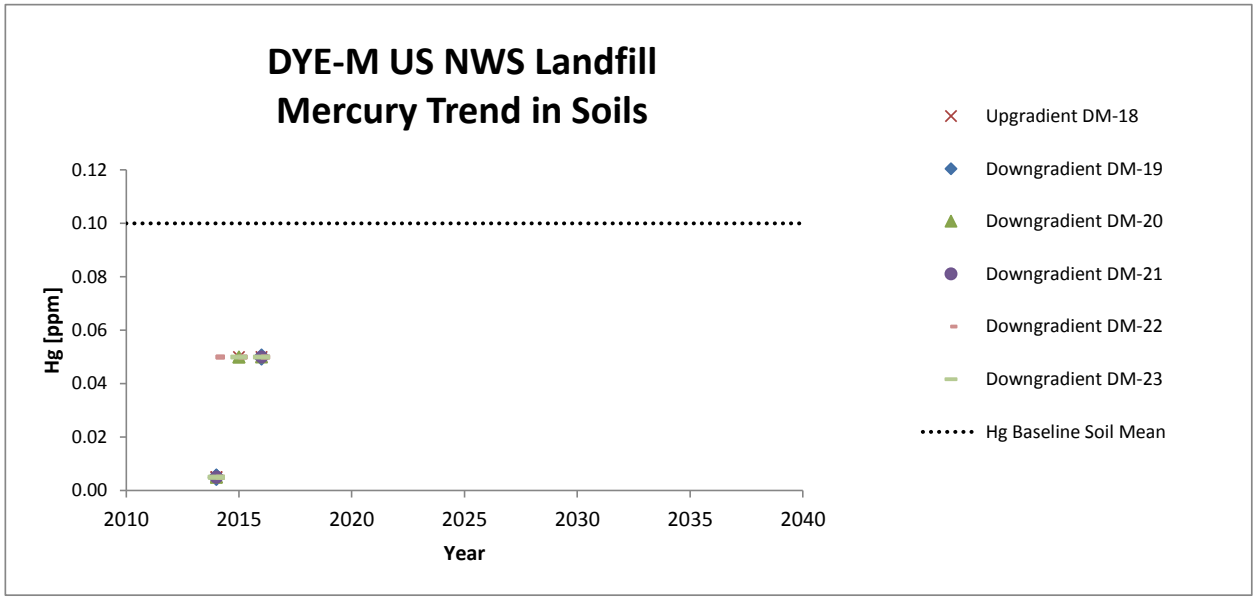


*Cr Baseline Arithmetic Mean is equal to the baseline detection limit.

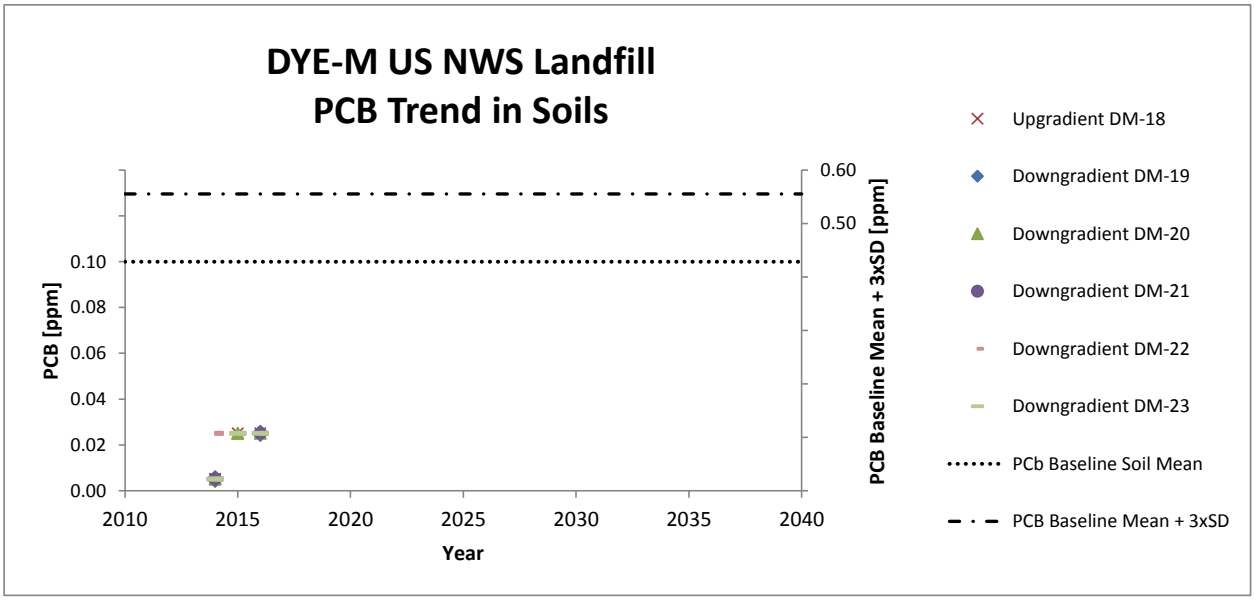


*As Baseline Arithmetic Mean is equal to the baseline detection limit

DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

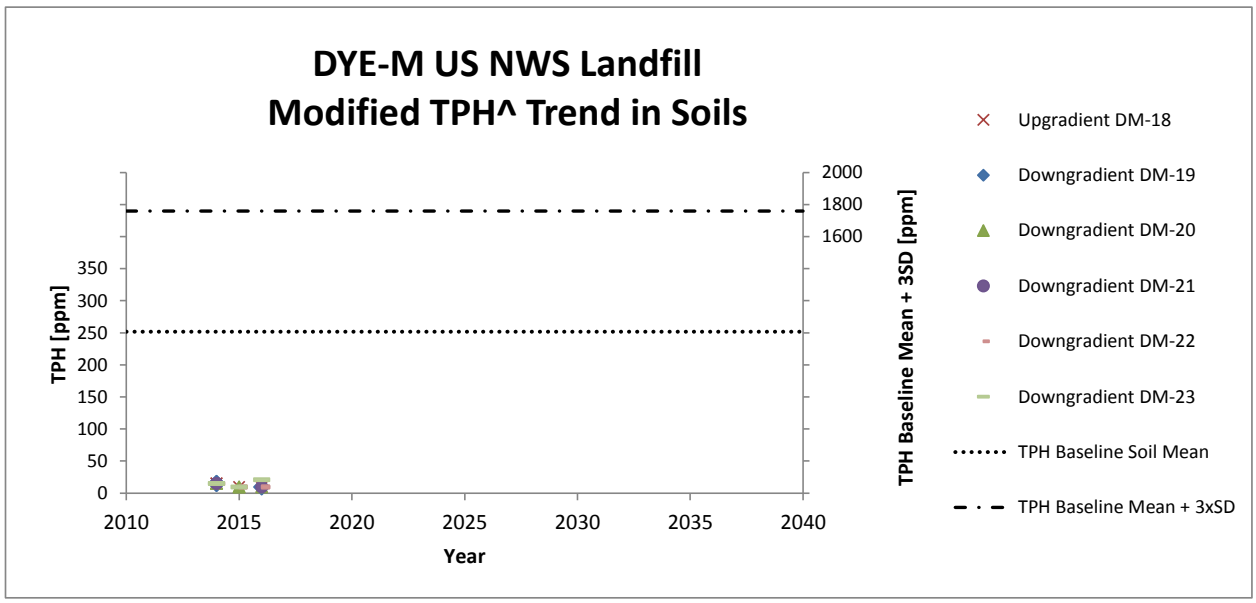


*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



DYE-M US NWS Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

*PCB Baseline Arithmetic Mean is equal to the baseline detection limit



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						60	141	20	1.0	10	70	90	1.0	0.50	0.002				N/A
Baseline Data - Arithmetic Mean						**26**	**42**	**13**	**1.0**	**10**	**84**	**56**	**2.3**	**0.10**	**0.05**	**10**	**4.0**	**9.0**	**175**
Baseline Data - Standard Deviation						21	20	13	6.8	27	48	41	15	0.0	0.17	0	2.3	41	387
Baseline Data Mean + 3xStandard Deviation						88	102	52	21	92	227	179	47	0.10	0.56	10	11	131	1337
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
*DEW Line Cleanup **Site Specific** Tier II Criteria & Hydrocarbon Action Level*						*296*	*2100*	*153*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			
Upgradient																			
	DM-19 surface (also US NWS LF downgradient)																		
14-8277	DM-19	2014	Year 1	Phase I	0-10	17	24	6.4	<1.0	<10	42	20	0.6	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-19	2015	Year 2	Phase I															#N/A
DM-19a	DM-19	2016	Year 3	Phase I	0-15	12.7	16.5	4.7	<0.5	6.1	29	14.1	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-19 depth (also US NWS LF downgradient)																		
14-8278	DM-19	2014	Year 1	Phase I	40-50	14	17	<5.0	<1.0	<10	36	<20	0.7	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-19	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-19	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

TPH Sum will appear when F1, F2 and F3 fractions are entered.

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-23 surface (also US NWS LF downgradient)																		
14-8280/81	DM-23	2014	Year 1	Phase I	0-10	**43**	**44**	9.3	<1.0	**11**	**84**	**82**	1.3	<0.010	<0.010	<10	<10	<10	15
DM-23 (0-20)	DM-23	2015	Year 2	Phase I	0-20	17.1	**52.1**	9.9	<0.5	9.9	42.4	35.5	1.1	<0.1	<0.05	<7	<4	<8	9.5
DM-23a (Dup Avg)	DM-23	2016	Year 3	Phase I	0-15	14	39	9	<0.5	7	46	30	<1	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-23 depth (also US NWS LF downgradient)																		
14-8282	DM-23	2014	Year 1	Phase I	25-35	20	33	7	<1.0	<10	46	27	0.7	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-23	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-23	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
Downgradient																			
	DM-24 surface																		
14-8254	DM-24	2014	Year 1	Phase I	0-10	**33**	**73**	12	<1.0	<10	82	**92**	0.5	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-24	2015	Year 2	Phase I															#N/A
DM-24a	DM-24	2016	Year 3	Phase I	0-15	21.8	**45.5**	**13.5**	<0.5	9.7	64.8	**58.9**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-24 depth																		
14-8255	DM-24	2014	Year 1	Phase I	25-35	**72**	**170**	**20**	<1.0	<10	**110**	**170**	0.9	<0.010	<0.010	<10	**16**	<10	26
Not sampled - frozen	DM-24	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-24	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-25 surface																		
14-8257	DM-25	2014	Year 1	Phase I	0-10	**31**	**82**	**14**	<1.0	<10	81	**89**	1.1	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-25	2015	Year 2	Phase I															#N/A
DM-25a	DM-25	2016	Year 3	Phase I	0-15	**35.3**	**52.2**	**13.3**	<0.5	9.3	66.9	**64.9**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-25 depth																		
14-8258	DM-25	2014	Year 1	Phase I	25-35	16	**130**	**15**	<1.0	<10	**94**	**71**	0.7	<0.010	<0.010	<10	**10**	<10	20
Not sampled - frozen	DM-25	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-25	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-26 surface																		
14-8260/61	DM-26	2014	Year 1	Phase I	0-10	**72**	**50**	11	<1.0	<10	74	**60**	1.2	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-26	2015	Year 2	Phase I															#N/A
DM-26a	DM-26	2016	Year 3	Phase I	0-15	**32.2**	**53**	12.4	<0.5	8.1	53.1	**81.7**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-26 depth																		
14-8262	DM-26	2014	Year 1	Phase I	25-35	**77**	**50**	**13**	<1.0	<10	**94**	**62**	1.5	<0.010	<0.010	<10	**10**	<10	20
Not sampled - frozen	DM-26	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-26	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-27 surface																		
14-8263	DM-27	2014	Year 1	Phase I	0-10	**28**	**58**	**13**	<1.0	<10	78	**58**	0.9	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-27	2015	Year 2	Phase I															#N/A
DM-27a (Dup Avg)	DM-27	2016	Year 3	Phase I	0-15	15	19	9	<0.5	7	60	20	<1	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-27 depth																		
14-8264	DM-27	2014	Year 1	Phase I	25-35	20	38	**14**	<1.0	<10	**96**	**61**	1	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-27	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-27	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-28 surface																		
14-8265	DM-28	2014	Year 1	Phase I	0-10	**27**	**78**	**14**	<1.0	<10	67	51	0.8	<0.010	<0.010	<10	<10	<10	15
DM-28 (0-15)	DM-28	2015	Year 2	Phase I	0-15	**28.8**	**55.5**	**12.9**	<0.5	8.9	77	**80.7**	1.7	<0.1	<0.05	<7	<4	<8	9.5
DM-28a	DM-28	2016	Year 3	Phase I	0-15	15.6	30.6	8.5	<0.5	5.4	40.1	23.4	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-28 depth																		
14-8267	DM-28	2014	Year 1	Phase I	25-35	15	**43**	10	<1.0	<10	74	32	0.5	<0.010	<0.010	<10	<10	<10	15
DM-28 (40-50)	DM-28	2015	Year 2	Phase I	40-50	25.6	30.6	11	<0.5	7.7	70	39.9	1.6	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-28	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-29 surface																		
14-8268	DM-29	2014	Year 1	Phase I	0-10	16	**59**	7.8	<1.0	<10	32	30	0.3	<0.010	<0.010	<10	<10	<10	15
DM-29 (0-20)	DM-29	2015	Year 2	Phase I	0-20	**26.8**	**62.5**	11	<0.5	7.9	42.4	34.1	1.3	<0.1	<0.05	<7	<4	<8	9.5
DM-29a	DM-29	2016	Year 3	Phase I	0-15	16.8	38.4	8.2	<0.5	6.7	31.5	22.7	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-29 depth																		
14-8270/71	DM-29	2014	Year 1	Phase I	25-35	15	**50**	6.8	<1.0	<10	27	23	0.6	<0.010	<0.010	<10	<10	<10	15
DM-29 (20-40)	DM-29	2015	Year 2	Phase I	20-40	22.9	**65.3**	11.1	<0.5	7.5	37.2	29.4	1.4	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-29	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-30 surface																		
14-8272	DM-30	2014	Year 1	Phase I	0-10	20	35	6.8	<1.0	<10	44	28	0.6	<0.010	<0.010	<10	<10	<10	15
DM-30 (0-15)	DM-30	2015	Year 2	Phase I	0-15	23.2	**44.9**	10.5	<0.5	7.7	52	30.6	1.8	<0.1	<0.05	<7	<4	<8	9.5
DM-30b	DM-30	2016	Year 3	Phase I	0-15	20.7	24.3	7.6	<0.5	7.2	40.1	26.7	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US South Landfill West - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-30 depth																		0
14-8273	DM-30	2014	Year 1	Phase I	25-35	**31**	14	6.2	<1.0	<10	32	<20	0.3	<0.010	<0.010	<10	<10	<10	15
DM-30 (20-30)	DM-30	2015	Year 2	Phase I	20-30	20	40.3	10.1	<0.5	7.4	51	32.1	1.5	<0.1	<0.05	<7	<4	<8	9.5
DM-30a	DM-30	2016	Year 3	Phase I	30-40	**28**	29.5	9.3	<0.5	8.3	49.7	32.6	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-5256		2001	0										<0.2						
01-5258		2001	0										0.32						
01-5259		2001	0										0.32						
01-5260/61		2001	0										<0.1						
01-5262		2001	0										<0.1						
01-5263		2001	0										<0.1						
01-5264		2001	0										<0.1						
01-5409	5409	2001	0	12	22	6.1	<1.0	12	43	<20	<1.0		<0.1						
01-5410/11	5409	2001	40																
01-5246	5246	2001	0										0.1						
01-5247	5246	2001	40											1100					
01-5243	5243	2001	0	33	36	12	<1.0	19	93	45	1.3		0.1						
01-5249	5249	2001	0	26	28	11	<1.0	14	89	48	<1.0		<0.7						
01-5250/51	5249	2001	30											375					
01-5252	5249	2001	55	21	16	10	<1.0	<10	77	35	<1.0		<0.1	<40					
97-6899		1997	0	33	40	10	<1.0	44	140	55	0.75		0.66	1000					
97-6900		1997	0	23	30	7.3	<1.0	13	100	42	0.5		<0.5						
01-5406	5406	2001	0	13	25	6.3	<1.0	<10	39	<20	<1.0		<0.1						
01-5295	5295	2001	0										<0.2						
01-5296	5295	2001	50										0.38	220					
01-5292	5292	2001	0	18	29	11	<1.0	12	65	27	<1.0		<0.1						
01-5293	5292	2001	30																
01-5285	5285	2001	0	16	22	7.6	<1.0	<10	57	<20	<1.0		<0.1						
01-5286	5285	2001	40																
01-5287	5285	2001	55	17	30	9.5	<1.0	15	63	25	<1.0		<0.1						
01-5288	5288	2001	0	25	22	9.2	<1.0	<10	68	21	<1.0		<0.1						
01-5289	5288	2001	30																
01-5290/91	5288	2001	50	36	31	12	<1.0	<10	99	31	<1.0		<0.1						
00-23549		2000	0	14	20	7.6	<1.0	<10	53	<20	<1.0		<0.1						
00-23550/51		2000	30	12	20	7.2	<1.0	<10	41	<20	<1.0		<0.1						
00-23547		2000	0	69	26	11	1.1	42	150	39	2.6		0.3						
08-11689*/90	DM-23		0-10	9.6	21	<5.0	<1.0	<10	27	<20	<1.0	<0.10	<0.0030	20			<10	<4.0	13
08-11691*/92	DM-23		30-40	15	38	8.4	<1.0	<10	36	27	<1.0	<0.10	<0.0030	19			<10	4.5	9
11-12898*/99	DM-23		0-10	19	58	11	<1.0	<10	38	33	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12900*/01	DM-23		20-30	14	48	9.7	<1.0	<10	31	28	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
13-25116*/17	DM-23		0-10	17	66	9.3	<1.0	<10	38	35	0.9	<0.10	<0.050	19			<10	<4.0	12
13-25118*/19	DM-23		25-35	11	39	<5.0	<1.0	<10	24	<20	0.7	<0.10	<0.050	12			<10	<4.0	<9.0
Downgradient:																			
01-5366	5367	2001	50.0										<0.1						
01-5372	5372	2001	0.0	21	44	12	<1.0	<10	65	76	<1.0		<0.1	<40					
01-5373	5372	2001	40.0											<40					
01-4029	4029	2001	0.0	26	49	13	<1.0	<10	93	130	<1.0		<0.1						
01-4030/31	4029	2001	20.0	25	55	14	<1.0	<10	68	110	<1.0		<0.1	<40					
01-5375	5375	2001	0.0										<0.1						
97-7772		1997	0.0						240					<40					
97-7773		1997	0.0											<40					
97-7774		1997	0.0											<40					
97-7775		1997	0.0											<40					
97-7776		1997	0.0											63					
97-7780/81		1997	0.0											<40					
97-7770/71		1997	0.0											<40					
97-5956	7776	1997	20.0											340					
97-7808		1997	0.0						140										
97-5946	7779	1997	50.0											890					
97-7782		1997	0.0						130				<0.5	<40					

DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
97-7783		1997	0.0											<40					
97-7784		1997	0.0						180										
97-7786		1997	0.0										<0.5	<40					
97-7787		1997	0.0											51					
97-7788		1997	0.0											<40					
97-7789		1997	0.0											1200					
97-7790/91		1997	0.0											<40					
97-7792		1997	0.0											<40					
97-7793		1997	0.0											1500					
97-7794		1997	0.0											210					
97-5949	7789	1997	20.0											<40					
97-5950/51	7789	1997	30.0											<40					
97-7805		1997	0.0						140					430					
97-7807		1997	0.0						120					<40					
00-23266	23266	2000	0.0	9	53	18	<1.0	<10	100	83	<1.0		<0.1	<40					
00-23267	23266	2000	30.0	4	58	23	<1.0	<10	140	50	<1.0		<0.1						
00-5382	5382	2001	0.0										<0.2						
00-23415		2000	0.0											<130					
97-5952	7793	1997	15.0											<40					
97-7623		1997	0.0										<0.5	<40					
97-5954	7797	1997	20.0											<40					
97-7796		1997	0.0											<40					
97-7797		1997	0.0						200					250					
00-23423		2000	0.0											<130					
00-23427		2000	0.0										<0.1						
97-7630/31		1997	0.0											<40					
97-7628		1997	0.0	42				17.0	140					<40					
97-7629		1997	0.0										<0.5	<40					
97-5970/71	7624	1997	20.0										<0.5	<40					
97-5972	7624	1997	30.0										<0.5						
97-7624		1997	0.0											120					
97-5960/61	7803	1997	20.0											1400					
97-7798		1997	0.0										<0.5						
97-7800/01		1997	0.0											210					
97-7802		1997	0.0											<40					
01-4013	4013	2001	0.0										<0.1						
01-4016	4016	2001	0.0										<0.1						
01-5388	5388	2001	0.0										0.440						
97-6354[1]		1997	0.0										<0.5	2700					
97-6355[1]		1997	0.0	17	30	9	<1.0	<10	69	63	<0.2		<0.5	3100					
97-6356[1]		1997	0.0	20	43	7	<1.0	<10	82	65	<0.2		<0.5	7200					
97-6357[1]		1997	0.0	160				31.0	210				0.5	2800					
97-5945[1]	7779	1997	20.0	18	40	10	<1.0	<10	65	56	0.3		<0.5	2800					
97-7625		1997	0.0						170				<0.5	1300					
97-7632		1997	0.0						200					<40					
97-7620/21		1997	0.0	29				<10	93				<0.5	1200					
97-7622		1997	0.0	13				<10	110					<40					
01-5385	5385	2001	0.0										0.280						
97-7614		1997	0.0						200					700					
97-7615		1997	0.0	68				46.0	160				<0.5	<40					
97-7618		1997	0.0						150				<0.5	1600					
97-7619		1997	0.0	64				22.0	130				<0.5	1500					
97-7626		1997	0.0											<40					
97-5973	7619	1997	20.0										<0.5	890					
97-5974	7619	1997	30.0										<0.5	1600					
		2000	0.0										<0.1						
97-5967	7627	1997	25.0											<40					
97-7636		1997	0.0						120					<40					
97-7635		1997	0.0											<40					
01-5402	5402	2001	0.0										<0.2						

DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-23270/71	23270/71	2000	0.0	24	52	14	<1.0	<10	61	66	<1.0		0.400	<40					
00-23272	23270/71	2000	30.0	25	57	15	<1.0	<10	74	100	<1.0		<0.1	<40					
97-5969	7634	1997	20.0											<40					
97-7634		1997	0.0						110				<0.5	<40					
01-4032	4032	2001	0.0										<0.2						
01-4033	4032	2001	50.0										0.460						
01-5395	5395	2001	0.0	38	79	17	<1.0	<10	73	130	<1.0		<0.1						
00-23428		2000	0.0											<130					
00-23429		2000	0.0											<130					
00-23430/31		2000	0.0										<0.1	<130					
00-23432		2000	0.0										0.800	820					
00-23560/61		2000	0.0										<0.1						
00-23434		2000	0.0										<0.2						
00-23435		2000	0.0										0.780						
00-23436		2000	0.0										<0.5						
00-23437		2000	0.0										<0.1						
00-23443		2000	0.0	65	20	130	65.0	140	130	65	140.0								
00-23557		2000	0.0										0.500						
00-23558		2000	30.0										0.600						
01-5398	5398	2001	0.0										0.720						
00-23555		2000	0.0	13	130	13	<1.0	<10	20	130	<1.0								
00-23438		2000	0.0	29	79	18	<1.0	12.0	100	100	2.1								
01-4023	4023	2001	0.0	26	49	13	<1.0	<10	93	130	<1.0		<0.2						
97-7643		1997	0.0											<40					
97-7637		1997	0.0	24	49	11	<1.0	<10	69	88	<0.2								
97-7639		1997	0.0	25				38.0	67										
97-7640/41		1997	0.0	67	54	14	<1.0	170.0	160	120	0.4		<0.5	95					
01-4026	4026	2001	0.0										<0.2						
97-7644		1997	0.0						220										
97-7645		1997	0.0						170										
97-5978	7642	1997	30.0	16	39	11	<1.0	<10	74	58	<0.2								
97-7642		1997	0.0						150										
00-23440/41		2000	0.0	59	52	14	<1.0	64	130	73	<1.0								
00-23442		2000	0.0	65	60	17	<1.0	140	130	100	<1.0								
00-23444		2000	0.0	41				46	110										
00-23446		2000	0.0					12											
00-23447		2000	0.0					75											
00-24890		2000	0.0	27	70	17	<1.0	12	88	120	<1.0		<0.1	<40					
00-24891		2000	0.0	19	69	23	<1.0	12	92	100	<1.0		<0.1	<40					
00-24892		2000	30.0	8.5	72	16	<1.0	<10	91	170	<1.0		<0.1	<40					
01-20013		2001	0.0					44											
01-20014		2001	0.0					26											
01-5419	5419	2001	0.0	42	37	11	<1.0	14	68	56	<1.0		<0.1						
01-5420/21	5419	2001	30.0	32	26	11	<1.0	<10	51	25	<1.0		<0.1						
01-5416	5416	2001	0.0	81	44	11	<1.0	11	140	130	<1.0		<0.1						
01-5413	5413	2001	0.0	60	55	11	<1.0	39	110	130	<1.0		<0.1						
08-11693/94	DM-24		0-10	33	61	15	<1.0	<10	97	120	<1.0	<0.10	0.008	85			<10	<4.0	78
08-11695	DM-24		30-40	<3.0	95	18	<1.0	<10	82	190	<1.0	<0.10	<0.0030	17			<10	<4.0	10
08-11697	DM-25		0-10	25	58	15	<1.0	<10	67	91	<1.0	<0.10	<0.0030	197			<10	<4.0	190
08-11699	DM-25		30-40	23	48	13	<1.0	<10	68	71	<1.0	<0.10	<0.0030	38			<10	<4.0	31
08-11799	DM-26		0-10	12	24	8	<1.0	<10	50	35	<1.0	<0.10	0.009	18			<10	<4.0	11
08-11801	DM-26		30-40	11	25	8	<1.0	<10	40	33	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11803	DM-27		0-10	20	35	12	<1.0	<10	59	39	<1.0	<0.10	<0.0030	25			<10	<4.0	18
08-11805	DM-27		30-40	19	27	14	<1.0	<10	75	37	<1.0	<0.10	<0.0030	20			<10	<4.0	13
08-11807	DM-28		0-10	23	34	16	<1.0	<10	120	38	<1.0	<0.10	0.0045	37			<10	<4.0	30
08-11809	DM-28		30-40	9.3	16	12	<1.0	<10	77	23	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11811	DM-29		0-10	12	42	7.4	<1.0	<10	27	20	<1.0	<0.10	<0.0030	21			<10	<4.0	14
08-11813	DM-29		30-40	14	39	7.9	<1.0	<10	29	<20	1.2	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11815	DM-30		0-10	12	12	<5.0	<1.0	<10	22	<20	<1.0	<0.10	<0.0030	19			<10	<4.0	12
08-11817	DM-30		30-40	13	9.4	<5.0	<1.0	<10	18	<20	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0

DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
11-12902	DM-24		0-10	25	35	14	<1.0	<10	57	58	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12904	DM-24		20-30	31	53	14	<1.0	<10	55	78	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12906	DM-25		0-10	28	60	18	<1.0	<10	67	88	1.6	<0.10	<0.050	63			<10	<4.0	56
11-12908	DM-25		20-30	25	83	19	<1.0	<10	85	100	1.8	<0.10	<0.050	12			<10	<4.0	<9.0
11-12910	DM-26		0-10	21	53	14	<1.0	<10	73	61	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-1291/13	DM-26		20-30	23	42	14	<1.0	<10	67	55	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
11-12914	DM-27		0-10	21	37	13	<1.0	<10	60	44	1.6	<0.10	<0.050	23			<10	<4.0	16
11-12916	DM-27		20-30	18	33	16	<1.0	<10	78	44	1.1	<0.10	<0.050	12			<10	<4.0	<9.0
11-12918	DM-28		0-10	18	25	15	<1.0	<10	96	34	1.2	<0.10	<0.050	12			<10	<4.0	<9.0
11-12920	DM-28		30-40	19	51	17	<1.0	<10	68	41	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12922	DM-29		0-10	14	23	10	<1.0	<10	33	<20	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12924	DM-29		30-40	20	54	13	<1.0	<10	40	32	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12926/27	DM-30		0-10	18	31	8.7	<1.0	<10	35	23	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12928	DM-30		30-40	17	26	7.5	<1.0	<10	32	22	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
13-25120/21	DM-24		0-10	33	60	11	<1.0	<10	84	99	1.5	<0.10	<0.050	21			<10	<4.0	14
13-25122	DM-24		25-35	8.5	52	8.5	<1.0	<10	57	44	0.7	<0.10	<0.050	12			<10	<4.0	<9.0
13-25124	DM-25		0-10	31	61	12	<1.0	<10	66	88	2.0	<0.10	<0.050	18			<10	<4.0	11
13-25126	DM-25		25-35	24	41	10	<1.0	<10	72	57	2.0	<0.10	<0.050	22			<10	5.6	11
13-25128	DM-26		0-10	28	55	10	<1.0	<10	65	54	2.1	<0.10	0.088	22			<10	5.7	11
13-25130/31	DM-26		25-35	18	37	7.7	<1.0	<10	51	48	1.5	<0.10	<0.050	16			<10	6.8	<9.0
13-25132	DM-27		0-10	19	36	5.8	<1.0	<10	38	33	1.1	<0.10	<0.050	61			<10	13	43
13-25134	DM-27		25-35	21	24	7.5	<1.0	<10	59	22	2.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25136	DM-28		0-10	16	20	8.9	<1.0	<10	79	28	1.1	<0.10	<0.050	32			<10	9.9	17
13-25138	DM-28		25-35	14	22	9	<1.0	<10	70	28	0.69	<0.10	<0.050	12			<10	<4.0	<9.0
13-25140/41	DM-29		0-10	18	38	6.2	<1.0	<10	33	25	0.82	<0.10	<0.050	12			<10	<4.0	<9.0
13-25142	DM-29		25-35	23	61	11	<1.0	<10	45	33	1.2	<0.10	<0.050	23			<10	7.9	9.8
13-25144	DM-30		0-10	23	33	7.7	<1.0	<10	37	27	1.0	<0.10	<0.050	12			<10	<4.0	<9.0
13-25146	DM-30		25-35	19	13	7.2	<1.0	<10	24	<20	<0.20	<0.10	<0.050	12			<10	<4.0	<9.0
	N value			98	90	90	90	102	114	90	90	48	133	127			48	48	48
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1	0	0	40			10	4.0	9.0
	Arithmetic Mean			26	42	13	1.2	15	84	56	2.3	0.050	0.10	175			5	3	23
	Arithmetic Mean Corrected for Detection Limits			26	42	13	1.0	10	84	56	2.3	0.10	0.05	175			10	4	9
	Standard Deviation			20.7	20	13.2	6.8	27	48	41	14.85	0.000	0.17	387			0	2	41
	Minimum			1.5	9.4	2.5	0.50	5.0	18	10	0.10	0.050	0.0015	12			5	2	5
	Maximum			160	130	130	65.00	170	240	190	140.0	0.05	0.80	1600			5	13	190
	95% Confidence Limit			4.1	4.1	2.7		5	8.7	8.4	3.07	0.000	0.029	67				1	11
Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004						
90-G315	2 km downstream BF304	1990										<0.5	0.024						
90-G320	100 m E of S end runway	1990										<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002						
90-G325	5 km from crossroads	1990										<0.5	<0.0002						
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0								
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0								
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0								
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0								
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0								
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0								
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0								
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0								
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0								
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0								
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0								
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0								
03-26140	Upper Site - BU 4	2003	0-10	16	53	8.5	<1.0	<10	32	24	<1.0								
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0								
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0								
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0								

DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4								
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1								
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1								
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0								
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6								
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0								
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0								
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0								
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8								
03-26172	Upper Site - BU 3	2003	0-10	59	34	7.1	<1.0	<10	89	94	<1.0								
03-26173	Upper Site - BU 3	2003	0-10	21	34	7.2	<1.0	<10	36	46	1.1								
03-26174	Upper Site - BU 3	2003	0-10	71	29	8.0	<1.0	11	106	120	1.4								
03-26175	Upper Site - BU 3	2003	0-10	76	27	8.7	<1.0	<10	117	119	<1.0								
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1								
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0								
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2								
03-26184	Upper Site - BU 4	2003	0-10	18	51	8.0	<1.0	12	39	33	1.4								
03-26185	Upper Site - BU 4	2003	0-10	17	17	5.3	<1.0	<10	44	<20	<1.0								
03-26186	Upper Site - BU 4	2003	0-10	19	43	8.7	<1.0	<10	46	57	<1.0								
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4								
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0								
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0								
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5								
03-26192	Upper Site - BU 3	2003	0-10	66	31	8.6	<1.0	<10	125	142	2.1								
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0								
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0								
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0								
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0								
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1								
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0								
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0								
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0								
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0								
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0								
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6								
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0								
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0								
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0								
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0								
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0								
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0								
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3								
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3								
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0								
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0								
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0								
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9								
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9								
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3								
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2								
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0								
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0								
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0								
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0								
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4								
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1								
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0								
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0								
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0								
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0								
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0								

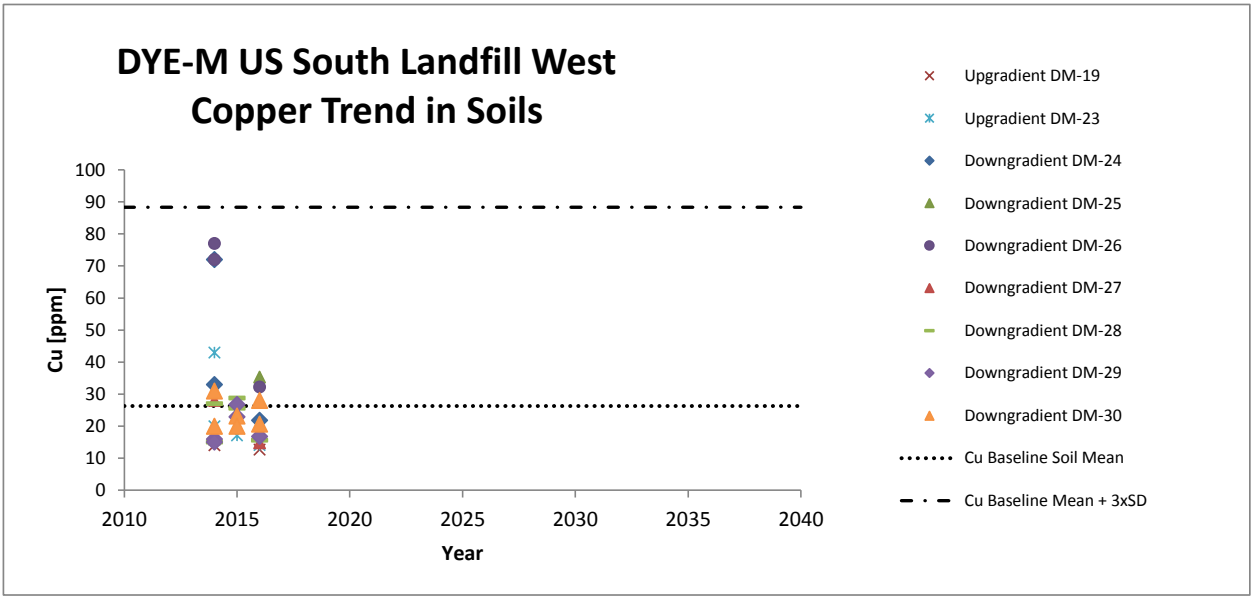
DYE-M US South Landfill West - Summary of Baseline and Background Soil Analytical Data

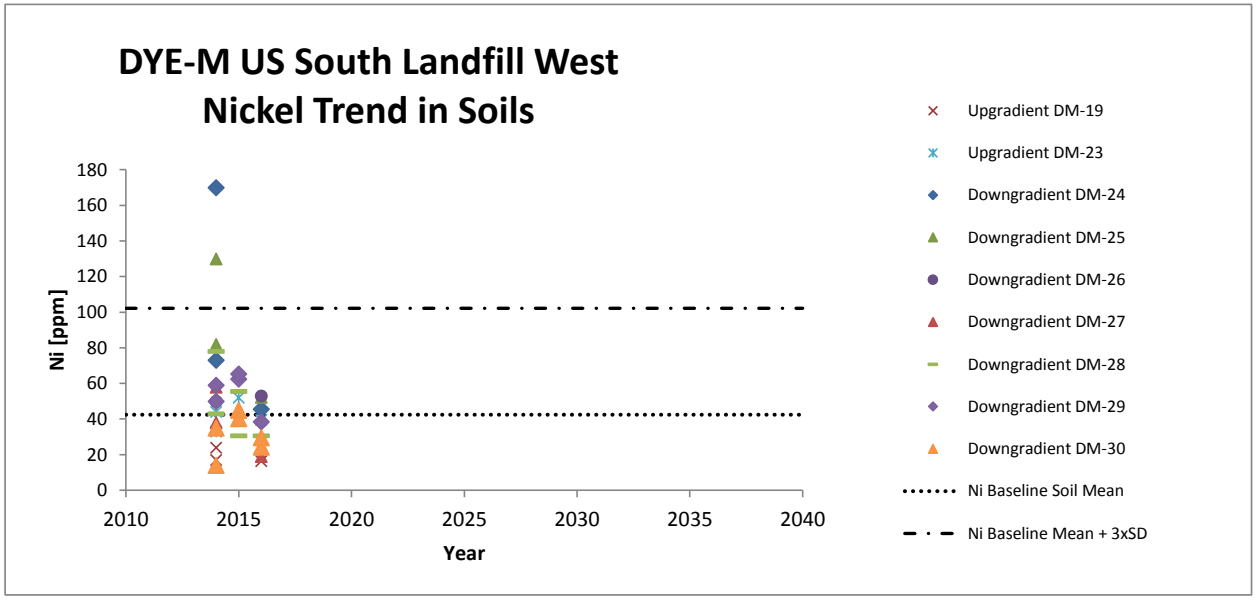
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0								
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0								
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0								
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0								
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0								
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0								
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7								
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0								
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0								
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0								
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0								
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0								
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0								
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0								
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0								
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0								
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0								
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1								
03-26262	Upper Site - BU 4	2003	0-10	26	46	9.1	<1.0	11	61	41	1.3								
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0								
03-26264	Upper Site - BU 4	2003	0-10	15	15	5.1	<1.0	<10	44	<20	<1.0								
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0								
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0								
03-26267	Upper Site - BU 4	2003	0-10	22	42	9.0	<1.0	10	63	60	<1.0								
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0								
03-26154	Upper Site - BU 3	2003	0-10	132	168	46	<1.0	21	175	151	<1.0								
03-26155	Upper Site - BU 3	2003	0-10	81	118	21	<1.0	17	100	92	<1.0								
03-26156	Upper Site - BU 3	2003	0-10	86	50	14	<1.0	<10	113	134	<1.0								
03-26157	Upper Site - BU 3	2003	0-10	37	32	8.3	<1.0	<10	74	82	1.1								
03-26158	Upper Site - BU 1	2003	0-10	222	495	60	<1.0	<10	37	134	1.3								
03-26159	Upper Site - BU 1	2003	0-10	53	640	57	<1.0	<10	28	63	1.2								
	N value			108	108	108	108	108	108	108	108	6	6						
	Background Detection Limits			5.0	5.0	5.0	1.0	10	15	20	1.0	0.5	0.002						
	Arithmetic Mean			60	141	20	0.50	7.7	70	90	0.78	0.25	0.0047						
	Arithmetic Mean Corrected for Detection Limits			60	141	20	1.0	10	70	90	1.0	0.5	0.002						
	Standard Deviation			40	230	16	0.0	4.9	33	76	0.65	0.00	0.01						
	Minimum			9.9	13	2.5	0.50	5.0	23	10	0.50	0.25	0.0001						
	Maximum			222	1140	76	0.50	26	186	580	5.9	0.25	0.024						
	95% Confidence Limit			7.6	43	3.0		0.9	6.3	14	0.12		0.01						

[1]sample results not included in calculation of Baseline Arithmetic Mean.

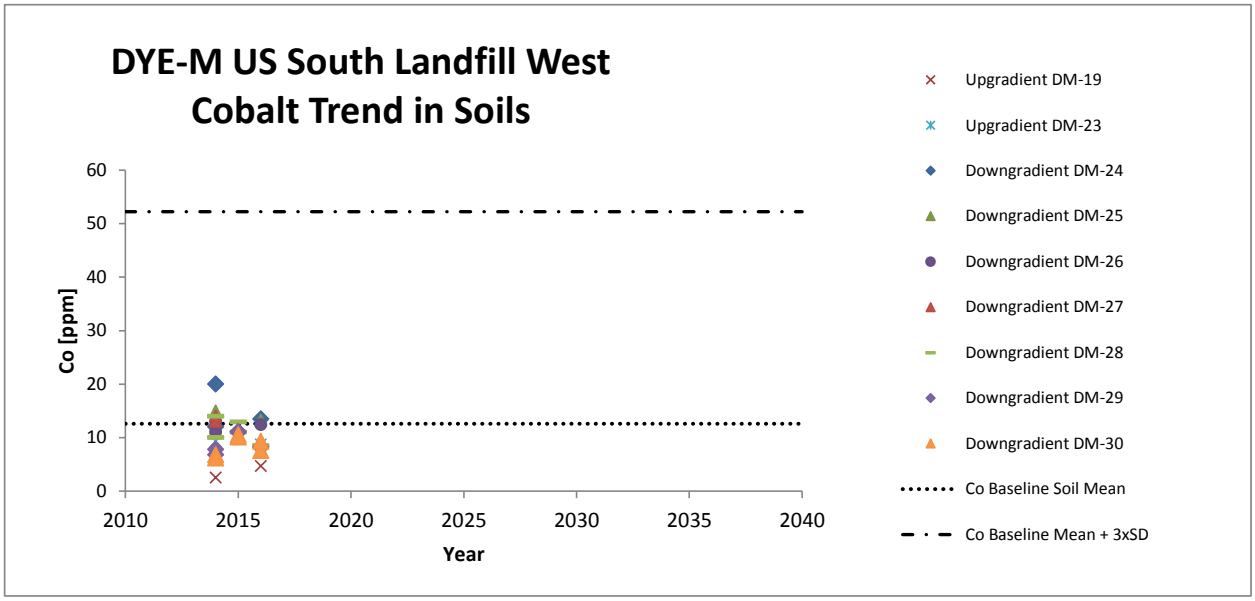
DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

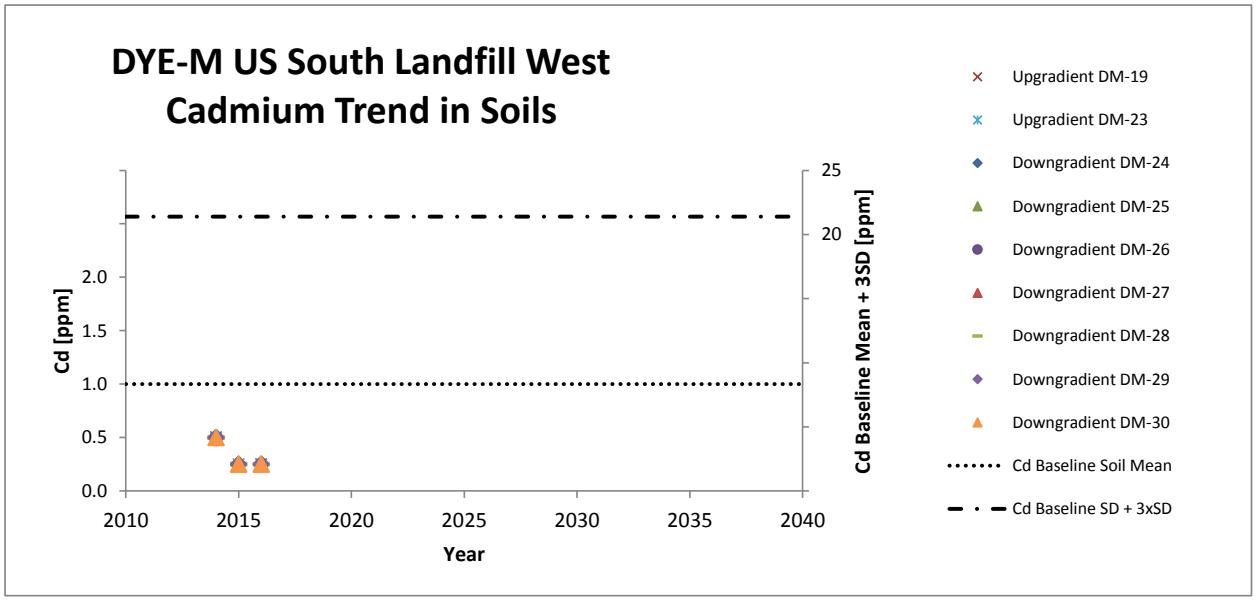
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





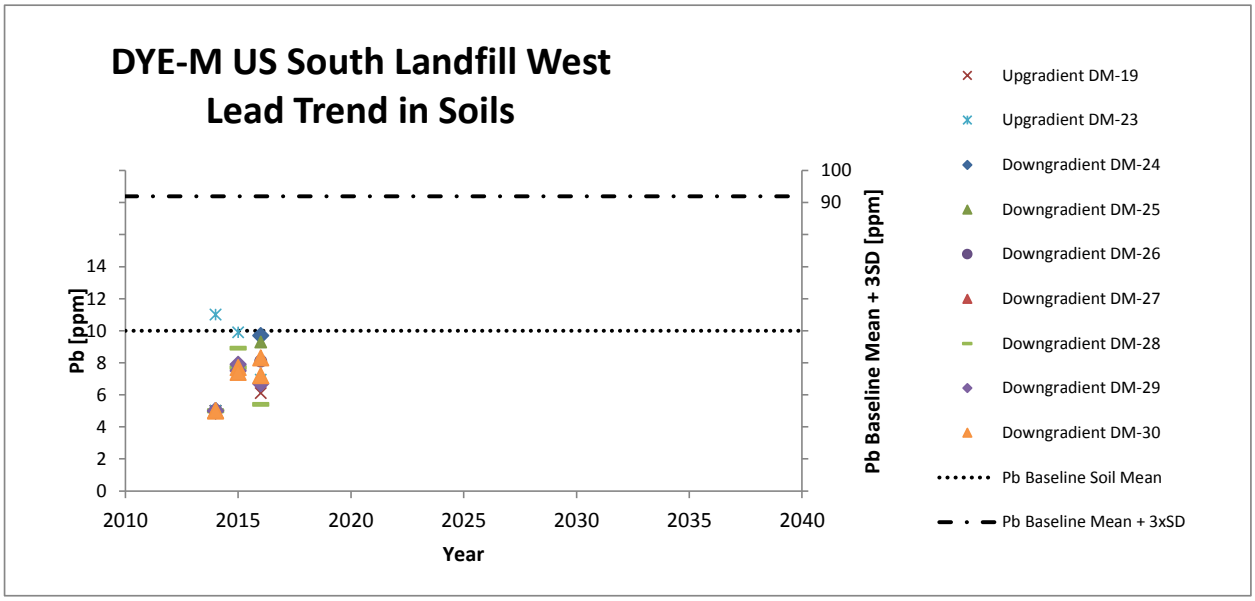
DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



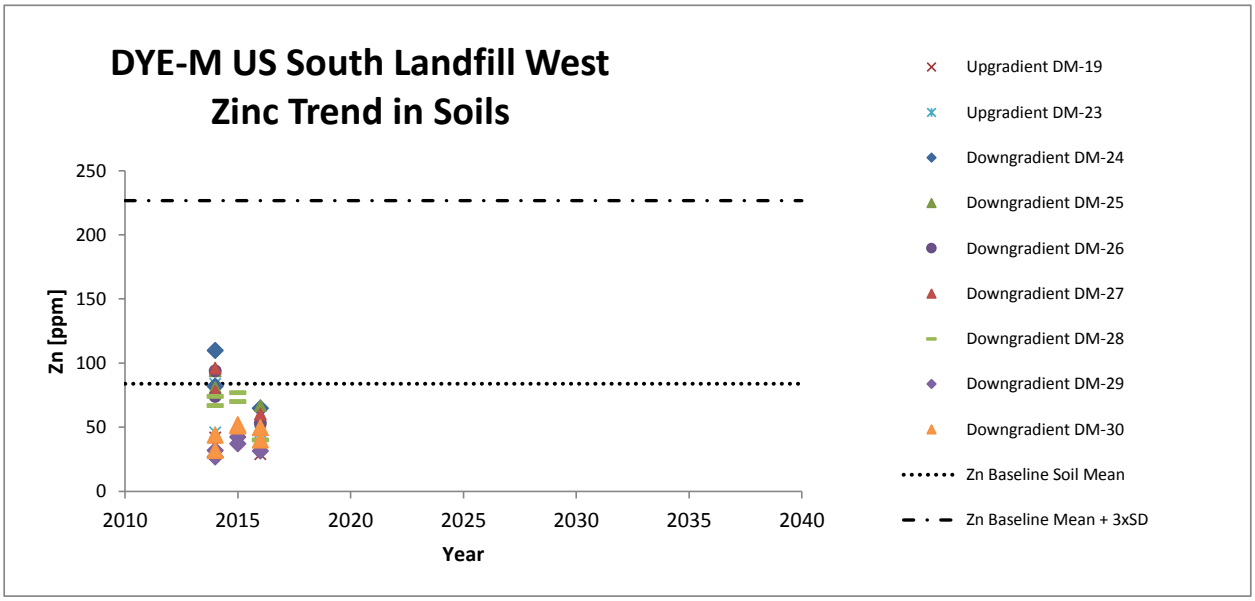


*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.

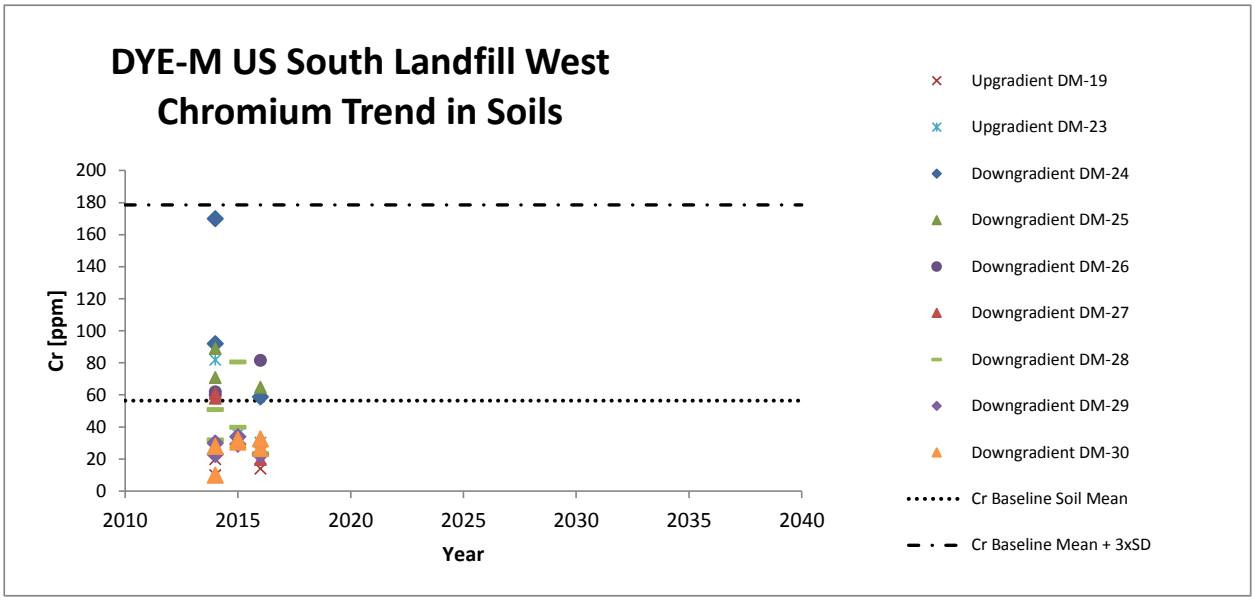
DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

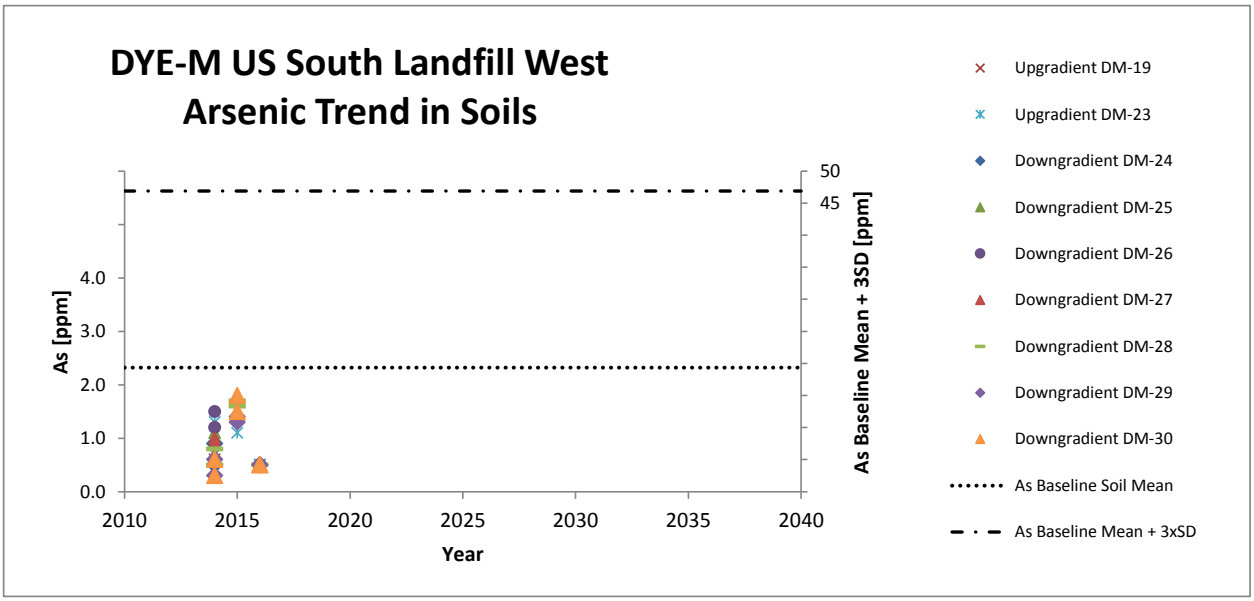


*Pb Baseline Arithmetic Mean is equal to the baseline detection limit

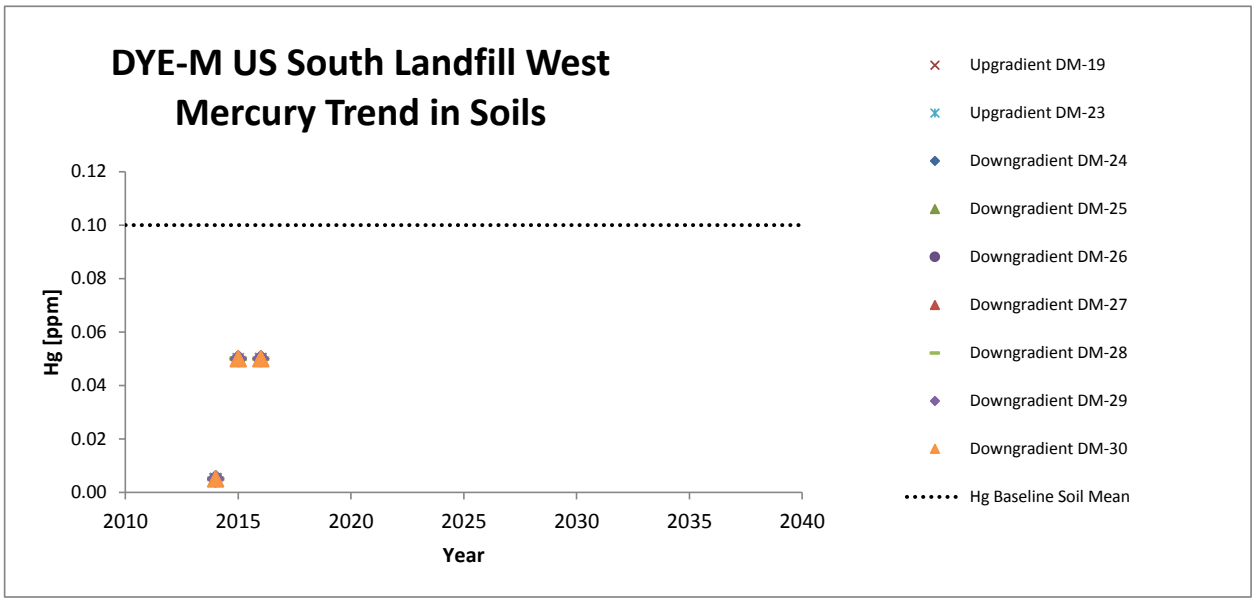


DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

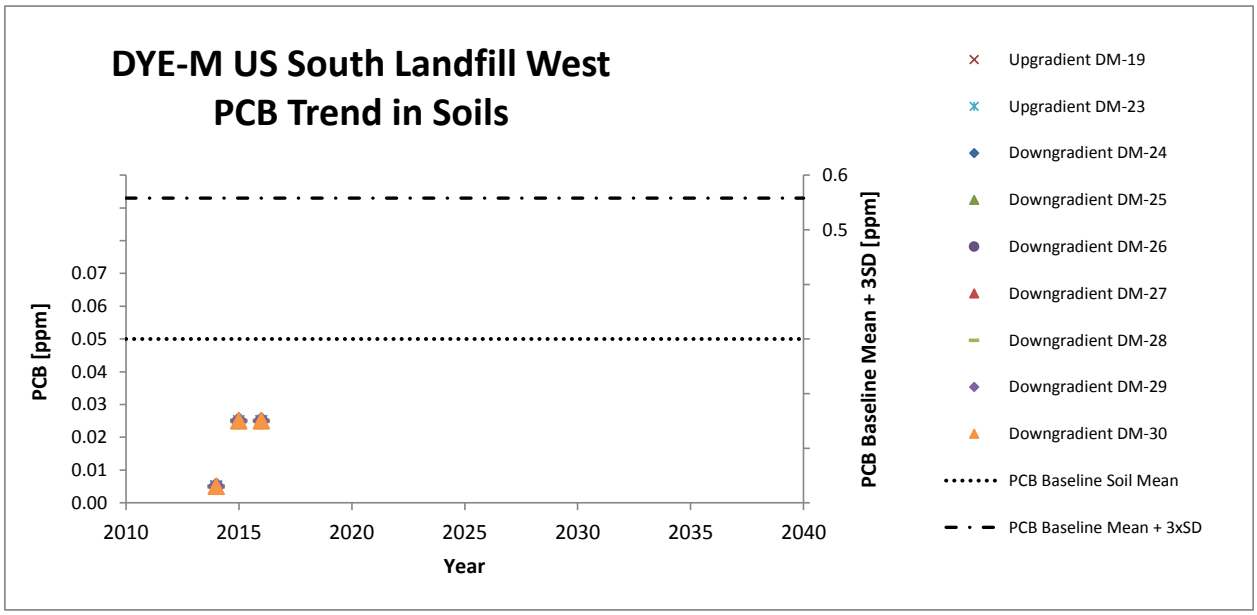




DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

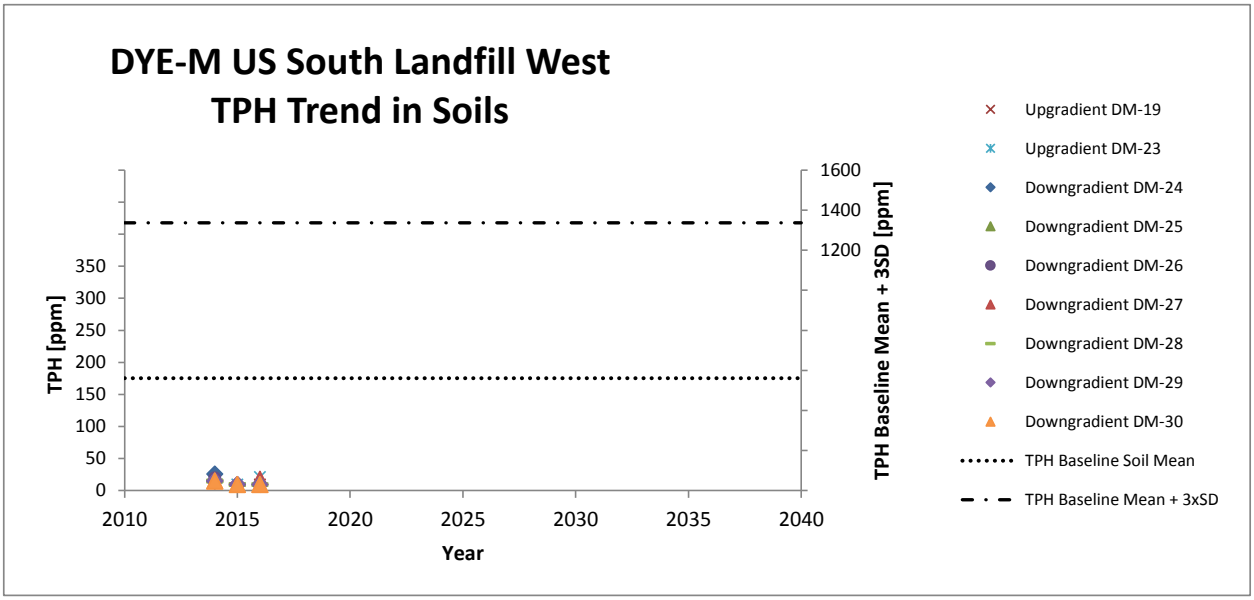


*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



*PCB Baseline Arithmetic Mean is equal to the baseline detection limit.

DYE-M US South Landfill West Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
Background Data - Arithmetic Mean						60	141	20	1.0	10	70	90	1.0	0.50	0.0002				N/A
Baseline Data - Arithmetic Mean						**68**	**61**	**16**	**1.0**	**10**	**115**	**133**	**1.3**	**0.1**	**0.1**	**30**	**10**	**10**	**138**
Baseline Data - Standard Deviation						30	48	6.9	0.40	16	46	59	2.3	0.0071	0.12	5.4	85	69	357
Baseline Data Mean + 3xStandard Deviation						157	203	37	2.2	57	254	310	8.3	0.12	0.46	46	264	217	1208
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
*DEW Line Cleanup **Site Specific** Tier II Criteria & Hydrocarbon Action Level*						*296*	*2100*	*153*	*5*	*500*	*500*	*513*	*30*	*2*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-35 surface																		
14-8438	DM-35	2014	Year 1	Phase I	5-10	50	**150**	**23**	<1.0	<10	44	53	0.6	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-35	2015	Year 2	Phase I															#N/A
DM-35a	DM-35	2016	Year 3	Phase I	0-15	29.4	**75.1**	14.2	<0.5	**14.2**	55.6	48	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-35 depth																		
14-8440/41	DM-35	2014	Year 1	Phase I	45-50	25	**76**	12	<1.0	**11**	45	41	1.0	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-35	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-35	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-39 surface																		
14-8427	DM-39	2014	Year 1	Phase I	5-10	**95**	37	11	<1.0	<10	**147**	**160**	**1.6**	<0.010	<0.010	<10	<10	<10	15
DM-39 (0-15)	DM-39	2015	Year 2	Phase I	0-15	**169**	29.3	11.3	<0.5	**10.7**	**153**	**187**	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
DM-39a	DM-39	2016	Year 3	Phase I	0-15	**73.5**	36.2	11.5	<0.5	**23.3**	**136**	133	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-39 depth																		
14-8428	DM-39	2014	Year 1	Phase I	45-50	**110**	37	11	<1.0	<10	**154**	**170**	**2**	<0.010	<0.010	<10	<10	<10	15
DM-39 (40-50)	DM-39	2015	Year 2	Phase I	40-50	**111**	35	13	<0.5	8.4	**126**	**172**	**1.9**	<0.1	<0.05	<7	**48**	<8	55.5
Not sampled - refusal	DM-39	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-40 surface																		
14-8367	DM-40	2014	Year 1	Phase I	5-10	**96.5**	51	11	<1.0	**11**	**158**	**200**	**2.7**	0.02	<0.010	<10	<10	<10	15
DM-40 (0-15) (Dup Avg)	DM-40	2015	Year 2	Phase I	0-15	**166**	40	10.0	<0.5	**11**	**225**	*602*	**5**	<0.1	<0.05	<6	9	<8	16
DM-40a	DM-40	2016	Year 3	Phase I	0-15	**91.7**	**79.1**	**18.2**	<0.5	**12.3**	113	**153**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-40 depth																		
14-8368	DM-40	2014	Year 1	Phase I	45-50	**100**	48	11	<1.0	<10	**180**	**300**	**2.5**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-40	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-40	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-47 surface																		
14-8342	DM-47	2014	Year 1	Phase I	5-10	**93**	**98**	**22**	<1.0	**11**	**190**	**290**	**3.2**	<0.010	<0.010	15	**2100**	**39**	**2144**
DM-47 (0-15)	DM-47	2015	Year 2	Phase I	0-15	**111**	**80.8**	**17.6**	<0.5	**14.8**	**139**	**193**	**4.1**	<0.1	<0.05	**187**	**3000**	**129**	*3316*
DM-47a	DM-47	2016	Year 3	Phase I	0-15	**87.1**	**71.6**	**16.9**	<0.5	**18.3**	**123**	**173**	<1.0	<0.1	<0.05	<7	**100**	**234**	**337.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-47 depth																		
14-8343	DM-47	2014	Year 1	Phase I	45-50	**83**	**110**	**17**	<1.0	**14**	**140**	**210**	**2.9**	<0.010	0.059	<10	**600**	**12**	**617**
DM-47 (40-50)	DM-47	2015	Year 2	Phase I	40-50	**95.8**	**66.2**	**21**	<0.5	**12.4**	**163**	**255**	**4**	<0.1	<0.05	<7	**79**	<8	86.5
Not sampled - refusal	DM-47	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-50 surface																		
14-8338	DM-50	2014	Year 1	Phase I	5-10	**100**	**79**	14	<1.0	**24**	82	**260**	**3.3**	0.015	<0.010	<10	<10	<10	15
DM-50 (0-15)	DM-50	2015	Year 2	Phase I	0-15	**89.9**	51.5	11.5	<0.5	**12.2**	82.3	**154**	**2.6**	<0.1	<0.05	<7	<4	<8	9.5
DM-50a	DM-50	2016	Year 3	Phase I	0-15	**82.6**	**68**	14.4	<0.5	**16.9**	80.9	**186**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-50 depth																		
14-8340/41	DM-50	2014	Year 1	Phase I	35-40	**120**	**74**	15	<1.0	**10**	99	**260**	**4.3**	<0.010	<0.010	<10	<10	<10	15
DM-50 (30-40)	DM-50	2015	Year 2	Phase I	30-40	**118**	55.6	13.2	<0.5	**13.8**	92.9	**186**	**4.2**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-50	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-51 surface																		
14-8362	DM-51	2014	Year 1	Phase I	5-10	46	**62**	13	<1.0	**13**	86	110	**2**	<0.010	0.018	<10	<10	<10	15
DM-51 (0-15)	DM-51	2015	Year 2	Phase I	0-15	48.3	60.6	11.9	<0.5	**25.6**	107	104	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
DM-51a	DM-51	2016	Year 3	Phase I	0-15	52.2	56	12.3	<0.5	**23.4**	84.8	112	<1.0	<0.1	<0.05	<7	<4	**209**	**214.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-51 depth																		
14-8363	DM-51	2014	Year 1	Phase I	30-35	56	54	11	<1.0	**23**	100	130	**1.7**	<0.010	0.066	19	**1500**	**390**	**1909**
Not sampled - refusal	DM-51	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-51	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
																			#N/A
	DM-52 surface																		
14-8364	DM-52	2014	Year 1	Phase I	5-10	**87**	**290**	**43**	<1.0	<10	61	75	0.6	<0.010	<0.010	<10	<10	<10	15
DM-52 (0-15)	DM-52	2015	Year 2	Phase I	0-15	56.8	**116**	**28.2**	<0.5	5.6	42.9	44.2	<1	<0.1	<0.05	<7	<4	<8	9.5
DM-52a	DM-52	2016	Year 3	Phase I	0-15	**70**	**209**	**34.3**	<0.5	7.9	44.6	43.6	<1.0	<0.1	<0.05	<7	<4	**75**	80.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-52 depth																		
14-8365	DM-52	2014	Year 1	Phase I	40-45	**78**	**220**	**34**	<1.0	<10	55	61	0.7	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-52	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-52	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
Downgradient																			
	DM-31 surface																		
14-8433	DM-31	2014	Year 1	Phase I	5-10	57	30	9.1	<1.0	**27**	**118**	130	1	<0.010	<0.010	<10	<10	<10	15
DM-31 (0-15)	DM-31	2015	Year 2	Phase I	0-15	**76.4**	28.8	11.3	<0.5	8.1	**150**	**170**	1	<0.1	<0.05	<7	<4	<8	9.5
DM-31a	DM-31	2016	Year 3	Phase I	0-15	64.7	35	11.9	<0.5	**11.2**	**124**	**149**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-31 depth																		
14-8434	DM-31	2014	Year 1	Phase I	45-50	49	30	7.3	<1.0	<10	97	100	0.7	<0.010	<0.010	<10	<10	<10	15
DM-31 (30-40)	DM-31	2015	Year 2	Phase I	30-40	61.5	32.9	12.3	<0.5	8.5	**138**	**165**	1.1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-31	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-32 surface																		
14-8430/31	DM-32	2014	Year 1	Phase I	5-10	66	33	9.9	<1.0	<10	115	**150**	**2.8**	<0.010	<0.010	<10	<10	<10	15
DM-32 (0-15)	DM-32	2015	Year 2	Phase I	0-15	**152**	46.9	15	<0.5	**50.8**	**138**	**282**	**3.1**	<0.1	<0.05	<7	<4	<8	9.5
DM-32a	DM-32	2016	Year 3	Phase I	0-15	**85.3**	39.5	11.8	<0.5	**11.1**	105	**172**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-32 depth																		0
14-8432	DM-32	2014	Year 1	Phase I	45-50	**90**	30	8.4	<1.0	<10	108	**150**	**5.3**	<0.010	<0.010	<10	<10	<10	15
DM-32 (20-30)	DM-32	2015	Year 2	Phase I	20-30	**120**	36	11.6	<0.5	**26.2**	**117**	**223**	**2.3**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-32	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-33 surface																		
14-8375	DM-33	2014	Year 1	Phase I	5-10	24	45	11	<1.0	<10	60	56	0.6	<0.010	<0.010	<10	<10	<10	15
DM-33 (0-15)	DM-33	2015	Year 2	Phase I	0-15	35.4	47.8	12.3	<0.5	5.7	57.3	70.9	**1.5**	<0.1	<0.05	<7	<4	<8	9.5
DM-33a (Dup Avg)	DM-33	2016	Year 3	Phase I	0-15	19	**66**	13	<0.5	4	42	51	<1.0	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-33 depth																		
14-8377	DM-33	2014	Year 1	Phase I	45-50	27	**63**	11	<1.0	<10	60	60	0.8	<0.010	<0.010	<10	<10	<10	15
DM-33 (20-30)	DM-33	2015	Year 2	Phase I	20-30	36.1	33	10.2	<0.5	4.7	54.9	67.3	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-33	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-34 surface																		
14-8378	DM-34	2014	Year 1	Phase I	5-10	30	55	16	<1.0	<10	65	42	1.1	<0.010	<0.010	<10	<10	<10	15
DM-34 (0-15) (Dup Avg)	DM-34	2015	Year 2	Phase I	0-15	15	53	9	<0.5	5	36	28	<1	<0.1	<0.1	<6	<4	<8	9
DM-34a	DM-34	2016	Year 3	Phase I	0-15	21.3	**63.8**	12	<0.5	8.5	44.8	46.5	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-34 depth																		
14-8380/81	DM-34	2014	Year 1	Phase I	45-50	25	**65**	16	<1.0	<10	58	37	0.9	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-34	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-34	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-36 surface																		
14-8442	DM-36	2014	Year 1	Phase I	5-10	**98**	48	13	<1.0	**13**	**135**	**180**	1.2	<0.010	<0.010	<10	<10	<10	15
Not sampled - frozen	DM-36	2015	Year 2	Phase I															#N/A
DM-36a	DM-36	2016	Year 3	Phase I	0-15	**76.1**	50.7	13.6	<0.5	**13**	91.4	**139**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-36 depth																		
14-8443	DM-36	2014	Year 1	Phase I	45-50	**93**	38	10	<1.0	**12**	106	**140**	**2.9**	<0.010	<0.010	<10	**19**	<10	29
Not sampled - frozen	DM-36	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-36	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-37 surface																		
14-8435	DM-37	2014	Year 1	Phase I	5-10	53	37	10.1	<1.0	<10	106	130	**1.4**	<0.010	<0.010	<10	<10	<10	15
DM-37 (0-15)	DM-37	2015	Year 2	Phase I	0-15	55	35.3	12.3	<0.5	8.5	103	**137**	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
DM-37a	DM-37	2016	Year 3	Phase I	0-15	63.9	38	12	<0.5	8.4	108	122	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-37 depth																		
14-8437	DM-37	2014	Year 1	Phase I	45-50	37	32	7.6	<1.0	<10	84	100	1.1	<0.010	<0.010	<10	<10	<10	15
DM-37 (30-40)	DM-37	2015	Year 2	Phase I	30-40	31.6	39.8	12.7	<0.5	5.1	93	125	<1	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-37	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-38 surface																		
14-8382	DM-38	2014	Year 1	Phase I	5-10	58	**61**	15	<1.0	**94**	**284**	84	**1.7**	0.02	<0.010	<10	<10	<10	15
DM-38 (0-15)	DM-38	2015	Year 2	Phase I	0-15	**92.3**	47.9	14.6	<0.5	**124**	**308**	91.9	**1.5**	<0.1	<0.05	<7	<4	**83**	88.5
DM-38a	DM-38	2016	Year 3	Phase I	0-15	**89.9**	47.1	13	<0.5	**58.2**	**129**	81.9	<1.0	<0.1	<0.05	<7	<4	**28**	33.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-38 depth																		
14-8383	DM-38	2014	Year 1	Phase I	45-50	64	**63**	13	<1.0	**100**	**265**	76	**1.6**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-38	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-38	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-41 surface																		
14-8370/71	DM-41	2014	Year 1	Phase I	5-10	**69**	44	11	<1.0	**34**	**155**	125	1.3	<0.010	<0.010	<10	<10	<10	15
DM-41 (0-15)	DM-41	2015	Year 2	Phase I	0-15	**171**	51.8	15.1	<0.5	**27.5**	**351**	**178**	**1.4**	<0.1	<0.05	<7	<4	**43**	48.5
DM-41a	DM-41	2016	Year 3	Phase I	0-15	64.9	39.4	10.8	<0.5	**17.1**	111	**135**	<1.0	<0.1	<0.05	<7	**54**	**295**	**352.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-41 depth																		
14-8372	DM-41	2014	Year 1	Phase I	35-40	**76**	**73**	16	<1.0	**15**	**170**	**180**	**1.6**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-41	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-41	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-42 surface																		
14-8373	DM-42	2014	Year 1	Phase I	5-10	**84**	**150**	**41**	<1.0	<10	**180**	120	**3.8**	<0.010	<0.010	<10	<10	<10	15
DM-42 (0-15)	DM-42	2015	Year 2	Phase I	0-15	**95**	**118**	**43.7**	0.6	**10.5**	**173**	**151**	**3.2**	<0.1	<0.05	<7	<4	<8	9.5
DM-42a	DM-42	2016	Year 3	Phase I	0-15	60.1	53.5	**16.9**	<0.5	8.1	110	**150**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-42 depth																		
14-8374	DM-42	2014	Year 1	Phase I	50-55	**69**	42	12	<1.0	<10	**130**	**140**	**1.5**	<0.010	<0.010	<10	<10	<10	15
DM-42 (40-50)	DM-42	2015	Year 2	Phase I	40-50	**98.7**	50.5	**18.5**	<0.5	8.5	**152**	**191**	**1.8**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-42	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-43 surface																		
14-8350/51	DM-43	2014	Year 1	Phase I	5-10	40	45	12	<1.0	<10	73	110	1.1	<0.010	<0.010	<10	<10	<10	15
DM-43 (0-15)	DM-43	2015	Year 2	Phase I	0-15	48.9	44.4	15.4	<0.5	5.9	79.8	127	1	<0.1	<0.05	<7	<4	<8	9.5
DM-43a	DM-43	2016	Year 3	Phase I	0-15	54.7	44.3	14.9	<0.5	7	70.9	122	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-43 depth																		
14-8352	DM-43	2014	Year 1	Phase I	45-50	38	48	12	<1.0	<10	79	110	0.9	<0.010	<0.010	<10	<10	<10	15
DM-43 (20-30) (Dup Avg	DM-43	2015	Year 2	Phase I	20-30	38	36	12	<0.5	4	72	112	1	<0.1	<0.05	<6	<4	<8	9
Not sampled - refusal	DM-43	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-44 surface																		
14-8353	DM-44	2014	Year 1	Phase I	5-10	**110**	41	13	<1.0	<10	**180**	**190**	**3.7**	<0.010	<0.010	<10	<10	<10	15
DM-44 (0-15)	DM-44	2015	Year 2	Phase I	0-15	**244**	26.4	10.1	0.6	**13.3**	**222**	**239**	**7**	<0.1	<0.05	<7	<4	<8	9.5
DM-44a	DM-44	2016	Year 3	Phase I	0-15	**79.8**	52.7	14.7	<0.5	8.5	**125**	**161**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-44 depth																		
14-8354	DM-44	2014	Year 1	Phase I	45-50	**190**	51	11	<1.0	**11**	**170**	**180**	**4.9**	0.023	<0.010	<10	<10	**15**	25
Not sampled - refusal	DM-44	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-44	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-45 surface																		
14-8355	DM-45	2014	Year 1	Phase I	5-10	**110**	**98**	**21**	<1.0	**10**	**160**	**170**	**2.2**	0.03	<0.010	<10	<10	<10	15
DM-45 (0-15)	DM-45	2015	Year 2	Phase I	0-15	**141**	**103**	**26.5**	<0.5	**11.5**	**158**	**178**	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
DM-45a	DM-45	2016	Year 3	Phase I	0-15	**157**	**129**	**37.1**	<0.5	**12.6**	**166**	**187**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-45 depth																		
14-8357	DM-45	2014	Year 1	Phase I	45-50	**100**	**100**	**17**	<1.0	**11**	**160**	**190**	**1.8**	0.024	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-45	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-45	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-46 surface																		
14-8358	DM-46	2014	Year 1	Phase I	5-10	**70**	**81**	14	<1.0	**18**	100	**150**	**3.9**	<0.010	<0.010	<10	<10	**13**	23
DM-46 (0-15) (Dup Avg)	DM-46	2015	Year 2	Phase I	0-15	**122**	54	14	<0.5	**11**	**144**	**161**	**5**	<0.1	<0.05	<6	<4	<8	9
DM-46a	DM-46	2016	Year 3	Phase I	0-15	**112**	49.4	11.6	<0.5	**16.7**	109	**147**	<1.0	<0.1	**0.45**	<7	<4	**91**	96.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-46 depth																		
14-8360/61	DM-46	2014	Year 1	Phase I	45-50	**160**	46	7.9	<1.0	**11**	**160**	**160**	**11**	<0.010	<0.010	<10	<10	<10	15
DM-46 (40-50)	DM-46	2015	Year 2	Phase I	40-50	**139**	44.3	11.5	<0.5	**12.4**	**128**	**158**	**7.5**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-46	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-48 surface																		
14-8347	DM-48	2014	Year 1	Phase I	5-10	**130**	**320**	**36**	<1.0	**16**	**140**	**450**	**15**	<0.010	<0.010	<10	<10	**16**	26
DM-48 (0-15) (Dup Avg)	DM-48	2015	Year 2	Phase I	0-15	**114**	**357**	**51**	<0.5	**28**	**140**	**487**	**20**	<0.1	0.05	<6	**13**	**108**	124
DM-48a	DM-48	2016	Year 3	Phase I	0-15	**96.6**	**223**	**27.1**	<0.5	**11.3**	**131**	**301**	**11.9**	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-48 depth																		
14-8348	DM-48	2014	Year 1	Phase I	45-50	**130**	**190**	**24**	<1.0	**12**	**130**	**280**	**12**	0.017	<0.010	<10	<10	<10	15
DM-48 (40-50)	DM-48	2015	Year 2	Phase I	40-50	**152**	**221**	**39.3**	<0.5	**16.8**	**131**	**311**	**14.8**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-48	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US West Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd* (mg/kg)	Pb* (mg/kg)	Zn (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB* (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34* (mg/kg)
	DM-49 surface																		
14-8344	DM-49	2014	Year 1	Phase I	5-10	**120**	37	9	<1.0	<10	**150**	**220**	1	<0.010	<0.010	14	**230**	<10	**249**
DM-49 (0-15) (Dup Avg)	DM-49	2015	Year 2	Phase I	0-15	**107**	**82**	**18**	<0.5	**14**	**147**	**220**	**3**	<0.05	<0.1	<6	**77**	**63**	**142.5**
DM-49b (Dup Avg)	DM-49	2016	Year 3	Phase I	0-15	**114**	**74**	16	<0.5	**13**	**144**	**208**	**2**	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-49 depth																		
14-8345	DM-49	2014	Year 1	Phase I	45-50	**130**	31	8.3	<1.0	<10	**150**	**200**	0.9	<0.010	<0.010	<10	<10	<10	15
DM-49 (40-50)	DM-49	2015	Year 2	Phase I	40-50	**90.6**	**87.6**	**20.5**	<0.5	**11.9**	114	**174**	**1.4**	<0.1	<0.05	<7	**90**	**37**	130.5
DM-49a	DM-49	2016	Year 3	Phase I	30-40	**100**	**70.7**	16	<0.5	**11.8**	108	**172**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
01-18807	18807	2001	0	85	54	17	<1.0	<10	130	160	<1.0		<0.1						
01-18808	18807	2001	40											<40					
01-18810/11	18810	2001	0	58	52	19	<1.0	<10	150	210	<1.0		<0.1						
01-18834	18834	2001	0	52	40	13	<1.0	12	98	130	<1.0		<0.1						
01-18837	18837	2001	0	61	56	13	<1.0	<10	86	99	<1.0		<0.1						
01-18840/41	18840	2001	0	63	51	16	<1.0	19	110	130	<1.0		<0.1						
01-19039	19039	2001	0	83	18	13	<1.0	<10	120	150	<1.0		<0.1						
01-19128	19128	2001	0	50	43	12	<1.0	15	90	96	1.1		<0.1						
01-19129	19128	2001	50											220					
01-19132	19132	2001	0	56	41	13	<1.0	10	110	120	<1.0		<0.1						
01-19133	19132	2001	50	150	46	17	<1.0	10	170	180	<1.0		<0.1	<40					
01-19043	19043	2001	0	79	36	13	<1.0	12	140	160	<1.0		<0.1						
01-19044	19043	2001	40	110	35	14	<1.0	<10	200	190	<1.0		<0.1	420					
01-19046	19046	2001	0	65	35	13	<1.0	<10	110	150	<1.0		<0.1						
01-4097	4097	2001	0	38	51	12	<1.0	20	93	110	<1.0		0.2						
01-4098	4097	2001	50										<0.1						
97-5679		1997	0	49				27	110				<0.5	150					
97-7914		1997	0	49				46	99				0.62	1900					
97-7915		1997	0	75				13	81				<0.5						
97-7924		1997	0	19				26	65				<0.5						
97-7930/31		1997	0	65				51	145				<0.5						
97-7932		1997	0	44				36	95				<0.5	240					
97-7935		1997	0										<0.5						
97-7936		1997	0	53				<10	72				<0.5	<40					
97-7942		1997	0	21				12	66				<0.5	84					
01-18623	18623	2001	0	88	55	20	<1.0	22	150	190	<1.0		<0.1						
01-18626	18626	2001	0	35	37	12	<1.0	14	76	98	<1.0		<0.1						
01-18633	18633	2001	0	55	47	15	<1.0	31	130	130	<1.0		<0.1						
01-18636	18636	2001	0	42	44	13	<1.0	23	100	110	<1.0		<0.1						
01-18637	18636	2001	40											<40					
01-18646	18649	2001	50	120	110	38	<1.0	30	150	200	<1.0		<0.1						
01-18648	18648	2001	0	43	58	16	<1.0	17	91	110	<1.0		<0.1	<40					
01-18649	18649	2001	0	46	60	18	<1.0	22	93	110	<1.0		<0.1						
01-18650/51[1]	18648	2001	50											6800					
01-18653	18653	2001	0	41	42	14	<1.0	15	78	99	<1.0		<0.1						
01-18654	18653	2001	50											<40					
01-18656	18656	2001	0										0.34						
01-18657	18656	2001	50	44	18	6.6	<1.0	16	66	82	<1.0		<0.1						
01-18659	18659	2001	0										0.52						
01-18778	18778	2001	0	49	53	13	<1.0	27	94	110	<1.0		<0.1						
01-18785	18785	2001	0	80	64	16	<1.0	14	130	160	2		<0.1						
01-18788	18788	2001	0	69	39	13	<1.0	16	110	140	<1.0		<0.1						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
01-18890/91	18889	2001	50	25	49	13	<1.0	14	59	48	<1.0		<0.1						
01-18896	18896	2001	0	97	68	17	<1.0	27	150	190	<1.0		0.5						
01-18897	18896	2001	50										0.1						
00-22453		2000	0	61	54	16	<1.0	<10	110	130	<1.0		<0.1						
00-22458		2000	0	41.5	49.9	13.2	<1.0	14	79	100	<1.0		<0.1						
00-23035		2000	0										0.82						
00-23057		2000	0	61	77	21	<1.0	19	110	130	<1.0		0.2						
00-23058		2000	0	130				120	400				0.66						
00-23062		2000	0						100				<0.2						
00-23063		2000	0										<0.2						
00-23064		2000	0						100				<0.2						
00-23066		2000	0										0.33						
00-23067		2000	0										0.6						
00-23076		2000	0											310					
00-23078		2000	0					140	140										
00-23080/81		2000	0											56					
00-23082		2000	0											140					
00-23497		2000	0	32	35	11	<1.0	15	65	81	<1.0		<0.1						
00-23524		2000	0	37	50	13	<1.0	28	75	93	<1.0		<0.1						
00-23525		2000	0	41	39	14	<1.0	110	94	110	<1.0		<0.1						
00-23526		2000	0	34	39	13	<1.0	11	70	94	<1.0		<0.1						
00-22394		2000	0	62	24	14	<1.0	<10	92	120	<1.0		<0.1						
00-22400/01		2000	0	59	30	12	<1.0	<10	110	110	<1.0		<0.1						
00-22399		2000	0	55	45	18	<1.0	<10	110	130	<1.0		<0.1						
00-22398		2000	0	98	47	19	<1.0	<10	140	160	<1.0		<0.1						
00-22397		2000	0	57	53	19	<1.0	<10	88	120	<1.0		<0.1						
97-5677		1997	0	47	44	14	<1.0	<10	100	120	0.3		<0.5						
97-5678		1997	35	81	47	14	<1.0	<10	140	160	0.24		<0.5						
08-29283	DM-39	2008	0-10	64	37	15	<1.0	<10	140	130	<1.0	<0.10	<0.0030	16			<10	<4.0	9.3
08-29285/86	DM-39	2008	30-40	71	26	16	<1.0	<10	120	120	<1.0	<0.10	<0.0030	30			<10	8.2	17
08-11633	DM-40	2008	0-10	43	46	13	<1.0	25	100	110	<1.0	<0.10	<0.0030	41			<10	<4.0	34
08-11635	DM-40	2008	30-40	58	41	13	<1.0	12	140	150	<1.0	<0.10	<0.0030	55			<10	<4.0	48
08-11641	DM-47	2008	0-10	59	70	20	<1.0	<10	130	180	<1.0	<0.10	0.019	821			21	680	120
08-11643/44	DM-47	2008	30-40	75	62	22	<1.0	<10	160	210	<1.0	<0.10	<0.0030	86			<10	67	14
08-11621/22	DM-50	2008	0-10	35	48	12	<1.0	20	76	91	<1.0	<0.10	0.003	81			<10	6.6	69
08-11623	DM-50	2008	30-40	76	96	18	<1.0	15	78	150	<1.0	<0.10	0.0047	99			<10	5.1	89
08-11625	DM-51	2008	0-10	41	70	16	<1.0	18	87	120	<1.0	<0.10	0.029	94			<10	4.8	84
08-11627	DM-51	2008	30-40	53	50	16	<1.0	21	110	140	<1.0	<0.10	0.03	1150			50	530	570
08-11629	DM-52	2008	0-10	76	260	42	<1.0	<10	56	73	<1.0	<0.10	0.0062	33			<10	<4.0	26
08-11631	DM-52	2008	30-40	82	160	33	<1.0	<10	72	84	<1.0	<0.10	0.023	44			<10	<4.0	37
09-21617	DM-35	2009	0-10	85	99	23	<1.0	<10	120	140	2.1	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21619/20	DM-35	2009	30-40	120	43	14	<1.0	<10	130	160	2.2	<0.10	<0.0030	46			<10	14	27
09-21613	DM-39	2009	0-10	48	76	20	<1.0	11	56	61	<1.0	<0.10	<0.0030	14			<10	4.2	<9.0
09-21615	DM-39	2009	30-40	46	93	20	<1.0	13	59	61	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21573	DM-40	2009	0-10	76	73	23	<1.0	<10	130	130	1.2	<0.10	<0.0030	30			<10	13	12
09-21575	DM-40	2009	30-40	120	37	9.6	<1.0	17	140	150	2.8	<0.10	<0.0030	37			<10	18	14
11-12942	DM-47	2011	0-10	55	52	16	<1.0	13	100	120	1.1	<0.10	0.05	53			<10	33	15

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
11-12944	DM-47	2011	30-40	88	84	28	<1.0	27	190	230	<1.0	<0.10	0.06	407			<10	370	32
11-12930	DM-50	2011	0-10	29	42	13	<1.0	11	56	68	<1.0	<0.10	0.05	36			<10	<4.0	29
11-12932	DM-50	2011	30-40	58	78	17	<1.0	20	95	140	<1.0	<0.10	0.19	64			<10	4.6	54
11-12934	DM-51	2011	0-10	41	74	18	<1.0	24	83	99	2.0	<0.10	<0.050	33			<10	5.5	22
11-12936	DM-51	2011	30-40	42	65	16	<1.0	19	85	98	<1.0	<0.10	0.05	251			<10	220	26
11-12938	DM-52	2011	0-10	80	350	50	<1.0	<10	66	92	<1.0	<0.10	<0.050	17			<10	<4.0	10
11-12940	DM-52	2011	30-40	91	190	37	<1.0	<10	70	86	<1.0	<0.10	<0.050	35			<10	<4.0	28
12-44798	DM-35	2012	0-10	80	100	22	<1.0	<10	140	150	3.3	<0.10	<0.050	12			<10	<4.0	<9.0
12-44800	DM-35	2012	20-30	88	53	12	<1.0	<10	170	190	2.2	<0.10	<0.050	238			<10	160	73
12-44810/11	DM-39	2012	0-10	74	51	13	<1.0	<10	180	170	1.1	<0.10	<0.050	30			<10	4.5	20.5
12-44812	DM-39	2012	20-30	85	37	12	<1.0	<10	140	170	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
12-44750/51	DM-40	2012	0-10	71	79	28	<1.0	<10	140	120	2.95	<0.10	<0.050	25			<30	<10	<10
12-44752	DM-40	2012	20-30	150	45	12	<1.0	18	190	230	2.1	0.0061	<0.050	25			<30	<10	<10
13-25320/21	DM-35	2013	0-10	110	38	7.3	<1.0	18	160	180	3.8	<0.10	<0.050	93			<10	38	50
13-25322	DM-35	2013	30-40	110	42	8.3	<1.0	15	150	180	2.5	<0.10	<0.050	171			<10	56	110
13-25336	DM-39	2013	0-10	78	47	11	<1.0	<10	160	170	2.0	<0.10	<0.050	43			<10	17	21
13-25338	DM-39	2013	30-40	95	38	11	<1.0	<10	150	170	2.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25292	DM-40	2013	0-10	85	77	19	<1.0	<10	130	120	3.0	<0.10	<0.050	29			<10	9.6	14
13-25294	DM-40	2013	30-40	85	77	19	<1.0	<10	130	120	2.7	<0.10	<0.050	64			<10	41	18
13-25052	DM-47	2013	0-10	64	53	11	<1.0	14	100	130	2.5	<0.10	0.15	178			<10	74	99
13-25054	DM-47	2013	30-40	67	59	16	<1.0	10	140	190	2.0	<0.10	<0.050	27			<10	17	<9.0
13-25064	DM-50	2013	0-10	68	52	10	<1.0	<10	78	140	2.6	<0.10	<0.050	12			<10	<4.0	<9.0
13-25066	DM-50	2013	30-40	80	43	10	<1.0	12	94	150	2.9	<0.10	<0.050	15			<10	5.8	<9.0
13-25068	DM-51	2013	0-10	32	47	8.7	<1.0	14	60	74	2.0	<0.10	<0.050	57			<10	7.9	44
13-25070/71	DM-51	2013	30-40	46	60	11	<1.0	22	80	110	2.4	<0.10	<0.050	418			28	240	150
13-25072	DM-52	2013	0-10	77	260	40	<1.0	<10	68	79	1.2	<0.10	<0.050	21			<10	<4.0	14
13-25074	DM-52	2013	30-40	76	200	34	<1.0	<10	48	57	0.4	<0.10	<0.050	21			<10	<4.0	14
Downgradient:																			
01-19152	19152	2001	0	58	31	13	<1.0	<10	100	120	<1.0		<0.1						
01-19209	19209	2001	0	110	30	12	<1.0	10	100	120	2.6		<0.1						
01-19210/11	19209	2001	50											<40					
01-19049	19049	2001	0	76	35	14	<1.0	<10	150	160	<1.0		<0.1						
01-19052	19049	2001	50	84	66	16	<1.0	<10	97	120	<1.0		<0.1						
01-19036	19036	2001	0	66	22	10	<1.0	<10	130	140	1.4		<0.1						
01-19158	19158	2001	0	59	37	14	<1.0	<10	120	130	<1.0		0.2						
01-19148	19148	2001	0	130	43	21	<1.0	56	440	220	<1.0		<0.1						
01-19149	19148	2001	40											160					
01-19155	19155	2001	0	58	41	16	<1.0	<10	110	140	<1.0		<0.1						
01-19109	19109	2001	0	45	45	16	<1.0	12	89	110	<1.0		<0.1						
01-19112	19112	2001	0	57	34	12	<1.0	<10	94	110	<1.0		<0.1						
01-19237	19237	2001	0	80	75	21	2.1	<10	110	120	<1.0		<0.1						
01-19238	19237	2001	30	54	51	15	1.8	<10	98	110	<1.0		<0.1						
00-22388		2000	0	72	33	11	<1.0	<10	110	130	<1.0		<0.1	<40					
00-22389		2000	0	83	44	18	<1.0	12	140	180	<1.0		<0.1	<40					
00-22390/91		2000	0	77	37	18	<1.0	21	150	140	<1.0		<0.1						
00-22392		2000	0	69	31	19	<1.0	<10	110	140	<1.0		<0.1						
00-24760		2000	0											<40					

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-24761		2000	0											<40					
00-24762		2000	0											<40					
00-24763		2000	0											<40					
00-24764		2000	0											42					
00-24765		2000	0											82					
00-24766		2000	0											400					
00-24770		2000	0											1100					
00-24771		2000	0											1300					
01-18929		2001	0	110	270	30	<1.0	<10	110	540	7.7		<0.1						
01-18914		2001	50	94	370	48	<1.0	<10	130	1200	<1.0		<0.1						
01-18909		2001	0	180	210	32	<1.0	<10	140	610	<1.0		<0.1						
97-5671		1997	0	57	45	14	<1.0	<10	100	130	0.25		<0.5						
97-5672		1997	40	91	68	14	<1.0	<10	120	160	0.72		<0.5						
97-5673		1997	0	87	11	9.1	<1.0	<10	130	180	0.24		<0.5						
97-5674		1997	35	120	18	7.6	<1.0	<10	120	170	0.23		<0.5						
97-5675		1997	0	56	60	21	<1.0	11	91	120	0.25		<0.5						
97-5676		1997	30	68	90	26	<1.0	<10	82	180	<0.2		0.51						
00-22315		2000	0	43	34	15	<1.0	<10	76	95	<1.0		<0.1						
00-22316		2000	30	37	31	15	<1.0	<10	76	92	<1.0		<0.1						
01-19054	19054	2001	0	78	22	9.7	<1.0	12	120	100	<1.0		<0.1						
01-19057	19057	2001	0	73	36	13	<1.0	40	140	160	<1.0		<0.1						
01-19060/61	19060	2001	0	60	24	10	<1.0	16	120	130	<1.0		<0.1						
01-19115	19115	2001	0	70	35	13	<1.0	24	130	140	<1.0		<0.1						
01-19118	19118	2001	0	56	41	15	<1.0	15	110	110	<1.0		<0.1						
01-19119	19118	2001	50											<40					
00-24804		2000	0											150					
00-24805		2000	30											96					
00-24807		2000	0											1900					
00-24808		2000	30											<130					
00-24810		2000	0											<40					
00-24811		2000	0											<40					
00-24812		2000	30											<40					
00-24813		2000	50											<40					
00-22387		2000	0											<40					
00-24767		2000	0											170					
00-24768		2000	0											340					
00-24769		2000	0											150					
01-19122	19122	2001	0	87	48	18	<1.0	14	150	200	<1.0		<0.1						
01-19125	19125	2001	0	47	39	13	<1.0	12	91	100	<1.0		<0.1						
01-24772		2000	0											1300					
01-19064	19064	2001	0	59	27	8.6	<1.0	<10	110	120	4.7		<0.1						
01-19067	19067	2001	0	62	27	9.2	<1.0	12	100	110	2.8		<0.1						
01-19068	19067	2001	50	170	33	12	<1.0	26	210	160	9.9		<0.1						
00-22378		2000	0	100	48	21	<1.0	<10	150	200	<1.0		<0.1	<40					
00-24930		2000	0	46	45	15	<1.0	14	100	130	<1.0		<0.1						
00-24931		2000	0	45	41	14	<1.0	15	97	120	<1.0		<0.1						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-24932	24930	2000	30	60	40	14	<1.0	<10	130	150	<1.0		<0.1						
00-24927		2000	0	66	31	15	<1.0	<10	200	160	<1.0		<0.1						
00-24928	24927	2000	30	71	27	15	<1.0	<10	160	150	<1.0		<0.1						
01-19053	19053	2001	0	67	30	13	<1.0	<10	130	120	<1.0		<0.1						
01-19089	19089	2001	0	43	38	16	<1.0	<10	120	180	<1.0		<0.1						
01-19090/91	19089	2001	40											<40					
01-19093	19093	2001	0	68	36	16	<1.0	<10	120	130	<1.0		<0.1						
01-19094	19093	2001	40											100					
01-19070/71	19069	2001	50											<40					
01-19003	19003	2001	0	48	37	13	<1.0	13	120	140	<1.0		<0.1						
00-22380/81		2000	0	72	53	18	<1.0	<10	140	180	<1.0		<0.1						
00-22382		2000	30	62	44	15	<1.0	15	130	160	4.7		<0.1						
01-19096	19096	2001	0	50	39	18	<1.0	<10	130	160	<1.0		<0.1						
01-19097	19096	2001	40											<40					
01-19099	19099	2001	0	84	26	16	<1.0	11	160	150	<1.0		<0.1						
01-19103	19103	2001	0	45	27	12	<1.0	<10	97	96	<1.0		<0.1						
01-19106	19106	2001	0	46	42	15	<1.0	<10	93	110	<1.0		<0.1						
01-18993	18993	2001	0	67	26	11	<1.0	11	120	130	<1.0		0.2						
01-18996	18996	2001	0	44	32	11	<1.0	<10	100	110	<1.0		<0.1						
01-18999	18999	2001	0	37	31	9.9	<1.0	11	83	99	<1.0		<0.1						
01-19106	19106	2001	0	46	42	15	<1.0	<10	93	110	<1.0		<0.1						
00-22383		2000	0	41	29	12	<1.0	10	110	120	<1.0		<0.1						
00-22372		2000	0	56	49	15	<1.0	22	120	210	<1.0		<0.1						
01-19076	19076	2001	0	53	40	12	<1.0	18	120	190	<1.0		<0.1						
01-19077	19076	2001	50											<40					
01-19083	19083	2001	0	95	19	9.6	<1.0	<10	120	170	<1.0		<0.1						
01-19084	19083	2001	50	84	19	10	<1.0	<10	140	180	<1.0		<0.1	<40					
01-19079	19079	2001	0	74	46	15	<1.0	<10	130	180	<1.0		<0.1						
01-19080/81	19079	2001	50											<40					
01-19280	19280	2001	50	84	19	11	1.1	11	140	130	<1.0		<0.1						
01-22373		2000	0	36	26	11	<1.0	<10	76	99	<1.0		<0.1						
01-22374		2000	30	36	27	11	<1.0	<10	73	99	<1.0		<0.1						
01-19142	19142	2001	0	23	66	16	<1.0	<10	46	54	1.1		<0.1						
01-19138	19138	2001	0	31	46	11	<1.0	<10	45	48	<1.0		<0.1						
01-19139/40	19138	2001	40	43	68	16	<1.0	<10	69	78	<1.0		<0.1						
01-19169	19169	2001	0	33	58	20	<1.0	10	75	41	<1.0		<0.1						
01-19166	19166	2001	0	22	44	14	<1.0	15	76	59	<1.0		<0.1						
01-19163	19163	2001	0	19	59	12	<1.0	12	47	41	1.4		<0.1						
01-19173	19173	2001	0	24	50	15	<1.0	<10	59	34	<1.0		<0.1						
01-19159	19159	2001	0	44	40	25	<1.0	<10	75	28	2.3		<0.1						
00-22307		2000	0	19	60	15	<1.0	<10	61	36	6.7		<0.1	<40					
00-22308		2000	0	18	56	11	<1.0	<10	44	37	1.1		<0.1						
01-19263	19263	2001	0	24	55	17	<1.0	12	69	50	<1.0		<0.1						
01-19264	19263	2001	40	24	41	14	<1.0	13	68	48	<1.0		<0.1						
01-19259	19259	2001	0	24	77	13	<1.0	<10	53	40	<1.0		<0.1						
01-19260/61	19259	2001	40	34	60	14	<1.0	<10	50	44	<1.0		<0.1						
01-19176	19176	2001	0	18	61	12	<1.0	18	65	33	<1.0		<0.1						

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
01-19179	19179	2001	0	18	21	12	<1.0	11	65	26	<1.0		<0.1						
00-22323		2000	0	38	57	17	<1.0	<10	79	84	<1.0		<0.1						
00-22309		2000	0	140	59	30	<1.0	13	99	84	<1.0		<0.1						
01-19256	19256	2001	0	21	62	13	<1.0	<10	53	41	<1.0		<0.1						
00-22309		2000	0	140	59	30	<1.0	13	99	84	<1.0		<0.1						
01-19246	19246	2001	0	50	50	16	<1.0	10	63	56	<1.0		<0.1						
01-19253	19253	2001	0	30	47	18	<1.0	<10	58	52	<1.0		<0.1						
01-19249	19249	2001	0	56	98	29	1.1	13	91	77	<1.0		<0.1						
01-19252	19249	2001	50	45	88	24	<1.0	12	79	71	<1.0		<0.1						
00-22313		2000	0	47	87	25	<1.0	14	99	91	<1.0		<0.1						
00-22314		2000	30	54	84	27	<1.0	<10	99	88	<1.0		<0.1						
00-24869		2000	0										<0.5	1300					
00-24870		2000	0											1900					
00-24860/61		2000	0											535					
00-24862		2000	0										<0.5						
00-24864		2000	0										<0.5						
00-24865		2000	0											350					
00-24867		2000	0										<0.5						
00-24868		2000	0											<40					
00-24842		2000	0										0.8						
00-24843		2000	0										<0.5						
00-24845		2000	0										<0.5						
00-24846		2000	0										<0.5						
00-24847		2000	0										<0.5						
00-24848		2000	0										0.8						
00-24855		2000	0										<0.5						
00-24856		2000	0										0.9						
00-24857		2000	0										<0.5						
00-24859		2000	0										<0.5						
00-22459		2000	0	57.8	45.1	12.4	<1.0	<10	101	120	<1.0		<0.1						
00-22460/61		2000	0	58.4	45.5	14.2	<1.0	<10	106	120	<1.0		<0.1	<40					
00-22869		2000	0										<0.5						
00-22870/71		2000	0										<0.5						
00-22872		2000	0										<0.5						
00-22874		2000	0										<0.1						
00-22876		2000	0										<0.1						
00-22880/81		2000	0										<0.1						
00-22882		2000	0										<0.1						
00-22883		2000	0										<0.1						
00-22884		2000	0										<0.1						
00-22886		2000	0										<0.5						
00-22888		2000	0										<0.5						
00-22889		2000	0										<0.5						
00-22890/91		2000	0										<0.5						
00-22892		2000	0										<0.5						
00-22893		2000	0										<0.5						
00-22894		2000	0										<0.5						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-22896		2000	0										0.2						
01-18639	18639	2001	0	45	45	13	<1.0	18	130	110	<1.0		<0.1						
01-18778	18778	2001	0	49	53	13	<1.0	27	94	110	<1.0		<0.1						
01-18782	18782	2001	0	51	50	13	<1.0	29	130	110	<1.0		0.5						
01-18785	18785	2001	0	80	64	16	<1.0	14	130	160	2		<0.1						
01-20540/41		2001	0										<0.5						
01-20542		2001	0										<0.5						
00-22455		2000	0											<40					
01-19188	19188	2001	0	75	47	12	<1.0	14	150	150	<1.0		<0.1						
01-19189	19188	2001	50	110	69	15	<1.0	14	170	170	<1.0		<0.1						
00-23498		2000	0											55					
00-23499		2000	0											<40					
00-22445		2000	0	46	47	16	<1.0	16	100	120	<1.0		<0.1						
00-22400/01		2000	0	59	30	12	<1.0	<10	110	110	<1.0		<0.1						
01-18804	18804	2001	0	56	42	13	<1.0	15	120	140	<1.0		<0.1						
01-18805	18804	2001	40											<40					
01-19134	19134	2001	0	80	40	13	<1.0	18	110	130	<1.0		<0.1						
01-19183	19134	2001	50											<40					
01-19128	19128	2001	0	50	43	12	<1.0	15	90	96	1.1		<0.1						
01-19129	19128	2001	50											220					
01-19132	19132	2001	0	56	41	13	<1.0	10	110	120	<1.0		<0.1						
01-19133	19132	2001	50	150	46	17	<1.0	10	170	180	<1.0		<0.1	<40					
01-19185	19185	2001	0	87	39	13	<1.0	12	120	120	3.7		<0.1						
01-19186	19185	2001	50											2400					
01-18807	18807	2001	0	85	54	17	<1.0	<10	130	160	<1.0		<0.1						
01-18808	18807	2001	40											<40					
00-22399		2000	0	55	45	18	<1.0	<10	110	130	<1.0		<0.1						
01-18800/01	18800	2001	0	53	49	14	<1.0	19	110	130	<1.0		<0.1						
01-18802	18800	2001	40											1700					
00-22446		2000	0	110	26	12	<1.0	<10	70	91	6.9		<0.1						
00-22447		2000	0	72	68	17	<1.0	39	120	120	<1.0		0.3						
00-22399		2000	0	55	45	18	<1.0	<10	110	130	<1.0		<0.1						
01-18840/41	18840	2001	0	63	51	16	<1.0	19	110	130	<1.0		<0.1						
01-18844	18844	2001	0	94	63	14	<1.0	<10	130	130	<1.0		<0.1						
01-18837	18837	2001	0	61	56	13	<1.0	<10	86	99	<1.0		<0.1						
01-18834	18834	2001	0	52	40	13	<1.0	12	98	130	<1.0		<0.1						
01-18810/11	18810	2001	0	58	52	19	<1.0	<10	150	210	<1.0		<0.1						
01-18850/51	18850	2001	0	81	59	15	<1.0	<10	140	150	2.3		<0.1						
01-18852	18850	2001	40	74	53	14	<1.0	<10	120	140	<1.0		<0.1						
01-18854	18854	2001	0	66	42	14	<1.0	<10	110	120	<1.0		<0.1						
01-18857	18857	2001	0	140	34	11	<1.0	11	170	160	<1.0		<0.1						
01-18650/51[1]	18648	2001	50											6800					
01-19006	19006	2001	0	120	49	12	<1.0	54	200	140	<1.0		0.3						
01-19009	19009	2001	0	96	39	13	<1.0	10	130	150	<1.0		<0.1						
01-18847	18847	2001	0	130	38	14	<1.0	<10	190	180	<1.0		<0.1						
00-22447		2000	0	72	68	17	<1.0	39	120	120	<1.0		0.3						
00-22449		2000	0	140	45	15	1.4	66	210	140	<1.0		0.2						

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
01-19016	19016	2001	0	93	66	18	<1.0	<10	140	150	<1.0		<0.1						
01-19019	19019	2001	0	58	90	20	<1.0	<10	110	130	<1.0		<0.1						
01-19023	19023	2001	0	68	57	17	<1.0	<10	110	130	<1.0		<0.1						
01-19026	19026	2001	0	71	36	13	<1.0	<10	92	110	26		<0.1						
01-19029	19029	2001	0	88	67	17	<1.0	11	130	150	<1.0		<0.1						
01-19030/31	19029	2001	50	110	58	15	<1.0	<10	150	150	<1.0		<0.1						
01-19033	19033	2001	0	90	71	17	<1.0	11	130	140	<1.0		<0.1						
00-22448		2000	0	82	100	24	<1.0	<10	160	160	<1.0		<0.1						
00-22450/51		2000	0	63	72	18	<1.0	13	130	130	<1.0		<0.1						
00-22460/61		2000	0	58	46	14	<1.0	<10	106	120	<1.0		<0.1	<40					
00-22452		2000	0	69	50	15	<1.0	42	280	150	<1.0		<0.1						
01-20535	20534	2001	40											110					
01-18953	18953	2001	0	62	42	12	<1.0	<10	110	120	<1.0		<0.1						
01-18954	18953	2001	50										<0.2	<40					
01-18955	18955	2001	0	82	89	20	<1.0	<10	120	150	<1.0		<0.1						
01-18956	18955	2001	50	100	160	27	<1.0	10	150	170	<1.0		<0.1						
01-18943	18943	2001	0	60	49	13	<1.0	<10	120	120	<1.0		<0.1						
01-18944	18943	2001	50	65	55	16	<1.0	<10	110	120	<1.0		<0.1						
01-18934	18934	2001	0	63	120	16	<1.0	12	110	140	<1.0		<0.1						
01-18946	18946	2001	0	87	45	14	<1.0	16	170	140	<1.0		<0.1						
01-18949	18949	2001	0	55	50	13	<1.0	14	160	120	<1.0		<0.1						
01-18937	18937	2001	0	93	84	21	<1.0	21	110	200	3.3		<0.1						
01-18940/41	18940	2001	0	63	45	11	<1.0	16	110	120	1.2		<0.1						
01-18932	18932	2001	0	77	180	67	<1.0	19	130	190	5.7		<0.1						
01-18926	18926	2001	0	99	180	27	<1.0	20	140	460	<1.0		0.1						
01-18906	18906	2001	0	100	41	11	<1.0	12	180	230	<1.0		<0.1						
01-18903	18903	2001	0	130	81	16	<1.0	17	170	230	<1.0		<0.1						
01-18916	18916	2001	0	52	61	12	<1.0	13	78	110	<1.0		<0.1						
01-18919	18919	2001	0	100	200	29	<1.0	12	140	200	<1.0		<0.1						
01-18920/21	18919	2001	50	110	200	29	<1.0	11	160	380	1.7		<0.1						
01-18923	18923	2001	0	50	49	13	<1.0	14	98	120	<1.0		<0.1						
08-11649	DM-31	2008	0-10	45	21	11	<1.0	<10	99	110	<1.0	<0.10	0.11	44			<10	4.2	35
08-11651	DM-31	2008	35-45	35	18	9.5	<1.0	<10	86	92	<1.0	<0.10	0.027	21			<10	6.8	9.4
08-11657	DM-32	2008	0-10	52	38	15	<1.0	<10	100	160	<1.0	<0.10	<0.0030	24			<10	6.8	12
08-11659	DM-32	2008	30-40	58	39	15	<1.0	<10	100	170	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11661	DM-33	2008	0-10	19	41	11	<1.0	<10	44	43	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11663	DM-33	2008	35-45	27	39	13	<1.0	<10	52	54	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11653	DM-34	2008	0-10	19	49	13	<1.0	<10	41	32	<1.0	<0.10	<0.0030	15			<10	5.4	<9.0
08-11655	DM-34	2008	30-40	19	41	13	<1.0	<10	40	30	<1.0	<0.10	<0.0030	15			<10	5.3	<9.0
08-29275	DM-37	2008	0-10	69	52	19	<1.0	<10	120	140	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-29277	DM-37	2008	30-40	52	40	16	<1.0	<10	110	130	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11637	DM-41	2008	0-10	110	43	16	<1.0	59	360	130	<1.0	<0.10	0.02	119			<10	38	76
08-11639	DM-41	2008	30-40	59	37	15	<1.0	13	140	120	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11645	DM-49	2008	0-10	98	160	29	<1.0	<10	140	280	1.6	<0.10	0.0031	41			<10	5.8	30
08-11647	DM-49	2008	30-40	160	210	38	<1.0	10	190	300	2.5	<0.10	<0.0030	16			<10	<4.0	9.2
09-21605	DM-36	2009	0-10	84	58	17	<1.0	12	100	150	<1.0	<0.10	<0.0030	19			<10	<4.0	12
09-21607	DM-36	2009	30-40	68	53	16	<1.0	11	96	130	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0

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Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
09-21609	DM-37	2009	0-10	79	44	18	<1.0	<10	130	150	<1.0	<0.10	<0.0030	29			<10	<4.0	22
09-21611	DM-37	2009	30-40	39	35	14	<1.0	<10	100	110	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21577/78	DM-41	2009	0-10	91	48	15	<1.0	36	250	130	<1.0	<0.10	0.0059	82			<10	23	54
09-21579	DM-41	2009	30-40	51	47	15	<1.0	<10	100	110	<1.0	<0.10	<0.0030	25			<10	4.3	16
09-21581	DM-42	2009	0-10	53	55	19	<1.0	<10	120	160	<1.0	<0.10	<0.0030	18			<10	<4.0	11
09-21583	DM-42	2009	30-40	39	57	18	<1.0	<10	98	130	<1.0	<0.10	<0.0030	17			<10	<4.0	10
09-21585	DM-43	2009	0-10	40	43	18	<1.0	<10	73	120	<1.0	<0.10	<0.0030	21			<10	<4.0	14
09-21587	DM-43	2009	30-40	30	46	15	<1.0	<10	59	93	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21589	DM-44	2009	0-10	97	38	17	<1.0	<10	180	190	<1.0	<0.10	<0.0030	16			<10	6.6	<9.0
09-21591	DM-44	2009	30-40	160	65	15	<1.0	<10	130	130	1.1	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21593	DM-45	2009	0-10	76	93	23	<1.0	26	120	120	<1.0	<0.10	<0.0030	16			<10	<4.0	9.1
09-21595	DM-45	2009	30-40	86	120	24	<1.0	16	170	170	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21597	DM-46	2009	0-10	71	63	15	<1.0	21	100	130	1.2	<0.10	0.0071	19			<10	<4.0	12
09-21599	DM-46	2009	30-40	73	58	14	<1.0	19	100	120	<1.0	<0.10	<0.0030	282			<10	77	200
09-21601	DM-48	2009	0-10	110	350	44	<1.0	<10	110	440	13	<0.10	0.0043	140			<10	4.7	130
09-21603	DM-48	2009	30-40	88	120	18	<1.0	<10	95	170	6.8	<0.10	<0.0030	12			<10	<4.0	<9.0
11-12954	DM-31	2011	0-10	55	39	14	<1.0	14	110	120	<1.0	<0.10	0.19	42			<10	5.5	31
11-12956/57	DM-31	2011	30-40	54	43	15	<1.0	<10	100	120	<1.0	<0.10	0.08	93			<10	5	83
11-12958	DM-32	2011	0-10	67	48	18	<1.0	10	120	180	2.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12960	DM-32	2011	30-40	99	46	14	<1.0	11	94	170	3.4	<0.10	<0.050	12			<10	<4.0	<9.0
11-12962	DM-33	2011	0-10	24	43	13	<1.0	<10	58	60	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12964	DM-33	2011	30-40	20	50	14	<1.0	<10	49	47	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12966	DM-34	2011	0-10	15	57	12	<1.0	<10	43	38	1.3	<0.10	<0.050	20			<10	10	<9.0
11-12968	DM-34	2011	30-40	12	45	14	<1.0	<10	34	27	1.6	<0.10	<0.050	17			<10	7.2	<9.0
11-12946	DM-48	2011	0-10	130	380	49	<1.0	<10	120	460	13	<0.10	<0.050	12			<10	<4.0	<9.0
11-12948	DM-48	2011	30-40	150	130	26	<1.0	13	130	190	8.9	<0.10	<0.050	12			<10	<4.0	<9.0
11-12950	DM-49	2011	0-10	97	120	25	<1.0	13	140	310	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
11-12952	DM-49	2011	30-40	100	170	31	<1.0	10	160	210	1.4	<0.10	<0.0050	17			<10	<4.0	9.7
12-44802	DM-36	2012	0-10	94	73	17	<1.0	27	140	190	1.0	<0.10	<0.050	12			<10	<4.0	<9.0
12-44804	DM-36	2012	20-30	82	77	18	<1.0	19	130	180	1.2	<0.10	<0.050	12			<10	<4.0	<9.0
12-44806	DM-37	2012	0-10	65	46	13	<1.0	<10	130	150	1.5	<0.10	<0.050	19			<10	<4.0	12
12-44808	DM-37	2012	20-30	62	46	12	<1.0	<10	120	150	1.4	<0.10	<0.050	17			<10	<4.0	10
12-44814/15	DM-38	2012	0-10	65.5	66	15	<1.0	110	310	95.5	2.25	<0.10	<0.050	25			<30	<10	<10
12-44816	DM-38	2012	20-30	65	79	16	<1.0	57	160	76	2.2	<0.10	<0.050	25			<30	<10	<10
12-44754	DM-41	2012	0-10	71	47	17	<1.0	22	160	140	2.0	0.023	<0.050	121			<30	26	80
12-44756	DM-41	2012	20-30	62	45	18	<1.0	<10	120	130	1.3	0.0063	<0.050	25			<30	<10	<10
12-44758	DM-42	2012	0-10	50	48	18	<1.0	<10	110	130	1.0	<0.10	<0.050	25			<30	<10	<10
12-44760	DM-42	2012	20-30	46	43	17	<1.0	<10	100	130	0.9	<0.10	<0.050	25			<30	<10	<10
12-44762/63	DM-43	2012	0-10	47	40	21	<1.0	<10	70.5	110	1.3	<0.10	<0.050	25			<30	<10	<10
12-44764	DM-43	2012	20-30	36	42	19	<1.0	<10	68	100	1.2	<0.10	<0.050	25			<30	<10	<10
12-44766	DM-44	2012	0-10	84	52	21	<1.0	<10	160	170	3	<0.10	<0.050	25			<30	<10	<10
12-44768	DM-44	2012	20-30	110	40	16	<1.0	19	150	140	2.3	0.023	<0.050	25			<30	<10	<10
12-44770	DM-45	2012	0-10	61	84	19	<1.0	<10	95	95	1.2	<0.10	<0.050	25			<30	<10	<10
12-44772	DM-45	2012	20-30	82	94	22	<1.0	12	150	150	1.6	<0.10	<0.050	25			<30	<10	<10
12-44774	DM-46	2012	0-10	70	53	16	<1.0	21	100	120	3.8	0.0062	<0.050	25			<30	<10	<10
12-44776	DM-46	2012	20-30	63	58	16	<1.0	<10	89	93	2.2	<0.10	<0.050	331			<30	116	200
13-25340/41	DM-31	2013	0-10	59	42	11	<1.0	<10	140	160	1.7	<0.10	<0.050	14			<10	4.6	<9.0

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
13-25342	DM-31	2013	30-40	54	34	8.1	<1.0	<10	120	140	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25344	DM-32	2013	0-10	86	43	10	<1.0	11	120	190	3.5	<0.10	<0.050	12			<10	<4.0	<9.0
13-25346	DM-32	2013	30-40	63	31	9.6	<1.0	<10	91	130	3.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25348	DM-33	2013	0-10	18	40	7.6	<1.0	<10	47	44	1.3	<0.10	<0.050	22			<10	7.4	9.7
13-25350/51	DM-33	2013	30-40	28	60	13	<1.0	<10	63	60	1.1	<0.10	<0.050	14			<10	4.4	<9.0
13-25352	DM-34	2013	0-10	36	58	18	<1.0	<10	74	47	2.0	<0.10	<0.050	12			<10	<4.0	<9.0
13-25354	DM-34	2013	30-40	36	54	17	<1.0	<10	76	43	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25324	DM-36	2013	0-10	110	71	16	<1.0	15	130	190	1.4	<0.10	<0.050	12			<10	<4.0	<9.0
13-25326	DM-36	2013	30-40	91	63	14	<1.0	15	110	170	0.71	<0.10	<0.050	12			<10	<4.0	<9.0
13-25328	DM-37	2013	0-10	66	42	10	<1.0	<10	110	140	3.3	<0.10	<0.050	14			<10	4.7	<9.0
13-25330/31	DM-37	2013	30-40	49	46	11	<1.0	<10	120	140	1.4	<0.10	<0.050	12			<10	<4.0	<9.0
13-25332	DM-38	2013	0-10	90	60	12	<1.0	56	160	68	1.9	<0.10	<0.050	27			<10	6.4	16
13-25334	DM-38	2013	30-40	92	61	12	<1.0	58	170	72	2.6	<0.10	<0.050	30			<10	5.4	20
13-25296	DM-41	2013	0-10	55	46	11	<1.0	28	150	120	1.3	<0.10	<0.050	54			<10	9.4	40
13-25298	DM-41	2013	30-40	68	52	12	<1.0	<10	110	130	1.5	<0.10	<0.050	43			<10	33	<9.0
13-25300/01	DM-42	2013	0-10	44	64	16	<1.0	<10	110	150	1.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25302	DM-42	2013	30-40	40	82	15	<1.0	<10	100	140	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25304	DM-43	2013	0-10	41	42	12	<1.0	<10	74	120	0.9	<0.10	<0.050	12			<10	<4.0	<9.0
13-25306	DM-43	2013	30-40	35	49	14	<1.0	<10	74	120	0.88	<0.10	<0.050	12			<10	<4.0	<9.0
13-25308	DM-44	2013	0-10	160	37	8.4	<1.0	11	180	190	4.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25310/11	DM-44	2013	30-40	60	60	11	<1.0	<10	120	130	1.3	<0.10	<0.050	30			<10	6.7	18
13-25312	DM-45	2013	0-10	84	110	18	<1.0	10	120	130	1.6	<0.10	<0.050	12			<10	<4.0	<9.0
13-25314	DM-45	2013	30-40	82	100	16	<1.0	10	120	130	1.6	<0.10	<0.050	12			<10	<4.0	<9.0
13-25316	DM-46	2013	0-10	66	57	9.7	7.5	13	99	100	3.2	<0.10	<0.050	71			<10	10	56
13-25318	DM-46	2013	30-40	95	52	10	<1.0	27	130	150	5.6	<0.10	<0.050	562			<10	97	460
13-25056	DM-48	2013	0-10	99	330	35	<1.0	<10	100	420	18	<0.10	<0.050	33			<10	9.6	18
13-25058	DM-48	2013	30-40	160	170	24	<1.0	14	140	230	11	<0.10	<0.050	18			<10	8.2	<9.0
13-25060/61	DM-49	2013	0-10	88	76	16	<1.0	11	120	180	2.4	<0.10	<0.050	21			<10	11	<9.0
13-25062	DM-49	2013	30-40	100	27	6.6	<1.0	11	150	180	1.1	<0.10	<0.050	12			<10	<4.0	<9.0
	N value			345	336	336	336	346	348	336	336	138	390	210			138	138	138
	Baseline Detection Limits			3.0	5.0	5.0	1.0	10	15	20	1.0	0.1	0.1	40			30	10	10
	Arithmetic Mean			68	61	16	0.54	13	115	133	1.3	0.049	0.068	138			7	25	29
Arithmetic Mean Corrected for Detection Limits				68	61	16	1.0	10	115	133	1.3	0.10	0.10	138			30	10	10
	Standard Deviation			30	48	6.9	0.40	16	46	59	2.3	0.007	0.119	357			5	85	69
	Minimum			12	11	6.6	0.5	5.0	34	26	0.1	0.006	0.002	12			5	2	5
	Maximum			170	380	67	7.5	140	440	460	26	0.05	0.90	2400			50	680	570
	95% Confidence Limit			3.1	5	1			4.9	6	0.25	0.001	0.012	48			1	14	12
Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004						
90-G315	2 km downstream BF304	1990										<0.5	0.024						
90-G320	100 m E of S end runway	1990										<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001						

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002						
90-G325	5 km from crossroads	1990										<0.5	<0.0002						
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0								
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0								
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0								
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0								
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0								
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0								
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0								
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0								
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0								
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0								
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0								
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0								
03-26140	Upper Site - BU 4	2003	0-10	16	53	8.5	<1.0	<10	32	24	<1.0								
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0								
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0								
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0								
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4								
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1								
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1								
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0								
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6								
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0								
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0								
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0								
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8								
03-26172	Upper Site - BU 3	2003	0-10	59	34	7.1	<1.0	<10	89	94	<1.0								
03-26173	Upper Site - BU 3	2003	0-10	21	34	7.2	<1.0	<10	36	46	1.1								
03-26174	Upper Site - BU 3	2003	0-10	71	29	8.0	<1.0	11	106	120	1.4								
03-26175	Upper Site - BU 3	2003	0-10	76	27	8.7	<1.0	<10	117	119	<1.0								
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1								
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0								
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2								
03-26184	Upper Site - BU 4	2003	0-10	18	51	8.0	<1.0	12	39	33	1.4								
03-26185	Upper Site - BU 4	2003	0-10	17	17	5.3	<1.0	<10	44	<20	<1.0								
03-26186	Upper Site - BU 4	2003	0-10	19	43	8.7	<1.0	<10	46	57	<1.0								
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4								

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0								
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0								
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5								
03-26192	Upper Site - BU 3	2003	0-10	66	31	8.6	<1.0	<10	125	142	2.1								
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0								
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0								
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0								
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0								
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1								
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0								
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0								
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0								
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0								
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0								
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6								
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0								
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0								
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0								
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0								
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0								
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0								
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3								
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3								
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0								
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0								
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0								
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9								
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9								
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3								
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2								
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0								
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0								
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0								
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0								
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4								
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1								
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0								
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0								
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0								
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0								
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0								
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0								
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0								
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0								
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0								
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0								
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0								

DYE-M US West Landfill - Summary of Baseline and Background Soil Analytical Data

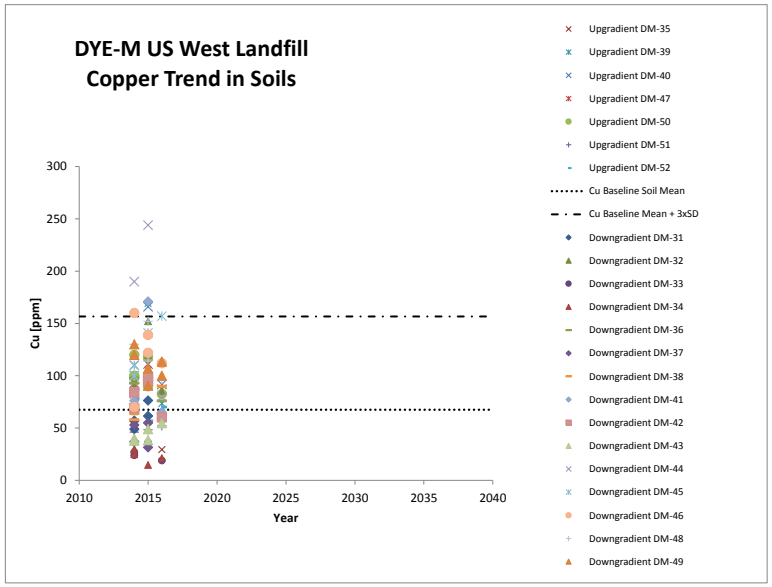
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7								
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0								
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0								
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0								
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0								
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0								
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0								
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0								
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0								
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0								
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0								
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1								
03-26262	Upper Site - BU 4	2003	0-10	26	46	9.1	<1.0	11	61	41	1.3								
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0								
03-26264	Upper Site - BU 4	2003	0-10	15	15	5.1	<1.0	<10	44	<20	<1.0								
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0								
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0								
03-26267	Upper Site - BU 4	2003	0-10	22	42	9.0	<1.0	10	63	60	<1.0								
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0								
03-26154	Upper Site - BU 3	2003	0-10	132	168	46	<1.0	21	175	151	<1.0								
03-26155	Upper Site - BU 3	2003	0-10	81	118	21	<1.0	17	100	92	<1.0								
03-26156	Upper Site - BU 3	2003	0-10	86	50	14	<1.0	<10	113	134	<1.0								
03-26157	Upper Site - BU 3	2003	0-10	37	32	8.3	<1.0	<10	74	82	1.1								
03-26158	Upper Site - BU 1	2003	0-10	222	495	60	<1.0	<10	37	134	1.3								
03-26159	Upper Site - BU 1	2003	0-10	53	640	57	<1.0	<10	28	63	1.2								
	N value			108	108	108	108	108	108	108	108	6	6						
	Background Detection Limits			5.0	5.0	5.0	1.0	10	15	20	1.0	0.5	0.002						
	Arithmetic Mean			60	141	20	0.5	7.7	70	90	0.78	0.25	0.0047						
	Arithmetic Mean Corrected for Detection Limits			60	141	20	1.0	10	70	90	1.0	0.5	0.0002						
	Standard Deviation			40	230	16	0	4.9	33	76	0.65	0.0	0.01						
	Minimum			9.9	13	2.5	0.5	5.0	23	10	0.5	0.25	0.00005						
	Maximum			222	1140	76	0.5	26	186	580	5.90	0.25	0.02						
	95% Confidence Limit			7.6	43	3.0		0.9	6.3	14.3	0.1		0.008						

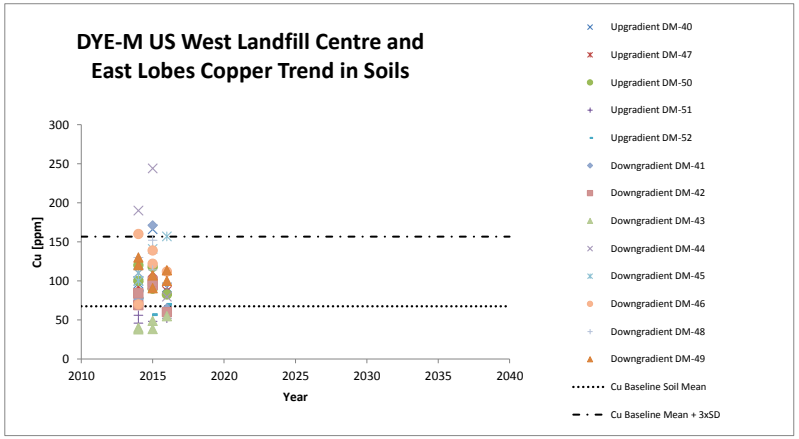
[1]sample results not included in calculation of Baseline Arithmetic Mean.

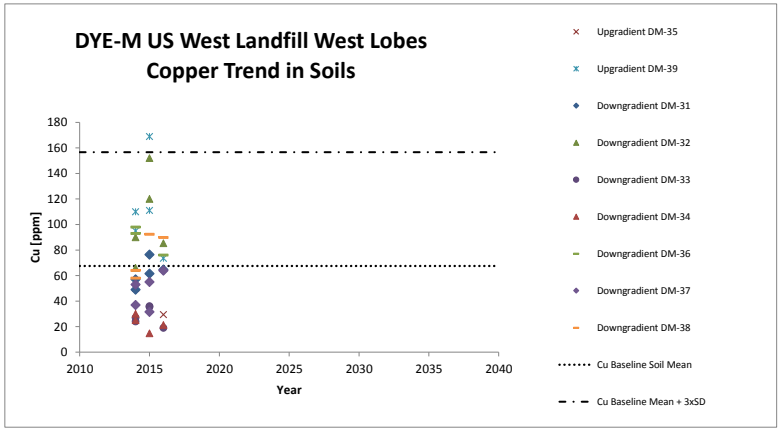
DYE-M US West Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

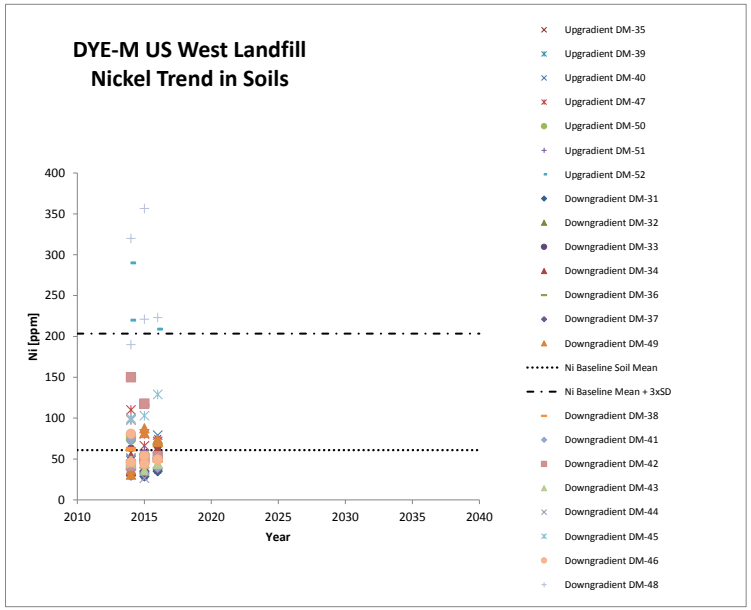
Where results are below detection, half of the detection limit has been used in the charts for the sample points.

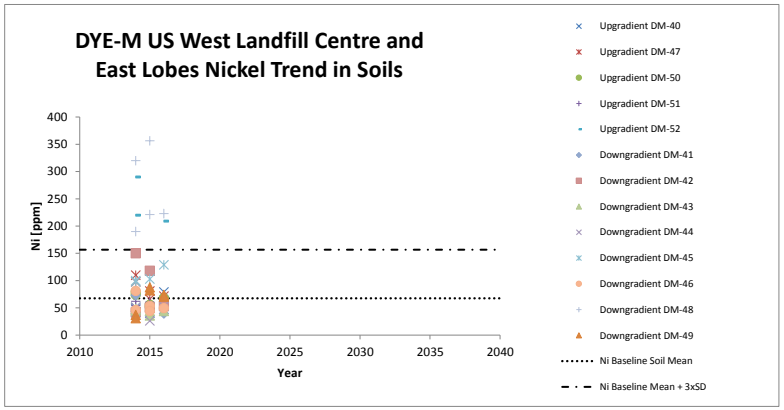
Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.

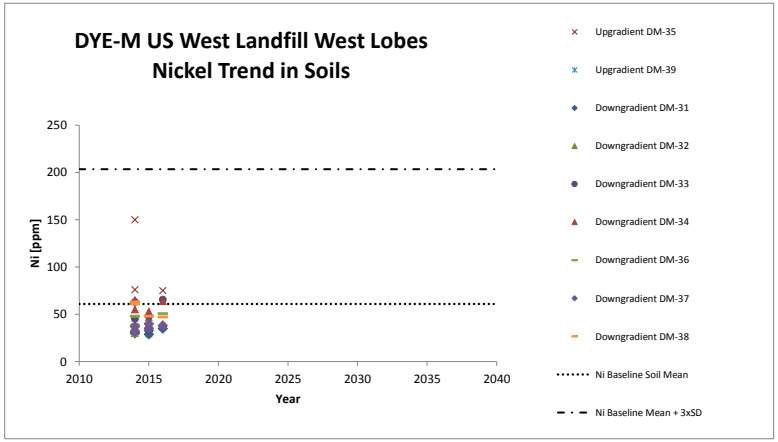


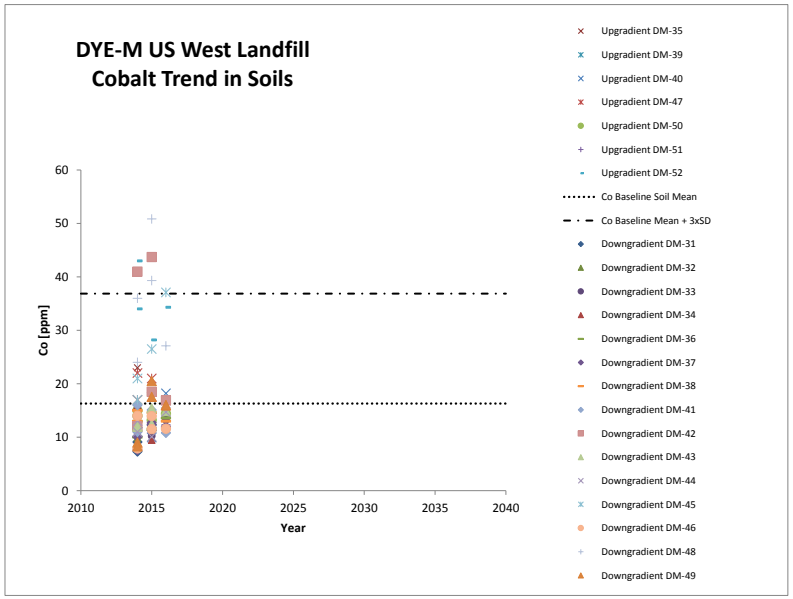


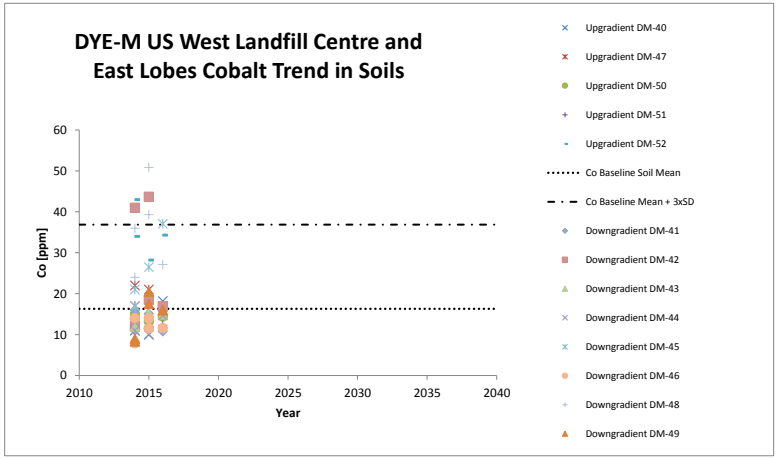


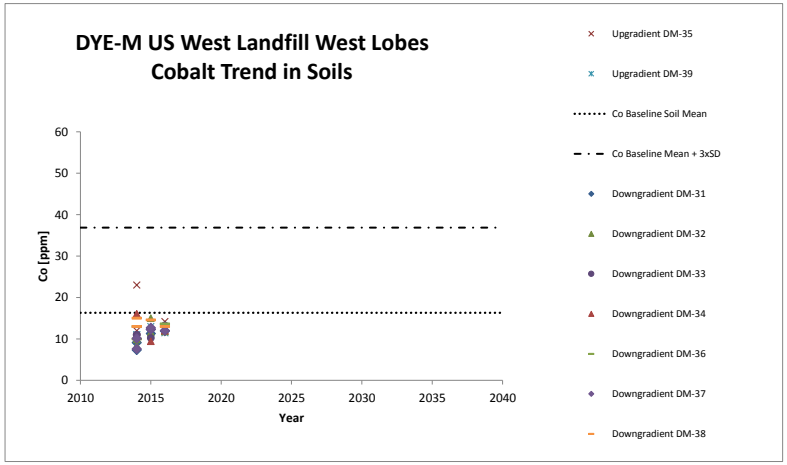

DYE-M US West Landfill
Nickel Trend in Soils
Ni [ppm]
Year
Upgradient DM-35
Upgradient DM-39
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-49
Ni Baseline Soil Mean
Ni Baseline Mean + 3xSD
Downgradient DM-38
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48

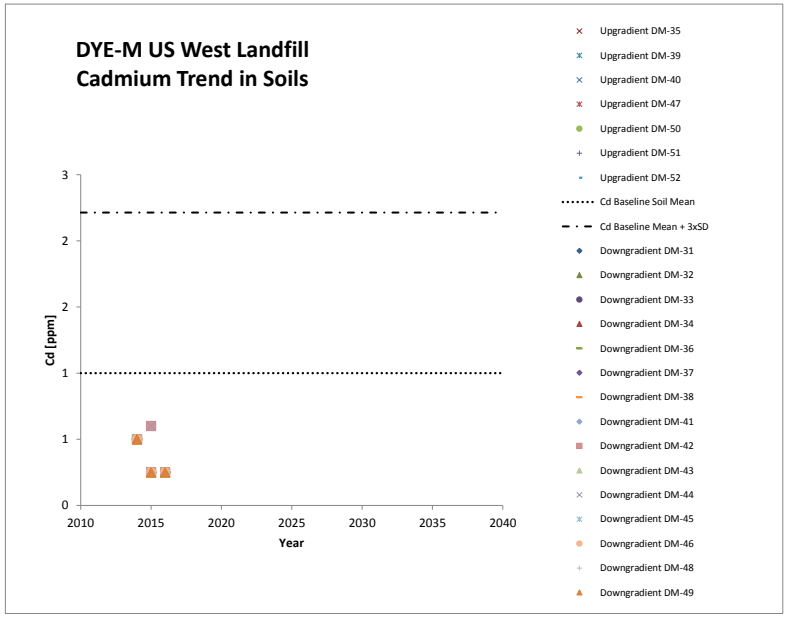

DYE-M US West Landfill Centre and
East Lobes Nickel Trend in Soils
Ni [ppm]
Year
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49
Ni Baseline Soil Mean
Ni Baseline Mean + 3xSD


DYE-M US West Landfill West Lobes
Nickel Trend in Soils
Ni [ppm]
Year
Upgradient DM-35
Upgradient DM-39
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38
Ni Baseline Soil Mean
Ni Baseline Mean + 3xSD

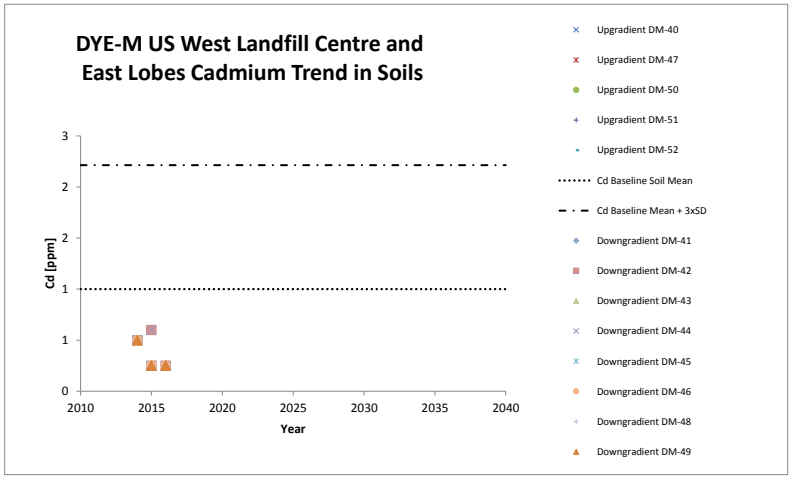

DYE-M US West Landfill
Cobalt Trend in Soils
Co [ppm]
Year
0
10
20
30
40
50
60
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Co Baseline Soil Mean
Co Baseline Mean + 3xSD
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

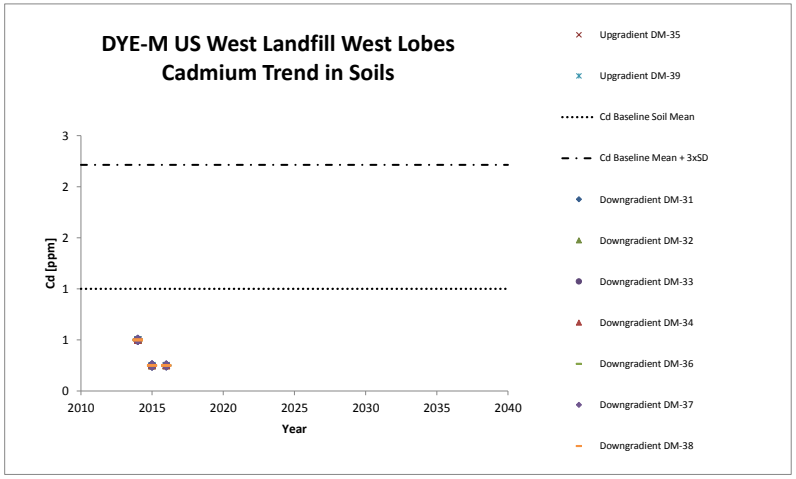

DYE-M US West Landfill Centre and
East Lobes Cobalt Trend in Soils
Co [ppm]
Year
0
10
20
30
40
50
60
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Co Baseline Soil Mean
Co Baseline Mean + 3xSD
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

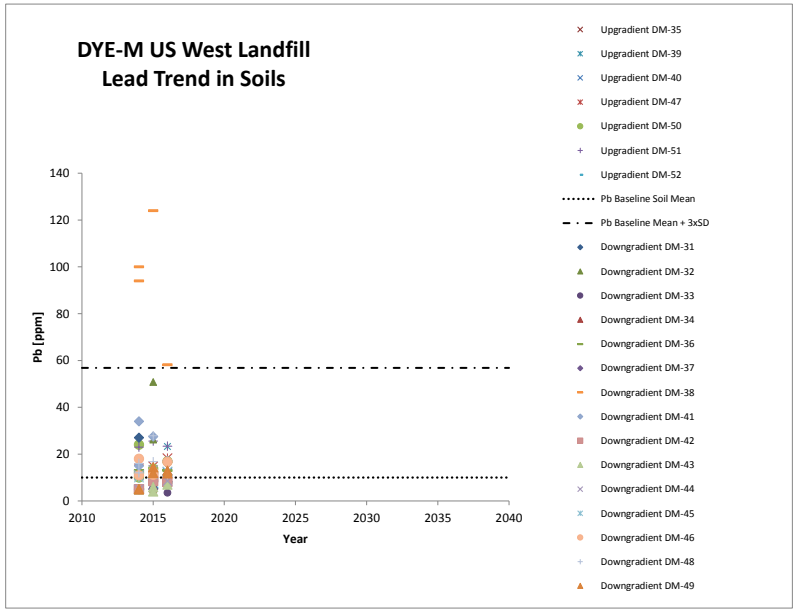

DYE-M US West Landfill West Lobes
Cobalt Trend in Soils
Co [ppm]
Year
0
10
20
30
40
50
60
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Co Baseline Soil Mean
Co Baseline Mean + 3xSD
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38



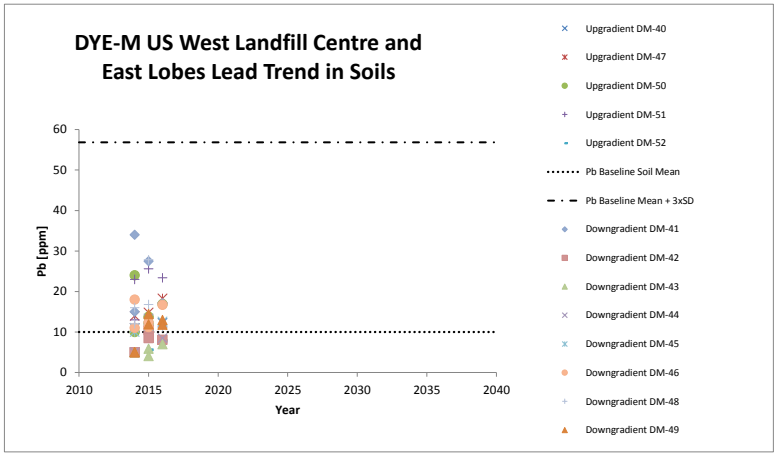
*Cd Baseline Arithmetic Mean is equal to the baseline detection limit.

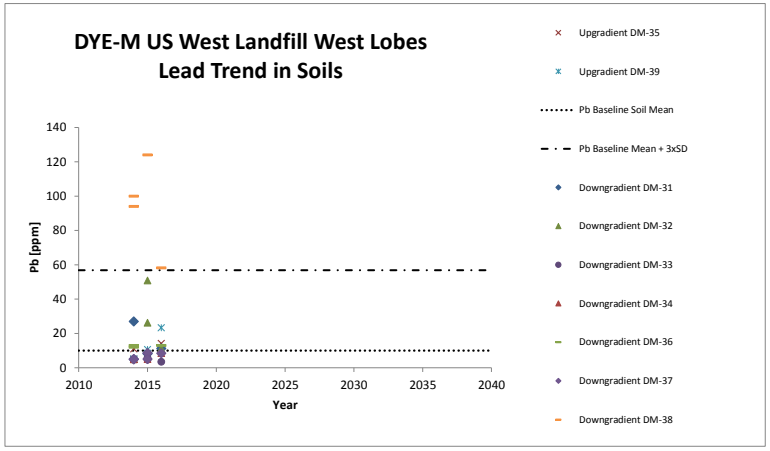


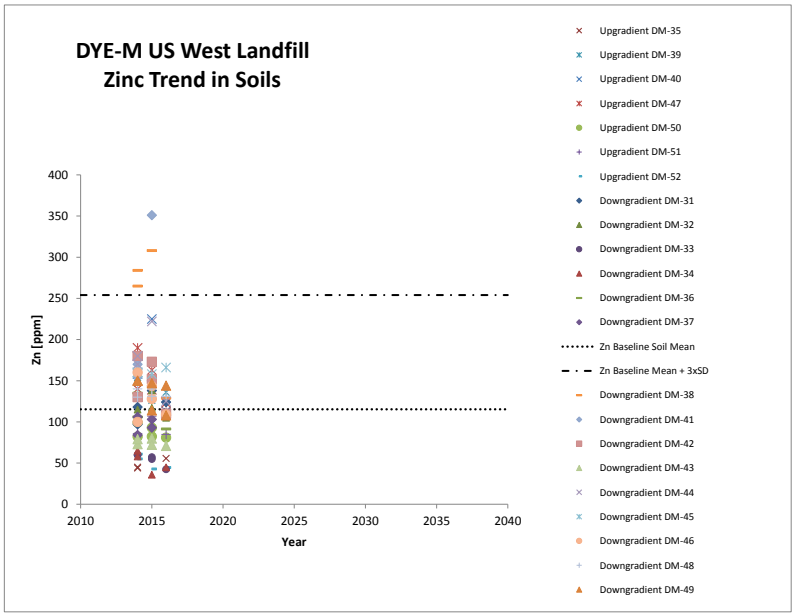


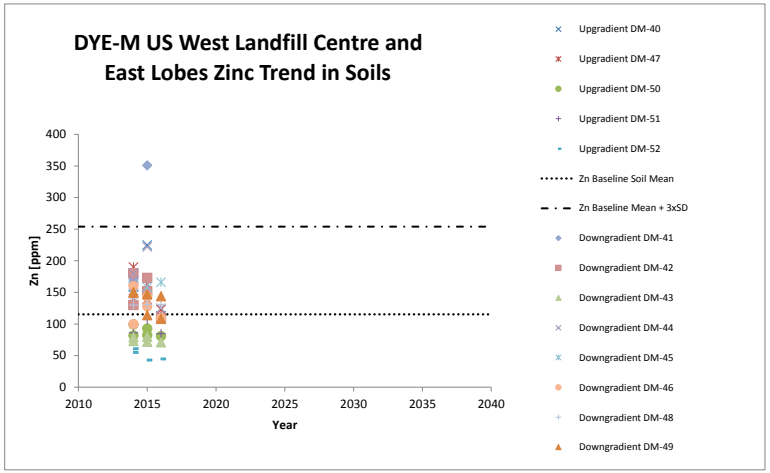


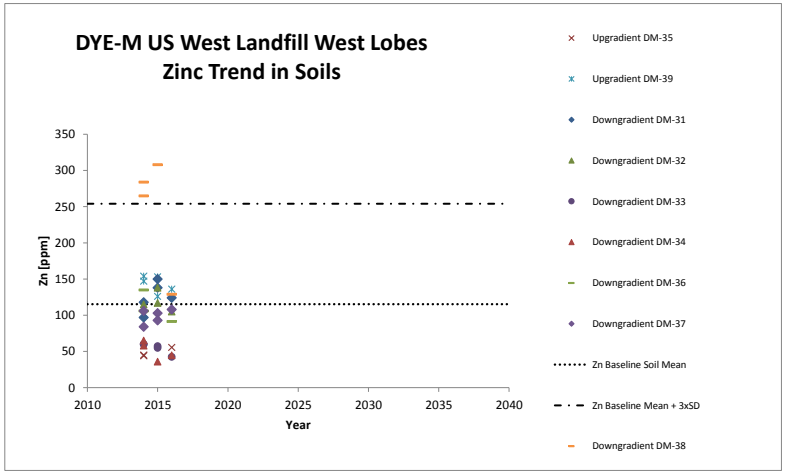
*Pb Baseline Arithmetic Mean is equal to the baseline detection limit

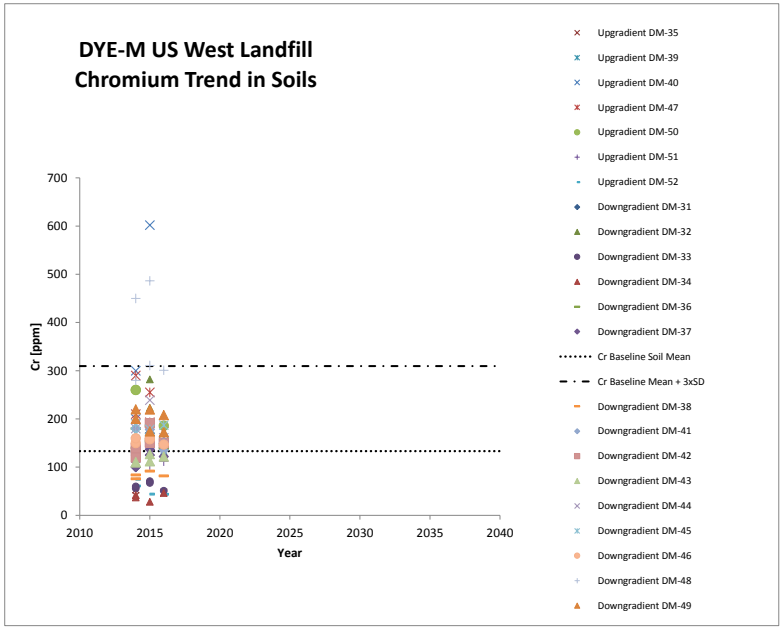


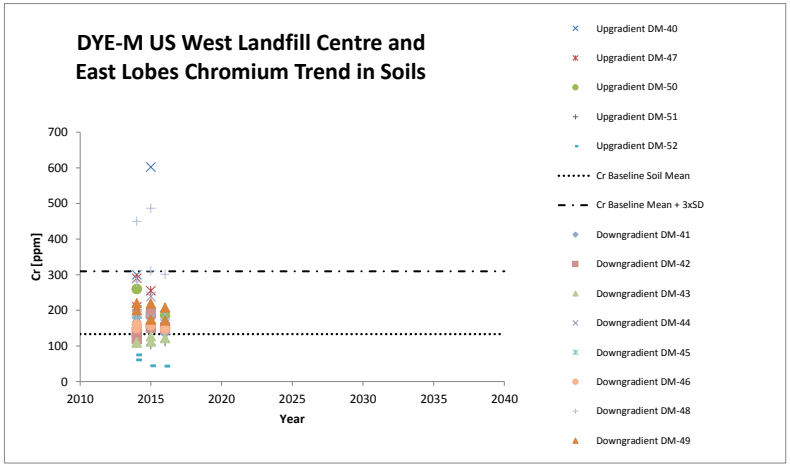


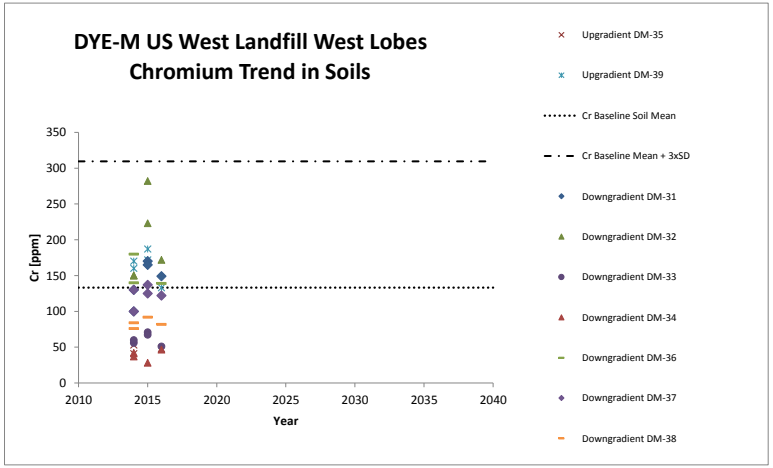

DYE-M US West Landfill
Zinc Trend in Soils
Zn [ppm]
Year
0
50
100
150
200
250
300
350
400
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Zn Baseline Soil Mean
Zn Baseline Mean + 3xSD
Downgradient DM-38
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

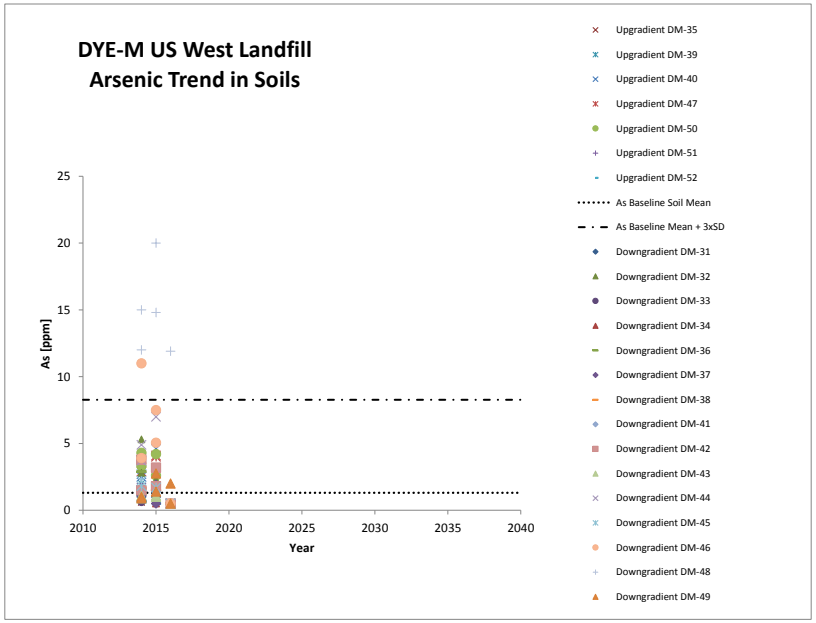

DYE-M US West Landfill Centre and
East Lobes Zinc Trend in Soils
Zn [ppm]
Year
0
50
100
150
200
250
300
350
400
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Zn Baseline Soil Mean
Zn Baseline Mean + 3xSD
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

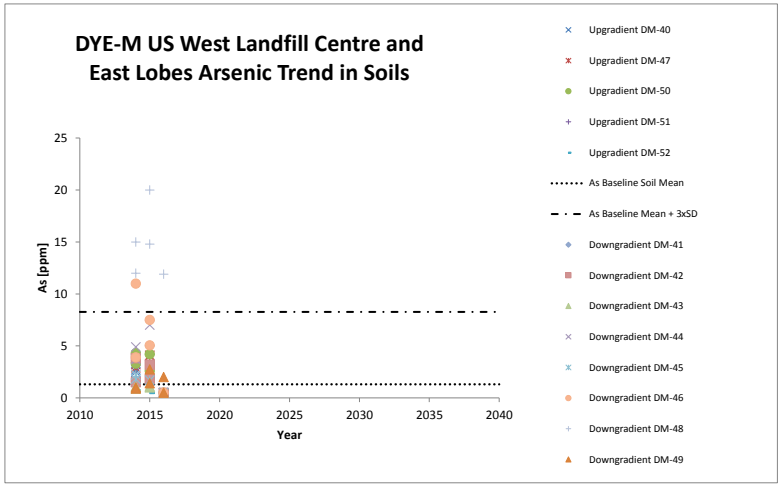

DYE-M US West Landfill West Lobes
Zinc Trend in Soils
Zn [ppm]
Year
0
50
100
150
200
250
300
350
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Zn Baseline Soil Mean
Zn Baseline Mean + 3xSD
Downgradient DM-38

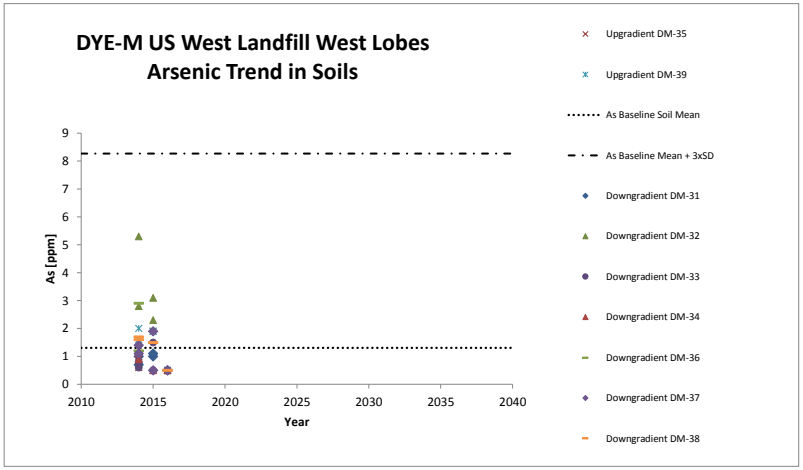

DYE-M US West Landfill
Chromium Trend in Soils
Cr [ppm]
Year
0
100
200
300
400
500
600
700
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Cr Baseline Soil Mean
Cr Baseline Mean + 3xSD
Downgradient DM-38
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Downgradient DM-48
Downgradient DM-49

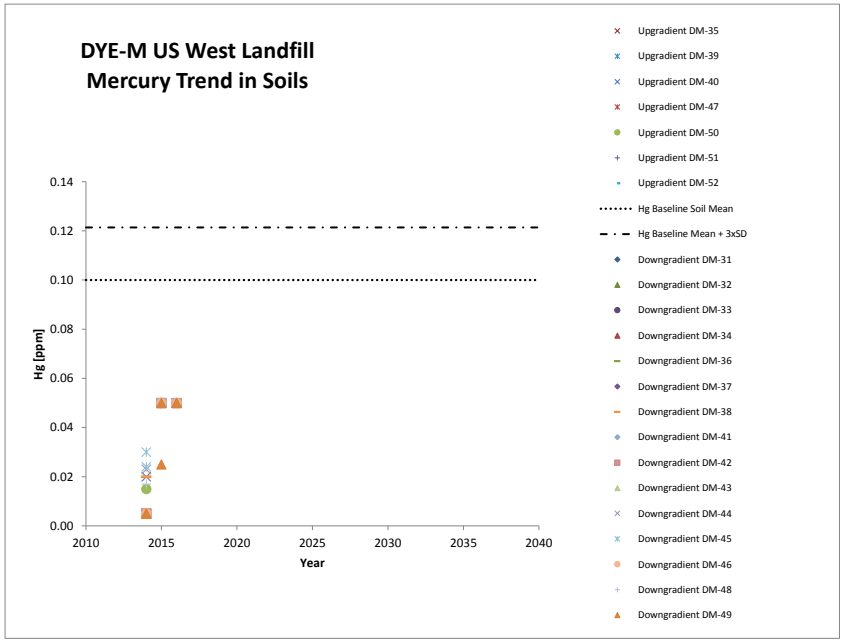

DYE-M US West Landfill Centre and
East Lobes Chromium Trend in Soils
Cr [ppm]
Year
0
100
200
300
400
500
600
700
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
Cr Baseline Soil Mean
Cr Baseline Mean + 3xSD
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49


DYE-M US West Landfill West Lobes
Chromium Trend in Soils
Cr [ppm]
Year
0
50
100
150
200
250
300
350
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Cr Baseline Soil Mean
Cr Baseline Mean + 3xSD
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38

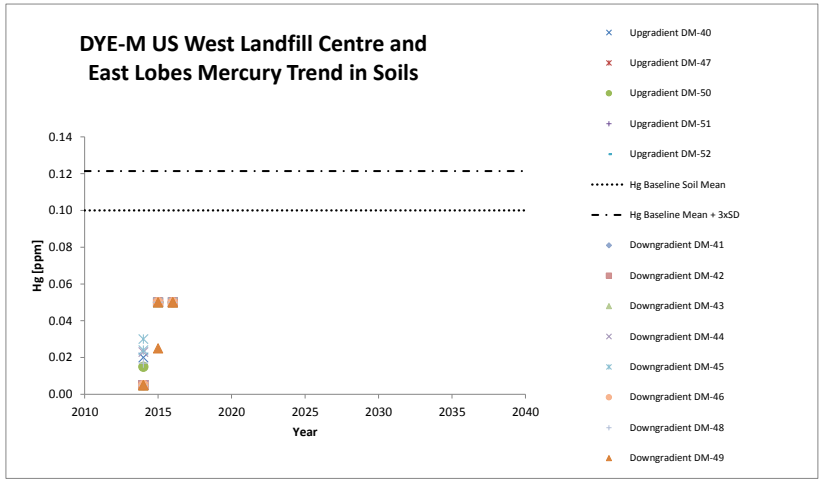

DYE-M US West Landfill
Arsenic Trend in Soils
As [ppm]
Year
0
5
10
15
20
25
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
As Baseline Soil Mean
As Baseline Mean + 3xSD
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38
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Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

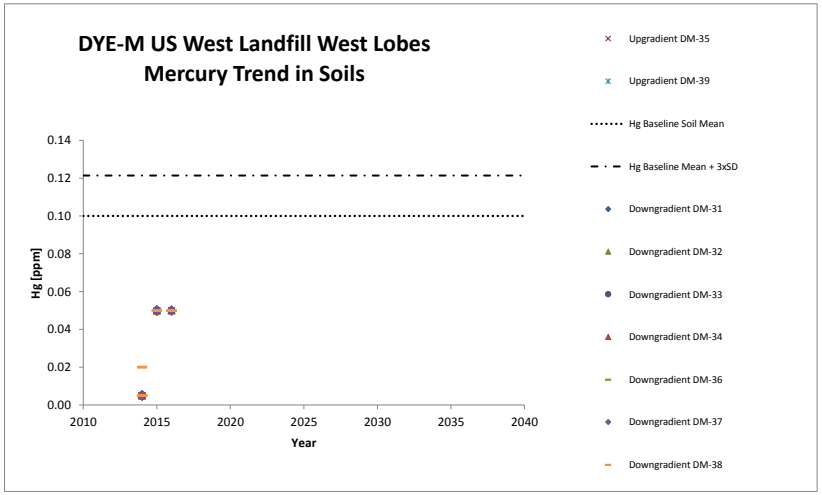

DYE-M US West Landfill Centre and
East Lobes Arsenic Trend in Soils
As [ppm]
Year
0
5
10
15
20
25
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-40
Upgradient DM-47
Upgradient DM-50
Upgradient DM-51
Upgradient DM-52
As Baseline Soil Mean
As Baseline Mean + 3xSD
Downgradient DM-41
Downgradient DM-42
Downgradient DM-43
Downgradient DM-44
Downgradient DM-45
Downgradient DM-46
Downgradient DM-48
Downgradient DM-49

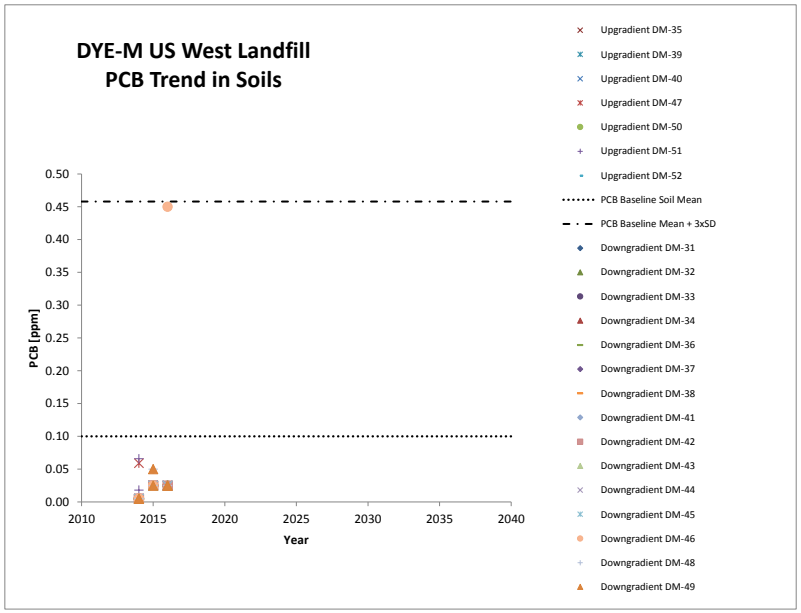

DYE-M US West Landfill West Lobes
Arsenic Trend in Soils
As [ppm]
Year
0
1
2
3
4
5
6
7
8
9
2010
2015
2020
2025
2030
2035
2040
Upgradient DM-35
Upgradient DM-39
As Baseline Soil Mean
As Baseline Mean + 3xSD
Downgradient DM-31
Downgradient DM-32
Downgradient DM-33
Downgradient DM-34
Downgradient DM-36
Downgradient DM-37
Downgradient DM-38



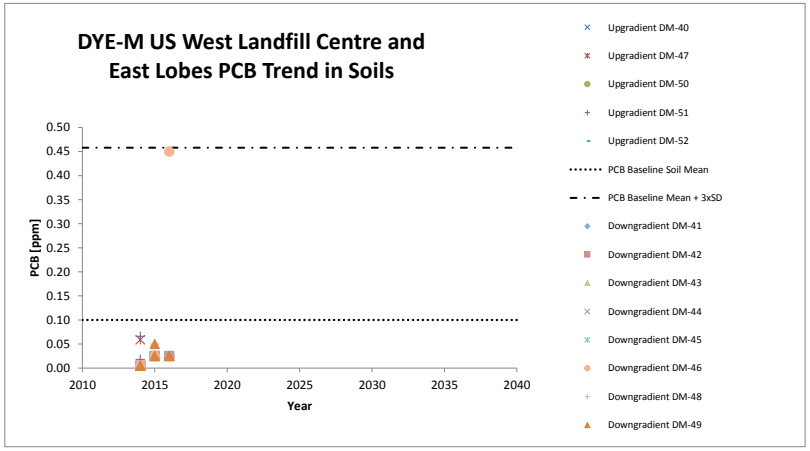
*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.

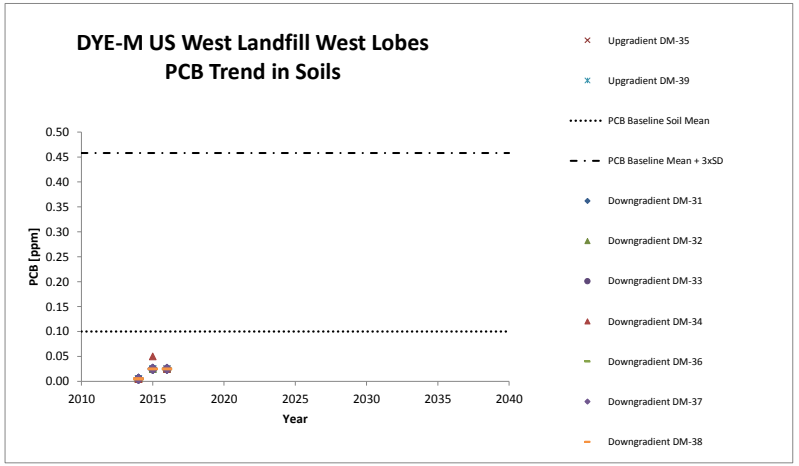


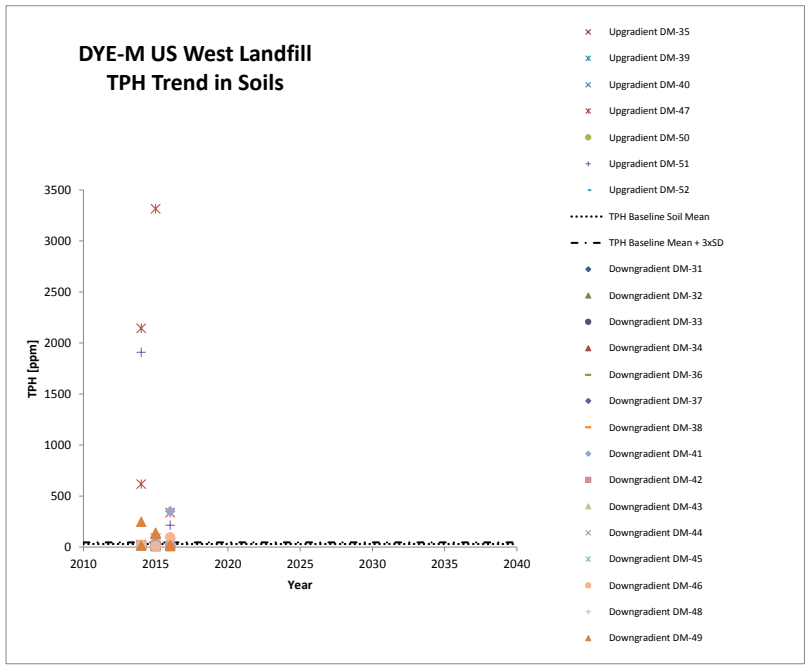




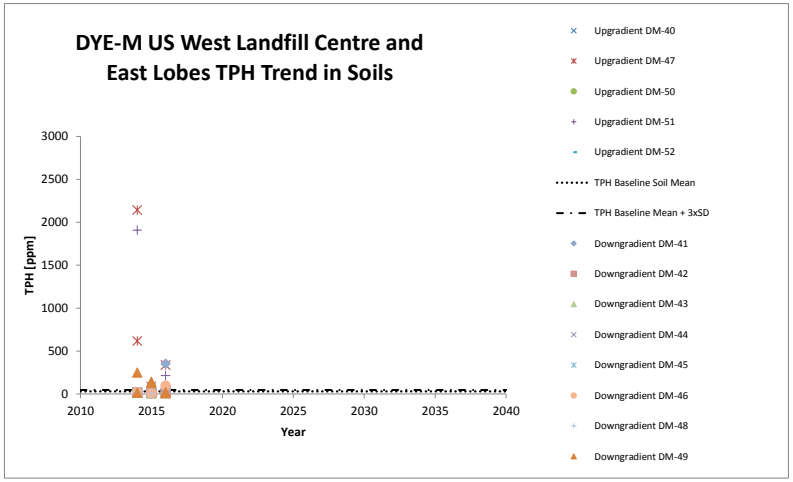
*PCB Baseline Arithmetic Mean is equal to the baseline detection limit.

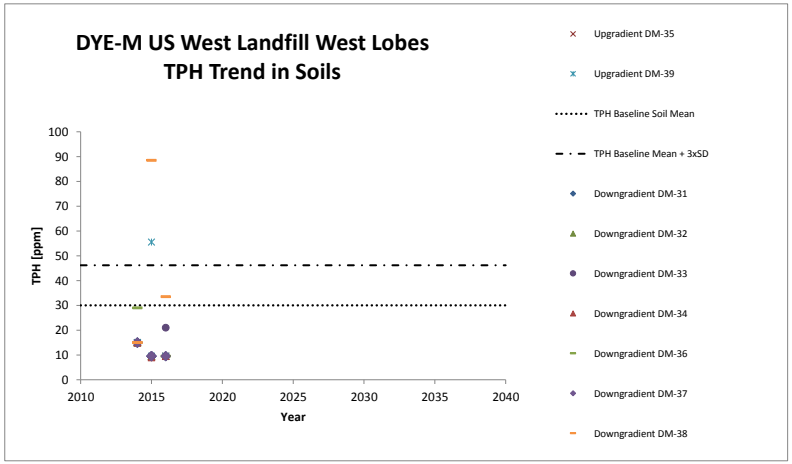






^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})





DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						60	141	20	1.0	10	70	90	1.0	0.5	0.002				N/A
Baseline Data - Arithmetic Mean						**37**	**75**	**17**	**1.0**	**10**	**75**	**72**	**1.0**	**0.1**	**0.05**	**30**	**10**	**10**	**324**
Baseline Data - Standard Deviation						17	25	6.3	0.15	24	33	36	0.6	0.0053	0.13	77	293	265	576
Baseline Data Mean + 3xStandard Deviation						88	150	35	1.4	82	175	179	2.8	0.12	0.44	261	888	806	2051
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
*DEW Line Cleanup **Site Specific** Tier II Criteria & Hydrocarbon Action Level*						*296*	*2100*	*153*	*5*	*500*	*500*	*250*	*30*	*2*	*5*				*2500*
Monitoring Data																			
Upgradient																			
	DM-50 surface																		
14-8338	DM-50	2014	Year 1	Phase I	5-10	**100**	**79**	14	<1.0	**24**	**82**	*260*	**3.3**	0.015	<0.010	<10	<10	<10	15
DM-50 (0-15)	DM-50	2015	Year 2	Phase I	0-15	**89.9**	51.5	11.5	<0.5	**12.2**	**82.3**	**154**	**2.6**	<0.1	<0.05	<7	<4	<8	9.5
DM-50a	DM-50	2016	Year 3	Phase I	0-15	**82.6**	68	14.4	<0.5	**16.9**	**80.9**	**186**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-50 depth																		
14-8340/41	DM-50	2014	Year 1	Phase I	35-40	**120**	74	15	<1.0	**10**	**99**	*260*	**4.3**	<0.010	<0.010	<10	<10	<10	15
DM-50 (30-40)	DM-50	2015	Year 2	Phase I	30-40	**118**	55.6	13.2	<0.5	**13.8**	**92.9**	**186**	**4.2**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-50	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

TPH Sum will appear when F1, F2 and F3 fractions are entered.

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-51 surface																		
14-8362	DM-51	2014	Year 1	Phase I	5-10	**46**	62	13	<1.0	**13**	**86**	**110**	**2.0**	<0.010	0.018	<10	<10	<10	15
DM-51 (0-15)	DM-51	2015	Year 2	Phase I	0-15	**48.3**	60.6	11.9	<0.5	**25.6**	**107**	**104**	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
DM-51a	DM-51	2016	Year 3	Phase I	0-15	**52.2**	56	12.3	<0.5	**23.4**	**84.8**	**112**	<1.0	<0.1	<0.05	<7	<4	**209**	214.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-51 depth																		
14-8363	DM-51	2014	Year 1	Phase I	30-35	**56**	54	11	<1.0	**23**	**100**	**130**	**1.7**	<0.010	**0.066**	19	**1500**	**390**	**1909**
Not sampled - refusal	DM-51	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-51	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-53 surface																		
14-8395	DM-53	2014	Year 1	Phase I	5-10	32	54	10	<1.0	**12**	70	**87**	**1.4**	<0.010	0.013	<10	<10	<10	15
DM-53 (0-15)	DM-53	2015	Year 2	Phase I	0-15	32	44.3	10	<0.5	**11**	68.2	**79.8**	**1**	<0.1	<0.05	<7	<4	<8	9.5
DM-53a (Dup Avg)	DM-53	2016	Year 3	Phase I	0-15	**39**	51	11	<0.5	**13**	**98**	**88**	**1**	<0.1	<0.05	<6	<7	<29	21
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-53 depth																		
14-8397	DM-53	2014	Year 1	Phase I	45-50	**50**	65	12	<1.0	**15**	**89**	**130**	**2.1**	<0.010	<0.010	<10	<10	<10	15
DM-53 (40-50)	DM-53	2015	Year 2	Phase I	40-50	**65.6**	63.8	14.2	<0.5	**17.8**	**113**	**155**	**1.7**	<0.1	<0.05	<7	**13**	**82**	98.5
Not sampled - refusal	DM-53	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-60 surface																		
14-8410/11	DM-60	2014	Year 1	Phase I	5-10	25.5	**85**	16	<1.0	<10	58.5	51.5	0.75	<0.010	<0.010	<10	<10	<10	15
DM-60 (0-15)	DM-60	2015	Year 2	Phase I	0-15	27.1	**87.5**	**18.3**	<0.5	9.1	61	51.5	**1.3**	<0.1	<0.05	<7	<4	<8	9.5
DM-60a	DM-60	2016	Year 3	Phase I	0-15	30.9	**113**	**20.7**	<0.5	8.8	56	60	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-60 depth																		
14-8412	DM-60	2014	Year 1	Phase I	40-45	18	**78**	14	<1.0	**10**	49	36	**1**	<0.010	<0.010	<10	<10	<10	15
DM-60 (40-50)	DM-60	2015	Year 2	Phase I	40-50	25.3	**101**	**16.9**	<0.5	7	48.5	52.5	**1.2**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-60	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			0
	DM-54 surface																		0
14-8393	DM-54	2014	Year 1	Phase I	5-10	35	**93**	15	<1.0	**22**	66	59	**1.6**	<0.010	<0.010	<10	<10	<10	15
DM-54 (0-15)	DM-54	2015	Year 2	Phase I	0-15	36.5	63.4	13.8	<0.5	**32.9**	65.2	54.4	**2.6**	<0.1	<0.05	<7	<4	<8	9.5
DM-54a	DM-54	2016	Year 3	Phase I	0-15	**47**	**75**	**18.5**	<0.5	**23.7**	**78.1**	**73.5**	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-54 depth																		0
14-8394	DM-54	2014	Year 1	Phase I	35-40	34	**82**	15	<1.0	**22**	66	56	**1.5**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-54	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-54	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-55 surface																		0
14-8384	DM-55	2014	Year 1	Phase I	5-10	**39**	**79**	16	<1.0	**28**	**81**	63	**2.4**	<0.010	<0.010	<10	<10	<10	15
DM-55 (0-15)	DM-55	2015	Year 2	Phase I	0-15	31.9	55.1	16.5	<0.5	**23.1**	67.4	54.8	**5.6**	<0.1	<0.05	<7	<4	<8	9.5
DM-55a	DM-55	2016	Year 3	Phase I	0-15	33.8	73.6	15.6	<0.5	**37.6**	65.7	56.9	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-55 depth																		0
14-8385	DM-55	2014	Year 1	Phase I	45-50	36	72	15	<1.0	**28**	**77**	56	**2.4**	<0.010	<0.010	<10	<10	<10	15
DM-55 (30-40)	DM-55	2015	Year 2	Phase I	30-40	32	58.3	**16.9**	<0.5	**23.3**	69.7	58.7	**5.2**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-55	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-56 surface																		0
14-8387	DM-56	2014	Year 1	Phase I	5-10	36	**97**	15	<1.0	**16**	61	68	**1.5**	<0.010	<0.010	<10	<10	<10	15
DM-56 (0-15)	DM-56	2015	Year 2	Phase I	0-15	**41.8**	**102**	**17.5**	<0.5	**14.2**	55.9	67.8	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
DM-56a	DM-56	2016	Year 3	Phase I	0-15	30.8	74.2	14.1	<0.5	**14.7**	50.7	56	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
																			#N/A
	DM-56 depth																		0
14-8388	DM-56	2014	Year 1	Phase I	45-50	32	**100**	15	<1.0	**13**	58	67	**1.1**	<0.010	<0.010	<10	<10	<10	15
Not sampled - refusal	DM-56	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-56	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-57 surface																		0
14-8390/91	DM-57	2014	Year 1	Phase I	5-10	36	**83.5**	12	<1.0	<10	64	62.5	**1.25**	<0.010	<0.010	<10	<10	<10	15
DM-57 (0-15)	DM-57	2015	Year 2	Phase I	0-15	32.9	**81.9**	14.7	<0.5	9.7	62	62.6	**1.4**	<0.1	<0.05	<7	<4	<8	9.5
DM-57a	DM-57	2016	Year 3	Phase I	0-15	**38**	**90**	**16.8**	<0.5	**11.9**	62.4	68.7	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-57 depth																		0
14-8392	DM-57	2014	Year 1	Phase I	40-45	27	**94**	13	<1.0	<10	56	54	**1**	<0.010	<0.010	<10	<10	<10	15
DM-57 (40-50)	DM-57	2015	Year 2	Phase I	40-50	34.6	**86.3**	15.4	<0.5	**10.2**	64.3	66.9	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-57	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-58 surface																		0
14-8398	DM-58	2014	Year 1	Phase I	5-10	**42**	**110**	**18**	<1.0	**14**	**85**	**75**	**1.5**	<0.010	<0.010	<10	<10	<10	15
DM-58 (0-15)	DM-58	2015	Year 2	Phase I	0-15	**37.7**	**108**	**18.6**	<0.5	**12.8**	**85.5**	63.1	**1.9**	<0.1	<0.05	<7	<4	<8	9.5
DM-58a	DM-58	2016	Year 3	Phase I	0-15	29.9	67.5	14.1	<0.5	**15.8**	**391**	46.9	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-58 depth																		0
14-8400/01	DM-58	2014	Year 1	Phase I	45-50	29.5	**94.5**	16	<1.0	**10**	60.5	56.5	**1**	<0.010	<0.010	<10	<10	<10	15
DM-58 (40-50) (Dup Av	DM-58	2015	Year 2	Phase I	40-50	**40**	**97**	**19**	<0.5	**14**	**111**	**75**	**2**	<0.1	<0.05	<6	<4	<8	9
Not sampled - refusal	DM-58	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-59 surface																		0
14-8402	DM-59	2014	Year 1	Phase I	5-10	**37**	**100**	15	<1.0	**11**	55	48	0.8	<0.010	<0.010	<10	**210**	**29**	244
DM-59 (0-15)	DM-59	2015	Year 2	Phase I	0-15	**71.5**	**119**	**25.4**	<0.5	3.8	33.4	33.1	<1	<0.1	<0.05	<7	<4	<8	9.5
DM-59a	DM-59	2016	Year 3	Phase I	0-15	**41.5**	**99.2**	**18.1**	<0.5	**10.5**	58.7	58.7	<1.0	<0.1	<0.05	<7	**903**	**30**	**936.5**
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-59 depth																		
14-8403	DM-59	2014	Year 1	Phase I	40-45	**44**	71	11	<1.0	<10	43	37	0.6	<0.010	<0.010	28	**720**	**29**	**777**
Not sampled - refusal	DM-59	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-59	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-61 surface																		
14-8407	DM-61	2014	Year 1	Phase I	5-10	**46**	**81**	15	<1.0	<10	63	53	0.9	<0.010	<0.010	<10	<10	<10	15
DM-61 (0-15)	DM-61	2015	Year 2	Phase I	0-15	30.7	54.8	14.2	<0.5	**12.9**	57.7	50.2	**1.7**	<0.1	<0.05	<7	<4	<8	9.5
DM-61a	DM-61	2016	Year 3	Phase I	0-15	**39.6**	**122**	**20**	<0.5	7	48	57.6	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-61 depth																		
14-8408	DM-61	2014	Year 1	Phase I	40-45	**44**	**97**	**18**	<1.0	<10	73	63	**1.2**	<0.010	<0.010	<10	<10	<10	15
DM-61 (20-30)	DM-61	2015	Year 2	Phase I	20-30	**54.4**	**91.5**	**21.5**	<0.5	**10.1**	54.2	44.2	**1.5**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-61	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Pallet Line Landfill - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-62 surface																		
14-8404	DM-62	2014	Year 1	Phase I	5-10	33	**150**	**19**	<1.0	<10	46	53	**1.1**	<0.010	<0.010	<10	<10	<10	15
DM-62 (0-15)	DM-62	2015	Year 2	Phase I	0-15	**49.7**	**99.2**	**18.2**	<0.5	**11.8**	60.6	53.7	**1.4**	<0.1	<0.05	<7	<4	<8	9.5
DM-62a	DM-62	2016	Year 3	Phase I	0-15	**42.7**	**101**	**18.7**	<0.5	**10.2**	54.4	50.3	<1.0	<0.1	<0.05	<7	<4	<8	9.5
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-62 depth																		0
14-8405	DM-62	2014	Year 1	Phase I	40-45	36	**110**	16	<1.0	<10	51	53	0.9	<0.010	<0.010	<10	<10	<10	15
DM-62 (20-30)	DM-62	2015	Year 2	Phase I	20-30	**57.1**	**98.6**	**18.6**	<0.5	**13**	65.9	57.8	**1**	<0.1	<0.05	<7	<4	<8	9.5
Not sampled - refusal	DM-62	2016	Year 3	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

Legend	
XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
Baseline Data																			
Upgradient:																			
00-22457		2000	0	32	41	10	<1.0	12	68	84	<1.0		<0.1						
01-4089	4089	2001	0	46	69	18	<1.0	34	130	110	<1.0		<0.1	<130					
00-23579		2000	0											<40					
00-23587		2000	0	22	47	13	<1.0	31	58	58	<1.0								
00-23595		2000	0										<0.1						
00-23588		2000	0										<0.1						
00-23284	23284	2000	0	51	51	11	<1.0	<10	27	28	1		<0.1	<40					
00-23285	23284	2000	30	89	57	15	<1.0	<10	37	42	<1.0		<0.1	<40					
08-11621/22	DM-50		0-10	35	48	12	<1.0	20	76	91	<1.0	<0.10	0.003	81			<10	6.6	69
08-11623	DM-50		30-40	76	96	18	<1.0	15	78	150	<1.0	<0.10	0.0047	99			<10	5.1	89
08-11625	DM-51		0-10	41	70	16	<1.0	18	87	120	<1.0	<0.10	0.029	94			<10	4.8	84
08-11627	DM-51		30-40	53	50	16	<1.0	21	110	140	<1.0	<0.10	0.03	1150			50	530	570
09-21629/30	DM-60		0-10	46	75	17	<1.0	12	65	49	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21631	DM-60		30-40	43	120	20	<1.0	<10	51	56	<1.0	<0.10	<0.0030	15			<10	5.1	<9.0
11-12930	DM-50		0-10	29	42	13	<1.0	11	56	68	<1.0	<0.10	0.05	36			<10	<4.0	29
11-12932	DM-50		30-40	58	78	17	<1.0	20	95	140	<1.0	<0.10	0.19	64			<10	4.6	54
11-12934	DM-51		0-10	41	74	18	<1.0	24	83	99	2.0	<0.10	<0.050	33			<10	5.5	22
11-12936	DM-51		30-40	42	65	16	<1.0	19	85	98	<1.0	<0.10	0.05	251			<10	220	26
12-29421	DM-50		0-10	89	110	18	<1.0	18	100	200	2.6	<0.10	<0.050	12			<10	<4.0	<9.0
12-29423	DM-50		20-30	84	55	12	<1.0	19	110	180	3.0	<0.10	<0.050	12			<10	<4.0	<9.0
12-29417/18	DM-51		0-10	34	54	11	<1.0	19	71	96	1.4	<0.10	<0.050	26			<10	<4.0	18.5
12-29419	DM-51		20-30	57	59	14	<1.0	31	130	170	1.4	<0.10	<0.050	1264			14	890	360
12-29425	DM-53		0-10	32	51	9.8	<1.0	21	77	86	1.3	<0.10	<0.050	16			<10	<4.0	9.4
12-29427	DM-53		20-30	35	72	12	<1.0	28	85	120	1.6	<0.10	<0.050	30			<10	<4.0	23
12-44778	DM-60		0-10	19	80	22	<1.0	12	60	48	1.5	<0.10	<0.050	25			<30	<10	<10
12-44780	DM-60		20-30	18	70	15	<1.0	<10	49	44	1.2	<0.10	<0.050	25			<30	<10	<10
13-25076	DM-53		0-10	46	63	12	<1.0	19	85	110	2.6	<0.10	<0.050	71			<10	9.8	56
13-25078	DM-53		25-35	25	43	7.7	<1.0	15	53	63	2.4	<0.10	<0.050	19			<10	<4.0	12
13-25104	DM-60		0-10	13	75	11	<1.0	<10	41	39	2	<0.10	<0.050	19			<10	9.7	<9.0
13-25106	DM-60		25-35	16	65	12	<1.0	11	49	41	2	<0.10	<0.050	14			<10	4.1	<9.0
Downgradient:																			
01-18778	18778	2001	0	49	53	13	<1.0	27	94	110	<1.0		<0.1						
01-18646	18649	2001	50	120	110	38	<1.0	30	150	200	<1.0		<0.1						
01-18649	18649	2001	0	46	60	18	<1.0	22	93	110	<1.0		<0.1						
01-18782	18782	2001	0	51	50	13	<1.0	29	130	110	<1.0		0.5						
01-18783	18782	2001	40																
00-24867		2000	0										<0.5						
00-24868		2000	0											<40					
01-18648	18648	2001	0	43	58	16	<1.0	17	91	110	<1.0		<0.1	<40					
01-18785	18785	2001	0	80	64	16	<1.0	14	130	160	2.0		<0.1						
01-18636	18636	2001	0	42	44	13	<1.0	23	100	110	<1.0		<0.1						
01-18637	18636	2001	40											<40					
01-18788	18788	2001	0	69	39	13	<1.0	16	110	140	<1.0		<0.1						
01-18623	18623	2001	0	88	55	20	<1.0	22	150	190	<1.0		<0.1						
00-22453		2000	0	61	54	16	<1.0	<10	110	130	<1.0		<0.1						
01-18626	18626	2001	0	35	37	12	<1.0	14	76	98	<1.0		<0.1						
01-23497		2000	0	32	35	11	<1.0	15	65	81	<1.0		<0.1						
01-18659	18659	2001	0										0.52						
00-23526		2000	0	34	39	13	<1.0	11	70	94	<1.0		<0.1						
01-18629	18629	2001	0	48	50	15	<1.0	17	120	120	<1.0		<0.1						
01-18663	18663	2001	0	47	87	21	<1.0	26	100	100	<1.0		<0.1						
01-18664	18663	2001	50	41	85	19	<1.0	25	77	82	<1.0		<0.1	770					
00-23527		2000	0	49	38	13	<1.0	<10	97	110	<1.0		<0.1						
00-23528		2000	0	44	62	19	<1.0	22	110	110	<1.0		<0.1						

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-23525		2000	0	41	39	14	<1.0	110	94	110	<1.0		<0.1						
01-18656	18656	2001	0										0.34						
01-18657	18656	2001	50	44	18	6.6	<1.0	16	66	82	<1.0		<0.1						
01-18666	18666	2001	0	63	64	17	<1.0	16	110	100	<1.0		<0.1						
01-18667	18666	2001	50											66					
01-18653	18653	2001	0	41	42	14	<1.0	15	78	99	<1.0		<0.1						
01-18654	18653	2001	50											<40					
00-23524		2000	0	37	50	13	<1.0	28	75	93	<1.0		<0.1						
00-23529		2000	0	54	37	17	1.2	14	110	120	<1.0		<0.1						
00-23530/31		2000	0	60	35	19	1.5	<10	140	160	<1.0		<0.1						
00-23532		2000	0										<0.1	660					
00-23534		2000	0	49	61	22	1.6	14	130	140	<1.0		<0.1						
00-23535		2000	0	82	42	16	1.5	10	160	160	<1.0		<0.1						
01-18669	18669	2001	0	48	56	18	<1.0	130	120	120	<1.0		0.1						
01-18718	18669	2001	50											410					
00-23533		2000	0										<0.1						
01-18720/21	18720	2001	0	53	110	24	<1.0	16	86	90	<1.0		0.2						
00-23516		2000	0	35	71	19	<1.0	20	51	56	<1.0		<0.1						
01-18864	18864	2001	0	39	97	24	<1.0	45	78	89	<1.0		<0.1						
01-18865	18864	2001	50											2400					
01-18752	18752	2001	0	32	60	17	<1.0	67	84	81	<1.0		<0.1						
01-18753	18752	2001	50											140					
00-23512		2000	0	37	110	19	<1.0	17	37	88	<1.0		<0.1						
01-18867	18867	2001	0	39	71	23	<1.0	10	69	69	<1.0		<0.1						
00-23509		2000	0	21	55	11	<1.0	<10	29	33	<1.0		<0.1						
01-18829	18829	2001	0	22	51	14	<1.0	22	67	42	1.5		<0.1						
01-18826	18826	2001	0	29	50	21	<1.0	17	78	57	<1.0		<0.1						
01-18820/21	18820	2001	0	28	48	16	<1.0	12	57	56	<1.0		<0.1						
00-23508		2000	0	12	50	13	<1.0	13	41	30	<1.0		<0.1						
00-23507		2000	0	23	72	13	<1.0	<10	43	45	<1.0		<0.1						
01-18755	18755	2001	0	31	100	19	<1.0	25	63	67	<1.0		<0.1						
01-18756	18755	2001	50											<40					
01-18758	18758	2001	0	31	77	19	<1.0	13	65	58	<1.0		<0.1						
01-18762	18762	2001	0	28	68	33	<1.0	11	87	71	<1.0		<0.1						
01-18763	18762	2001	40											<40					
01-18765	18765	2001	0	30	52	22	<1.0	18	87	47	<1.0		<0.1						
01-18727	18727	2001	0	29	77	19	<1.0	22	81	73	<1.0		<0.1						
01-18728	18727	2001	50	25	76	19	<1.0	21	77	70	<1.0		<0.1						
01-18862	18765	2001	50											<40					
01-18724	18724	2001	0	40	120	23	<1.0	24	80	68	<1.0		<0.1						
01-18725	18724	2001	50											<40					
01-18734	18734	2001	0	22	87	14	<1.0	34	46	44	<1.0		<0.1						
01-18738	18738	2001	0	31	110	20	<1.0	26	71	64	<1.0		<0.1						
01-18742	18742	2001	0	28	96	18	<1.0	15	58	68	1.6		<0.1						
01-18730	18730	2001	0	31	72	22	<1.0	27	84	63	<1.0		<0.1						
01-18731	18730	2001	0										<0.1						
01-18745	18745	2001	0										<0.1						
01-18746	18745	2001	50	26	73	20	<1.0	17	71	59	<1.0		<0.1						
01-18772	18772	2001	0	32	66	15	<1.0	<10	58	44	<1.0		<0.1						
01-18774	18774	2001	0	38	52	15	<1.0	<10	68	37	<1.0		<0.1						
01-5453	5453	2001	0	34	96	17	<1.0	14	97	64	<1.0		<0.1						
00-23488		2000	0											<40					
01-5449	5449	2001	0	24	59	11	<1.0	26	61	44	<1.0		<0.1						
01-5446	5446	2001	0	23	87	14	<1.0	46	53	40	<1.0								
00-24894		2000	0	20	38	11	<1.0	<10	48	29	<1.0		<0.1	1200					
00-23490/91		2000	0	47	45	16	<1.0	<10	56	36	<1.0		<0.1						
00-23489		2000	0	35	110	23	<1.0	<10	55	58	<1.0		<0.1						
00-23275	23275	2000	0										<0.1	<40					
00-23276	23275	2000	30										<0.1	<40					
00-23277	23275	2000	55										<0.1	<40					

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
01-18556	18556	2001	0	23	86	14	<1.0	<10	41	36	<1.0		<0.1						
01-18557	18556	2001	40	23	66	12	<1.0	<10	43	34	<1.0		<0.1						
97-5686		1997	0	26	45	13	<1.0	40	62	31	0.3		<0.5	<40					
01-5443	5443	2001	0	61	87	15	<1.0	12	50	80	<1.0			2000					
01-5444	5443	2001	40											1300					
01-5439	5439	2001	0	27	64	15	<1.0	32	71	51	<1.0		<0.1						
00-23520/21		2000	0	60	59	18	<1.0	31	66	52	<1.0		<0.1						
01-18615	18615	2001	0	29	62	14	<1.0	<10	50	41	<1.0		<0.1						
01-18580/81	18580	2001	0	40	55	17	<1.0	<10	61	37	1.1								
01-18584	18584	2001	0	42	92	19	<1.0	<10	61	53	<1.0		<0.1						
01-18574	18574	2001	0	33	77	16	<1.0	<10	62	53	<1.0		<0.1						
01-18575	18574	2001	40											<40					
01-18577	18577	2001	0	27	120	17	<1.0	<10	48	52	<1.0		<0.1						
01-18578	18577	2001	30											770					
01-18579	18577	2001	50	26	95	16	<1.0	5	54	43	<1.0		<0.1						
01-18609	18609	2001	0	33	91	19	<1.0	5	61	44	<1.0		<0.1						
01-18610/11	18609	2001	30	31	86	19	<1.0	5	61	44	<1.0		<0.1						
01-3623	3623	2001	0	24	60	13	<1.0	10	51	40	<1.0		<0.1						
01-3624	3623	2001	40	22	69	13	<1.0	12	58	37	<1.0		<0.1						
01-3626	3625	2001	25	25	72	14	<1.0	11	58	43	<1.0		<0.1						
01-3614	3614	2001	0	34	88	16	<1.0	5	57	49	<1.0		<0.1						
01-3615	3614	2001	30	31	100	18	<1.0	5	51	47	1.1		<0.1						
01-3628	3628	2001	0	42	80	18	<1.0	5	64	50	<1.0		<0.1						
00-23480/81		2000	0	26	93	18	<1.0	5	47	45	<1.0		<0.1						
01-18606	18606	2001	0	18	42	12	<1.0	5	49	23	<1.0		<0.1						
01-18607	18606	2001	30											65					
01-18617	18617	2001	0	23	83	19	<1.0	11	70	63	<1.0		<0.1						
01-18618	18617	2001	30	19	65	15	<1.0	11	60	48	<1.0		<0.1						
01-18597	18597	2001	0	42	75	18	<1.0	58	68	89	<1.0		<0.1						
97-7847		1997	0										<0.5	1500					
97-7848		1997	0										<0.5	1100					
97-7850/51		1997	0											415					
97-7840/41		1997	0	33	110	18	<1.0	25	68	70	0.25		<0.5	1900					
97-7842		1997	0										<0.5						
97-7843		1997	0	46				110	88				<0.5	120					
97-7845		1997	0											<40					
97-7906		1997	0	32	62	13	<1.0	27	70	58	0.36		< 0.5	<40					
97-7907		1997	0											<40					
97-7908		1997	0	41	63	13	<1.0	35	92	72	0.28		<0.5						
97-7909		1997	0	22				11	73				<0.5						
97-7913		1997	0	44				43	100					<40					
97-7900/01		1997	0	69				24	160				<1	200					
97-5635	7848	1997	25										< 0.5						
97-5636	7848	1997	35										< 0.5	330					
01-18573	18573	2001	0	36	69	16	<1.0	68	110	64	<1.0		<0.1						
01-18598	18573	2001	40											2200					
00-23522		2000	0										0.53	130					
00-23517		2000	0	23	44	11	1	71	260	37	<1.0		<0.1	1600					
01-18590/91	18590	2001	0	18	62	13	<1.0	12	67	50	<1.0		0.1						
01-18592	18590	2001	40											<40					
01-18595	18594	2001	40	100	78	18	<1.0	170	270	63	3		<0.1	1300					
01-18587	18587	2001	0	26	100	15	<1.0	5	57	60	<1.0		<0.1						
01-18600/01	18600	2001	0	28	77	13	<1.0	26	67	55	<1.0		0.27						
01-18602	18600	2001	40											550					
97-7854		1997	0										<0.5	81					
97-7856		1997	0	32	56	14	<1.0	32	130	98	<0.2		<0.5	44					
00-23612		2000	0											<40					
00-23330/31		2000	0	31	83	15	<1.0	42	77	51	<1.0								
01-18749	18748	2001	50										<0.5						
00-23326		2000	0					180	160				0.2						

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-23320/21		2000	0	59	67	18	<1.0	42	110	110	<1.0		<0.5						
00-23312		2000	0	33	60	15	<1.0	140	120	53	<1.0								
00-23329		2000	0	46	55	15	<1.0	45	150	52	<1.0								
00-23315		2000	0											1400					
00-23307		2000	0										<0.1						
00-23302		2000	0					110					0.1						
97-6177	7878	1997	40	28	100	15	<1.0	20	75	61	0.39			1200					
97-6178	7878	1997	50											630					
00-23001		2000	0										0.3						
00-23026		2000	0										<0.1						
97-7868		1997	0	37				110	89				<0.5	850					
97-5996	7898	1997	30										<0.5						
97-7898		1997	0	56	180	24	<1.0	45	84	98	0.4		0.5						
97-7894		1997	0	45				58	97				<0.5						
97-7902		1997	0					<100					<0.5						
00-23590/91		2000	0											93					
01-20718		2001	0										<0.5						
01-20720/21		2001	0										<0.5						
00-23090/91		2000	0											950					
00-23088		2000	0											340					
00-23089		2000	0											390					
00-23054		2000	0										0.32						
00-23057		2000	0	61	77	21	<1.0	19	110	130	<1.0		0.2						
00-23082		2000	0											140					
00-23086		2000	0											270					
00-23087		2000	0											400					
97-5983	7918	1997	30										0.94	1500					
97-5984	7918	1997	40										<0.5	1200					
00-23039		2000	0										0.69						
00-23037		2000	0										0.3						
00-23038		2000	0										0.4						
00-23030/31		2000	0										0.4						
00-23028		2000	0										0.5						
97-7866		1997	0										0.5	1200	1200				
97-7936		1997	0	53				<10	72				<0.5	<40	<40				
00-23605		2000	0						110				<0.1						
01-18768	18768	2001	0	26	68	16	<1.0	19	69	50	<1.0		<0.1						
97-7838		1997	0	24				19	92					77	77				
97-6191	7830	1997	20	23				18	74					<40	<40				
97-6192	7830	1997	30					19											
97-7830/31		1997	0						140				<0.5	<40	<40				
97-7825		1997	0																
97-7826		1997	0						130					<40	<40				
97-7827		1997	0						270					<40	<40				
97-7828		1997	0	27				22	67										
97-7829		1997	0										<0.5	300	300				
97-6185	7903	1997	30	5.6				<10	66										
97-6186	7903	1997	50	7				18	110					1500	1500				
97-6187	7829	1997	20					<10						<40	<40				
08-11847	DM-55		0-10	30	91	20	<1.0	22	73	65	1.7	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11849/29274	DM-55		30-40	24	74	18	<1.0	19	64	57	1.7	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11839	DM-56		0-10	28	99	18	<1.0	<10	53	66	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11841	DM-56		30-40	24	61	13	<1.0	10	46	49	1	<0.10	<0.0030	16			<10	<4.0	9
08-11843	DM-57		0-10	30	100	22	<1.0	13	65	66	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
08-11845	DM-57		30-40	23	110	20	<1.0	<10	47	49	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21621	DM-58		0-10	27	110	17	<1.0	<10	78	63	<1.0	<0.10	<0.0030	12			<10	<4.0	<9.0
09-21623/24	DM-58		30-40	23	78	15	<1.0	<10	51	51	<1.0	<0.10	<0.0030	26			<10	<4.0	19
09-21625	DM-59		0-10	36	78	16	<1.0	19	58	50	<1.0	<0.10	<0.0030	60			<10	9.1	46
09-21627	DM-59		30-40	39	89	16	<1.0	12	45	48	<1.0	<0.10	<0.0030	931			21	780	130
09-21633	DM-61		0-10	30	63	14	<1.0	<10	43	37	<1.0	<0.10	<0.0030	415			<10	160	250

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
09-21635	DM-61		30-40	32	61	14	<1.0	<10	42	39	<1.0	<0.10	<0.0030	24			<10	5.1	14
09-21637	DM-62		0-10	21	81	16	<1.0	<10	51	55	<1.0	<0.10	<0.0030	24			<10	14	<9.0
09-21639	DM-62		30-40	25	89	16	<1.0	<10	52	60	2.6	<0.10	<0.0030	17			<10	7	<9.0
11-13074*	DM-55		0-10	23	79	18	<1.0	17	56	58	<1.0	<0.10	<0.050	20			<10	<30	15
11-13076*	DM-55		30-40	21	71	18	<1.0	23	62	59	1.1	<0.10	<0.050	15			<10	<30	9.7
11-13078/79*	DM-56		0-10	24	77	16	<1.0	<10	48	60	<1.0	<0.10	<0.050	10			<10	<30	<9.0
11-13080*	DM-56		30-40	22	95	16	<1.0	<10	45	56	<1.0	<0.10	<0.050	10			<10	<30	<9.0
11-13082*	DM-57		0-10	31	120	22	<1.0	11	57	67	<1.0	<0.10	<0.050	10			<10	<30	<9.0
11-13084*	DM-57		30-40	25	110	20	<1.0	<10	53	61	<1.0	<0.10	<0.050	10			<10	<30	<9.0
12-29429	DM-54		0-10	30	91	16	<1.0	79	79	67	2	<0.10	<0.050	17			<10	<4.0	10
12-29431/32	DM-54		20-30	24	79	14	<1.0	49	60	52	1.6	<0.10	<0.050	25			<10	15.5	<9.0
12-44790	DM-58		0-10	27	130	17	<1.0	14	74	60	<1.0	<0.10	<0.050	12			<10	<4.0	<9.0
12-44792/93	DM-58		20-30	50	110	79	<1.0	18	57	60	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
12-44794	DM-59		0-10	29	130	19	<1.0	18	49	47	1.1	<0.10	<0.050	42			<10	<4.0	35
12-44796	DM-59		20-30	32	120	19	<1.0	11	52	55	1.4	<0.10	<0.050	20			<10	<4.0	13
12-44782/83	DM-61		0-10	25	70	16	<1.0	<10	41	33	<1.0	<0.10	<0.050	25			<30	<10	<10
12-44784	DM-61		20-30	40	70	19	<1.0	<10	65	50	1.2	<0.10	<0.050	25			<30	<10	<10
12-44786/87	DM-62		0-10	67	120	26	<1.0	15	80	76	2.1	0.0061	<0.050	25			<30	<10	<10
12-44788	DM-62		20-30	50	140	25	<1.0	12	66	65	1.4	<0.10	<0.050	25			<30	<10	<10
13-25080/81	DM-54		0-10	29	65	11	<1.0	27	53	47	2.4	<0.10	<0.050	17			<10	7.5	<9.0
13-25082	DM-54		25-35	23	64	9.8	<1.0	21	47	40	2.1	<0.10	<0.050	2111			<10	6.2	2100
13-25084	DM-55		0-10	28	83	12	<1.0	20	54	56	2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25086	DM-55		25-35	27	77	13	<1.0	21	58	56	2.1	<0.10	<0.050	14			<10	4.6	<9.0
13-25088	DM-56		0-10	24	81	10	<1.0	<10	44	52	1.6	<0.10	<0.050	16			<10	6.4	<9.0
13-25090/91	DM-56		25-35	19	57	7.8	<1.0	<10	34	39	1	<0.10	<0.050	12			<10	<4.0	<9.0
13-25092	DM-57		0-10	37	120	18	<1.0	11	62	68	1.7	<0.10	<0.050	12			<10	<4.0	<9.0
13-25094	DM-57		25-35	29	130	17	<1.0	<10	49	63	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25096	DM-58		0-10	24	92	11	<1.0	<10	81	46	1.3	<0.10	<0.050	12			<10	<4.0	<9.0
13-25098	DM-58		25-35	18	71	11	<1.0	<10	52	45	0.7	<0.10	<0.050	21			<10	4.2	12
13-25100/01	DM-59		0-10	31	63	13	<1.0	16	64	44	1.3	<0.10	<0.050	1044			34	840	170
13-25102	DM-59		25-35	22	63	14	<1.0	15	76	45	1.3	<0.10	<0.050	2484			640	1800	44
13-25108	DM-61		0-10	21	67	10	<1.0	<10	42	36	0.7	<0.10	<0.050	12			<10	<4.0	<9.0
13-25110/11	DM-61		25-35	33	69	15	<1.0	<10	61	51	1.2	<0.10	<0.050	12			<10	<4.0	<9.0
13-25112	DM-62		0-10	45	130	18	<1.0	<10	58	68	2	<0.10	<0.050	22			<10	12	<9.0
13-25114	DM-62		25-35	33	120	17	<1.0	<10	53	55	1.1	<0.10	<0.050	18			<10	8.2	<9.0
	N value			188	176	176	176	193	193	176	176	68	215	140			68	68	68
	Baseline Detection Limits			3	5	5	1	10	15	20	1	0.1	0.05	40			30	10	10
	Arithmetic Mean			37	75	17	0.52	21	75	72	0.8	0.049	0.077	324			17	88	66
	Arithmetic Mean Corrected for Detection Limits			37	75	17	1.0	10	75	72	1.0	0.10	0.05	324			30	10	10
	Standard Deviation			17	25	6	0.15	24	33	36	0.6	0.005	0.128	576			77	293	265
	Minimum			6	18	7	0.5	5	27	23	0.1	0.006	0.002	10			5	2	5
	Maximum			120	180	79	1.6	170	270	200	3	0.05	0.94	2484			640	1800	2100
	95% Confidence Limit			2	4	1			4.7	5	0.09	0.001	0.017	95			18	70	63

*F2 fraction TPH results for some Baseline samples from 2011 were reported with elevated detection limits due to interferences. These samples have been removed from the baseline average calculation.

Background Data																			
89-G300	Along the beach, 1 km NW of ravine	1989										<0.5	0.004						
90-G315	2 km downstream BF304	1990										<0.5	0.024						
90-G320	100 m E of S end runway	1990										<0.5	<0.0002						
90-G321	0.5 mi E of S end runway	1990										<0.5	<0.0001						
90-G324	2.8 km from crossroads	1990										<0.5	<0.0002						
90-G325	5 km from crossroads	1990										<0.5	<0.0002						
00-25501	Pallet Line Area - background	2000	0-10	40	41	9.8	<1.0	16	41	73	<1.0								
00-25505	East of West Landfill - background - BU 1	2000	0-10	102	268	34	<1.0	<10	70	223	<1.0								
00-25506	East of West Landfill - background - BU 1	2000	0-10	72	293	29	<1.0	<10	84	214	<1.0								
00-25507	East of West Landfill - background - BU 1	2000	0-10	60	183	24	<1.0	<10	69	132	<1.0								
00-25508	East of West Landfill - background - BU 1	2000	0-10	54	138	25	<1.0	<10	99	118	<1.0								
00-25509	East of West Landfill - background - BU 1	2000	0-10	73	85	24	<1.0	<10	114	128	<1.0								
00-25512	South of Tacan - background - BU 2b	2000	0-10	110	99	22	<1.0	<10	37	27	<1.0								
00-25513	South of Tacan - background - BU 2b	2000	0-10	83	127	26	<1.0	<10	45	33	<1.0								

DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

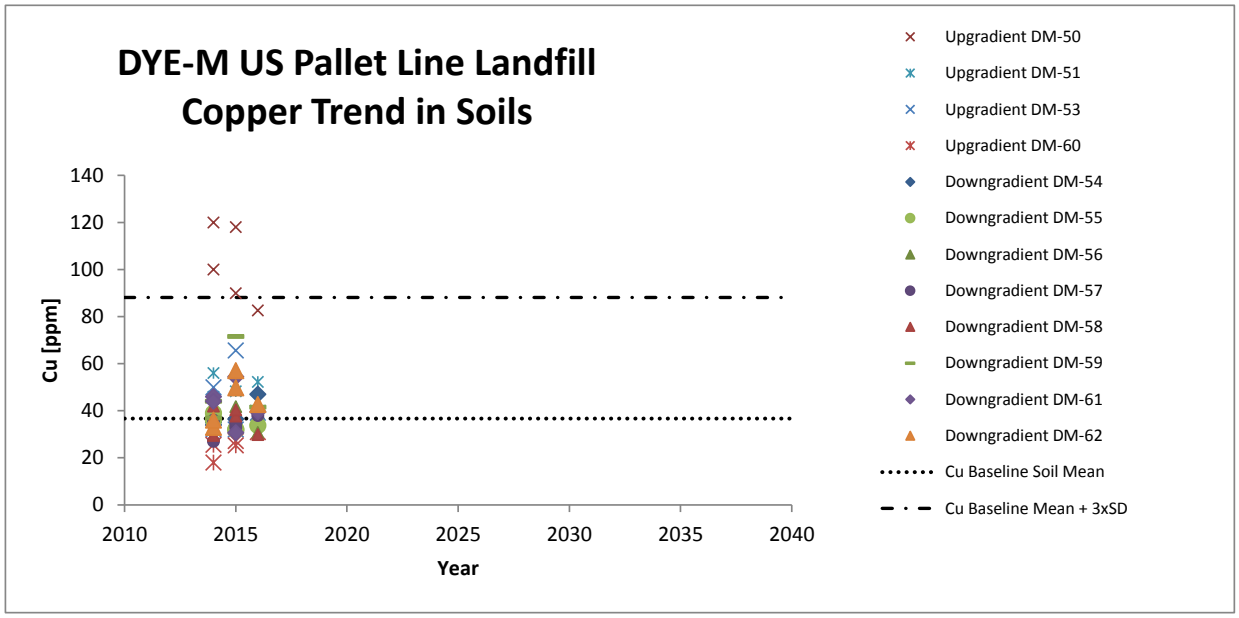
Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
00-25514	South of Tacan - background - BU 2b	2000	0-10	158	96	25	<1.0	<10	43	24	<1.0								
00-25515	South of Tacan - background - BU 2b	2000	0-10	103	68	22	<1.0	<10	45	<20	<1.0								
00-25516	South of Tacan - background - BU 2b	2000	0-10	191	97	23	<1.0	<10	39	24	<1.0								
03-26130	Upper Site - BU-2	2003	0-10	65	940	69	<1.0	<10	61	118	<1.0								
03-26140	Upper Site - BU 4	2003	0-10	16	53	8.5	<1.0	<10	32	24	<1.0								
03-26150	Upper Site - BU 3	2003	0-10	44	61	13	<1.0	<10	89	115	<1.0								
03-26152	Upper Site - BU 3	2003	0-10	59	60	18	<1.0	10	84	159	<1.0								
03-26153	Upper Site - BU 3	2003	0-10	37	67	13	<1.0	11	75	86	<1.0								
03-26160	Upper Site - BU 1	2003	0-10	37	69	18	<1.0	11	93	86	1.4								
03-26162	Upper Site - BU 1	2003	0-10	70	99	17	<1.0	<10	80	108	1								
03-26163	Upper Site - BU 3	2003	0-10	57	112	17	<1.0	<10	89	106	2.1								
03-26165	Upper Site - BU 3	2003	0-10	65	79	17	<1.0	<10	102	122	<1.0								
03-26166	Upper Site - BU 3	2003	0-10	57	85	20	<1.0	22	99	120	1.6								
03-26167	Upper Site - BU 1	2003	0-10	115	93	19	<1.0	<10	40	121	<1.0								
03-26168	Upper Site - BU 3	2003	0-10	57	41	15	<1.0	<10	76	138	<1.0								
03-26169	Upper Site - BU 3	2003	0-10	38	58	16	<1.0	11	98	109	<1.0								
03-26170	Upper Site - BU 3	2003	0-10	59	28	10	<1.0	<10	100	98	1.8								
03-26172	Upper Site - BU 3	2003	0-10	59	34	7.1	<1.0	<10	89	94	<1.0								
03-26173	Upper Site - BU 3	2003	0-10	21	34	7.2	<1.0	<10	36	46	1.1								
03-26174	Upper Site - BU 3	2003	0-10	71	29	8.0	<1.0	11	106	120	1.4								
03-26175	Upper Site - BU 3	2003	0-10	76	27	8.7	<1.0	<10	117	119	<1.0								
03-26180	Upper Site - BU 4	2003	0-10	12	16	<5.0	<1.0	<10	28	<20	1.1								
03-26182	Upper Site - BU 4	2003	0-10	32	74	15	<1.0	<10	43	39	<1.0								
03-26183	Upper Site - BU 4	2003	0-10	37	47	10	<1.0	20	69	66	1.2								
03-26184	Upper Site - BU 4	2003	0-10	18	51	8.0	<1.0	12	39	33	1.4								
03-26185	Upper Site - BU 4	2003	0-10	17	17	5.3	<1.0	<10	44	<20	<1.0								
03-26186	Upper Site - BU 4	2003	0-10	19	43	8.7	<1.0	<10	46	57	<1.0								
03-26187	Upper Site - BU 4	2003	0-10	40	44	15	<1.0	<10	57	42	1.4								
03-26188	Upper Site - BU 4	2003	0-10	129	46	21	<1.0	<10	44	31	<1.0								
03-26189	Upper Site - BU 4	2003	0-10	107	39	14	<1.0	<10	38	38	<1.0								
03-26190	Upper Site - BU 4	2003	0-10	33	57	12	<1.0	10	64	73	1.5								
03-26192	Upper Site - BU 3	2003	0-10	66	31	8.6	<1.0	<10	125	142	2.1								
03-26193	Upper Site - BU 1	2003	0-10	87	86	19	<1.0	26	186	382	<1.0								
03-26194	Upper Site - BU 1	2003	0-10	131	33	10	<1.0	10	137	177	<1.0								
03-26195	Upper Site - BU 3	2003	0-10	11	16	<5.0	<1.0	<10	23	25	<1.0								
03-26196	Upper Site - BU 3	2003	0-10	49	40	10	<1.0	<10	84	107	<1.0								
03-26197	Upper Site - BU 4	2003	0-10	26	41	11	<1.0	10	61	66	1.1								
03-26198	Upper Site - BU 3	2003	0-10	88	26	14	<1.0	13	138	184	<1.0								
03-26199	Upper Site - BU 3	2003	0-10	58	50	15	<1.0	<10	116	144	<1.0								
03-26200	Upper Site - BU 1	2003	0-10	72	118	32	<1.0	13	150	146	<1.0								
03-26202	Upper Site - BU 4	2003	0-10	28	88	18	<1.0	15	60	46	<1.0								
03-26203	Upper Site - BU 4	2003	0-10	26	108	14	<1.0	<10	43	46	<1.0								
03-26204	Upper Site - BU 4	2003	0-10	29	93	17	<1.0	20	81	46	1.6								
03-26205	Upper Site - BU 3	2003	0-10	108	91	22	<1.0	10	127	147	<1.0								
03-26206	Upper Site - BU 3	2003	0-10	81	85	15	<1.0	<10	108	178	<1.0								
03-26212	Upper Site - BU 4	2003	0-10	22	13	<5.0	<1.0	<10	47	<20	<1.0								
03-26213	Upper Site - BU 4	2003	0-10	15	40	7.8	<1.0	<10	32	24	<1.0								
03-26214	Upper Site - BU 4	2003	0-10	23	250	26	<1.0	12	70	580	<1.0								
03-26215	Upper Site - BU 4	2003	0-10	40	68	20	<1.0	11	77	119	<1.0								
03-26216	Upper Site - BU 3	2003	0-10	62	73	22	<1.0	23	111	115	1.3								
03-26217	Upper Site - BU 4	2003	0-10	21	36	8.3	<1.0	<10	42	35	1.3								
03-26218	Upper Site - BU 3	2003	0-10	124	53	14	<1.0	13	140	167	<1.0								
03-26219	Upper Site - BU 3	2003	0-10	53	48	12	<1.0	<10	90	105	<1.0								
03-26220	Upper Site - BU 3	2003	0-10	44	34	8	<1.0	<10	74	82	<1.0								
03-26222	Upper Site - BU 3	2003	0-10	63	59	14	<1.0	24	84	107	5.9								
03-26223	Upper Site - BU 4	2003	0-10	29	29	24	<1.0	<10	67	41	1.9								
03-26224	Upper Site - BU 4	2003	0-10	21	50	9.0	<1.0	<10	42	39	1.3								
03-26225	Upper Site - BU 4	2003	0-10	17	27	7.7	<1.0	<10	40	23	1.2								
03-26226	Upper Site - BU 4	2003	0-10	23	24	9.3	<1.0	<10	54	27	<1.0								
03-26227	Upper Site - BU 1	2003	0-10	66	56	14	<1.0	<10	64	52	<1.0								
03-26228	Upper Site - BU 3	2003	0-10	42	48	13	<1.0	13	96	106	<1.0								

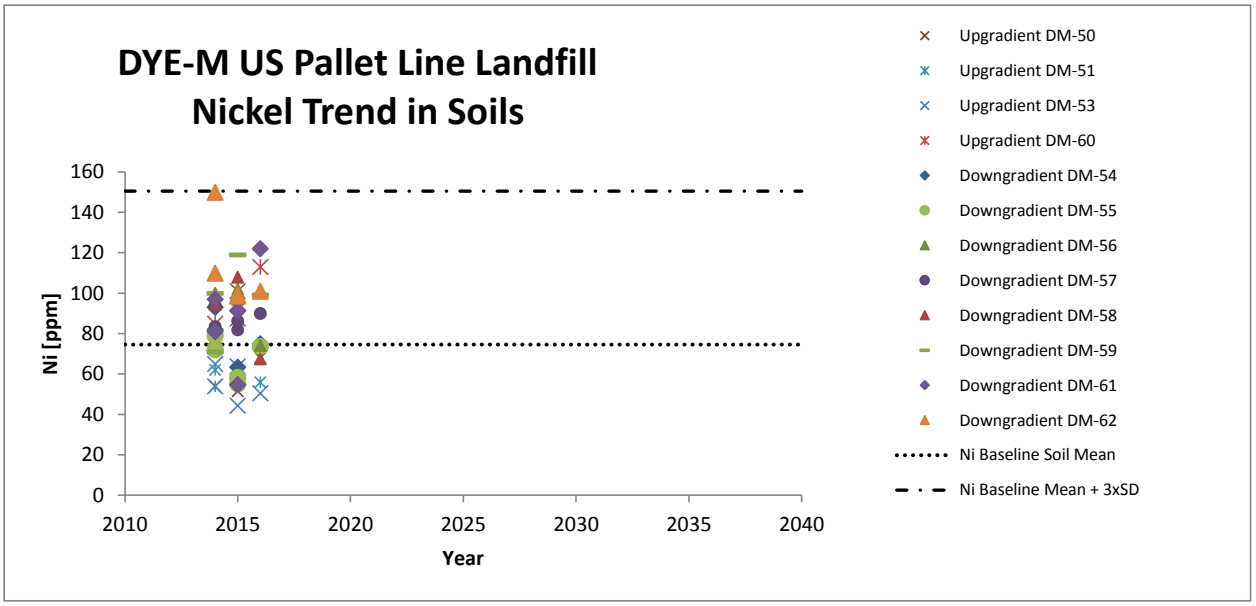
DYE-M US Pallet Line Landfill - Summary of Baseline and Background Soil Analytical Data

Sample #	Location	Date	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	Cr (mg/kg)	As (mg/kg)	Hg (mg/kg)	Total PCB (mg/kg)	Modified TPH - Total C6-C34 (mg/kg)	TPH Identity		F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)
															% Fuel Oil	% Lube Oil			
03-26229	Upper Site - BU 4	2003	0-10	22	23	7.3	<1.0	<10	30	21	<1.0								
03-26230	Upper Site - BU 3	2003	0-10	61	71	15	<1.0	12	88	95	1.4								
03-26232	Upper Site - BU 4	2003	0-10	32	31	11	<1.0	<10	61	26	1								
03-26233	Upper Site - BU 4	2003	0-10	42	40	11	<1.0	<10	50	35	<1.0								
03-26234	Upper Site - BU 4	2003	0-10	29	51	10	<1.0	14	49	43	<1.0								
03-26235	Upper Site - BU 1	2003	0-10	144	77	20	<1.0	<10	48	56	<1.0								
03-26236	Upper Site - BU 1	2003	0-10	56	325	32	<1.0	<10	32	185	<1.0								
03-26237	Upper Site - BU 4	2003	0-10	29	49	8	<1.0	<10	52	53	<1.0								
03-26238	Upper Site - BU 4	2003	0-10	36	93	14	<1.0	<10	57	50	<1.0								
03-26239	Upper Site - BU 2	2003	0-10	147	93	20	<1.0	<10	46	28	<1.0								
03-26240	Upper Site - BU 2	2003	0-10	117	240	31	<1.0	<10	51	67	<1.0								
03-26242	Upper Site - BU 1	2003	0-10	38	101	14	<1.0	<10	53	92	<1.0								
03-26243	Upper Site - BU 2	2003	0-10	42	275	28	<1.0	<10	59	65	<1.0								
03-26244	Upper Site - BU 2	2003	0-10	64	171	22	<1.0	<10	45	62	<1.0								
03-26245	Upper Site - BU 4	2003	0-10	28	42	10	<1.0	<10	50	39	1.7								
03-26246	Upper Site - BU 2	2003	0-10	70	1000	69	<1.0	<10	73	126	<1.0								
03-26250	Upper Site - BU 2	2003	0-10	49	1100	76	<1.0	<10	76	140	<1.0								
03-26251	Upper Site - BU 2	2003	0-10	51	1060	72	<1.0	<10	70	136	<1.0								
03-26252	Upper Site - BU 2	2003	0-10	120	95	18	<1.0	<10	42	25	<1.0								
03-26254	Upper Site - BU 2	2003	0-10	58	1140	76	<1.0	<10	74	141	<1.0								
03-26255	Upper Site - BU 2	2003	0-10	77	720	61	<1.0	<10	72	110	<1.0								
03-26256	Upper Site - BU 2	2003	0-10	84	289	38	<1.0	<10	52	77	<1.0								
03-26257	Upper Site - BU 2	2003	0-10	113	199	34	<1.0	<10	62	103	<1.0								
03-26258	Upper Site - BU 2	2003	0-10	81	284	36	<1.0	<10	54	74	<1.0								
03-26259	Upper Site - BU 2	2003	0-10	103	167	28	<1.0	<10	49	35	<1.0								
03-26260	Upper Site - BU 4	2003	0-10	13	21	<5.0	<1.0	<10	30	<20	1								
03-26262	Upper Site - BU 4	2003	0-10	26	46	9.1	<1.0	11	61	41	1.3								
03-26263	Upper Site - BU 4	2003	0-10	17	43	10	<1.0	<10	51	32	<1.0								
03-26264	Upper Site - BU 4	2003	0-10	15	15	5.1	<1.0	<10	44	<20	<1.0								
03-26265	Upper Site - BU 4	2003	0-10	10	21	<5.0	<1.0	<10	29	20	<1.0								
03-26266	Upper Site - BU 4	2003	0-10	19	55	10	<1.0	<10	42	32	<1.0								
03-26267	Upper Site - BU 4	2003	0-10	22	42	9.0	<1.0	10	63	60	<1.0								
03-26268	Upper Site - BU 3	2003	0-10	79	63	16	<1.0	12	135	186	<1.0								
03-26154	Upper Site - BU 3	2003	0-10	132	168	46	<1.0	21	175	151	<1.0								
03-26155	Upper Site - BU 3	2003	0-10	81	118	21	<1.0	17	100	92	<1.0								
03-26156	Upper Site - BU 3	2003	0-10	86	50	14	<1.0	<10	113	134	<1.0								
03-26157	Upper Site - BU 3	2003	0-10	37	32	8.3	<1.0	<10	74	82	1.1								
03-26158	Upper Site - BU 1	2003	0-10	222	495	60	<1.0	<10	37	134	1.3								
03-26159	Upper Site - BU 1	2003	0-10	53	640	57	<1.0	<10	28	63	1.2								
	N value			108	108	108	108	108	108	108	108	6	6						
	Background Detection Limits			5.0	5.0	5.0	1.0	10	15	20	1.0	0.5	0.002						
	Arithmetic Mean			60	141	20	0.50	7.7	70	90	0.78	0.25	0.0047						
	Arithmetic Mean Corrected for Detection Limits			60	141	20	1.0	10	70	90	1.0	0.5	0.002						
	Standard Deviation			40	230	16	0.0	4.9	33	76	0.65	0.00	0.01						
	Minimum			9.9	13	2.5	0.50	5.0	23	10	0.50	0.25	0.00005						
	Maximum			222	1140	76	0.50	26	186	580	5.9	0.3	0.024						
	95% Confidence Limit			7.6	43	3.0		0.9	6.3	14	0.12		0.01						

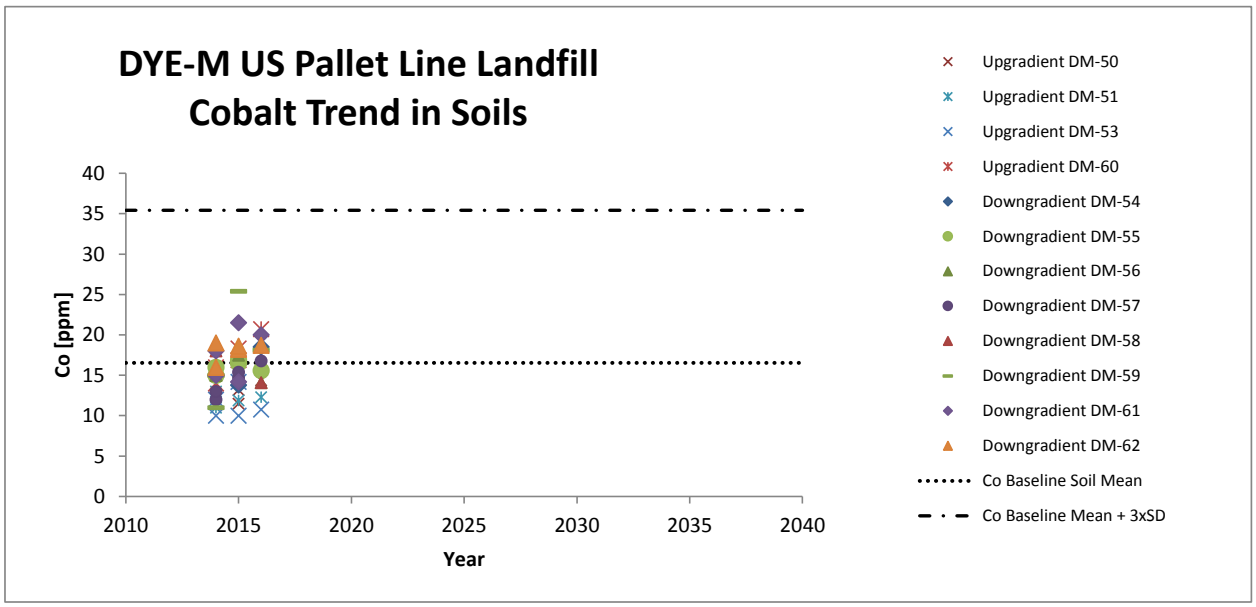
DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

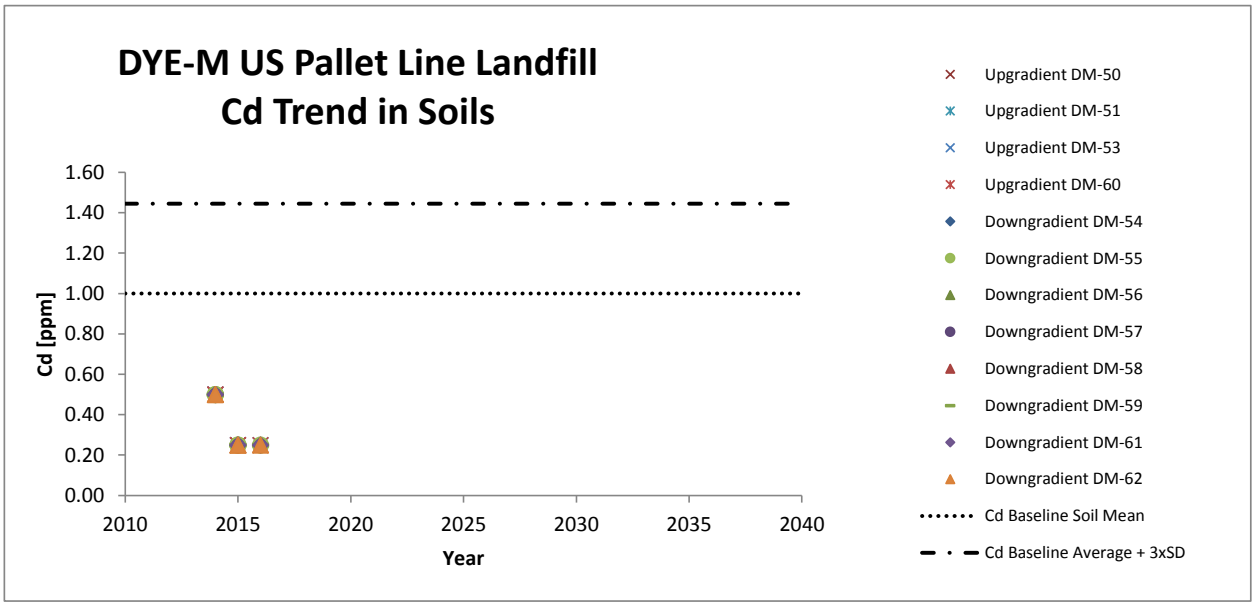
Where results are below detection, half of the detection limit has been used in the charts for the sample points. Trendlines are intended for visual interpretation of temporal trends. When all monitoring results are below detection, trendlines are a reflection of changes in detection limit. Users should refer to data tables.





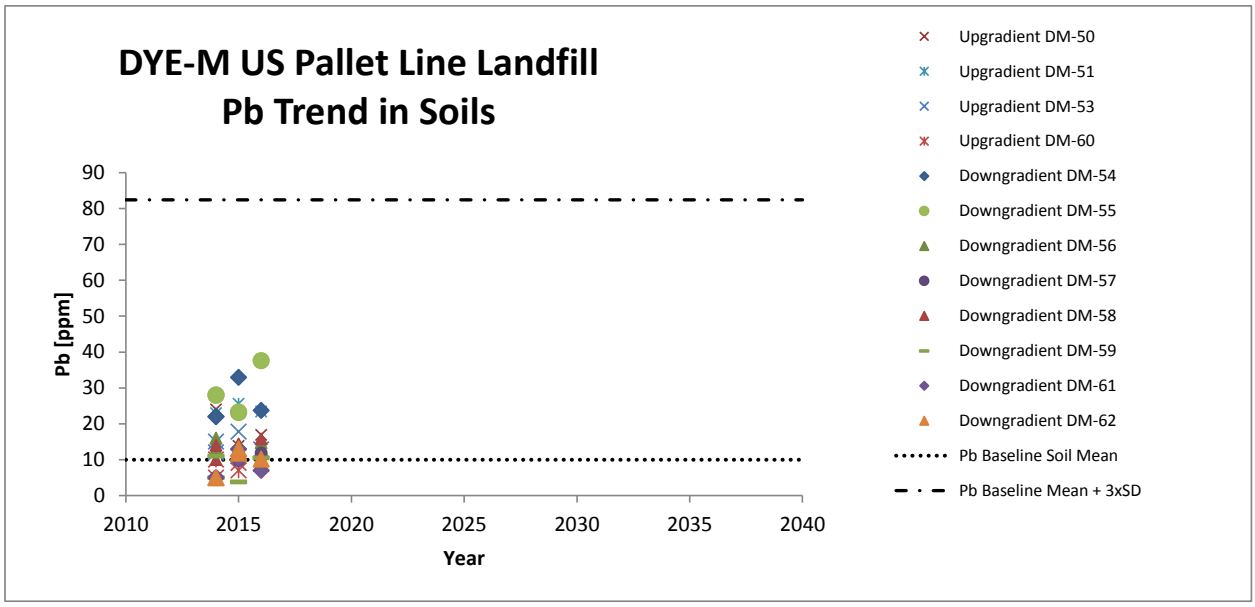
DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



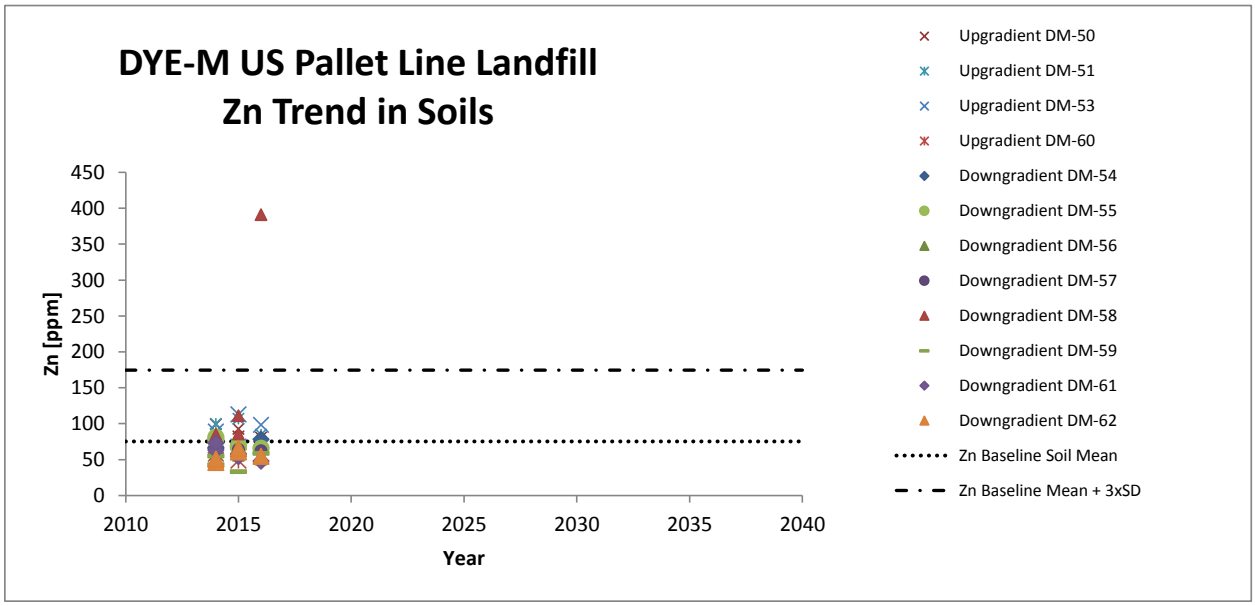


*Cd Baseline Mean is equal to the baseline detection limit

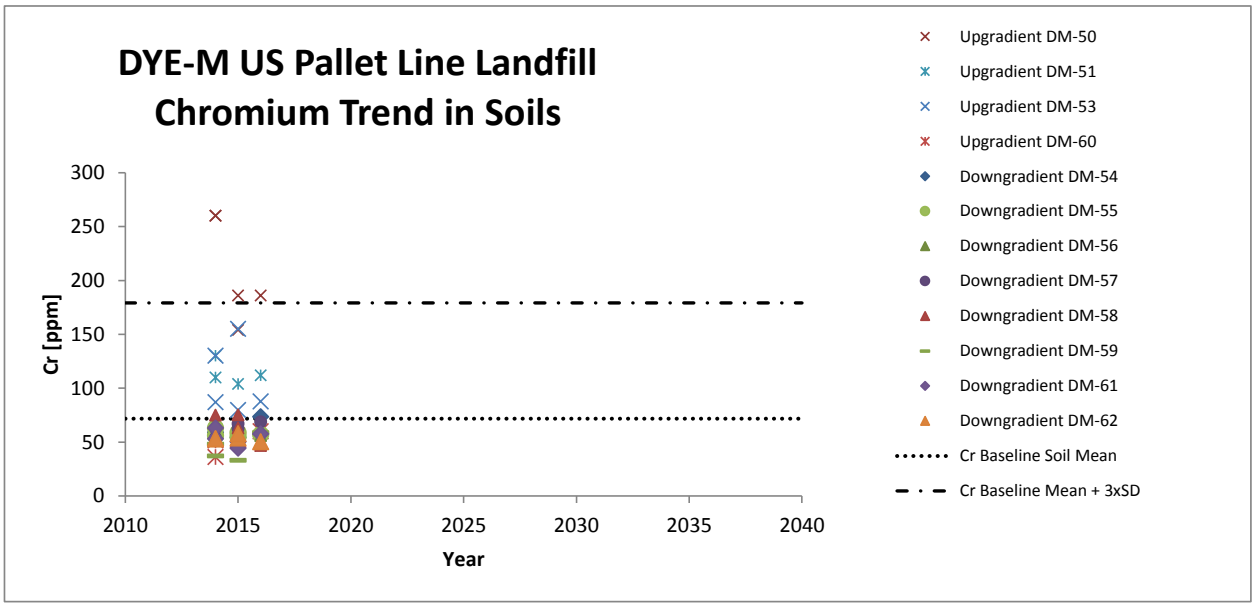
DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

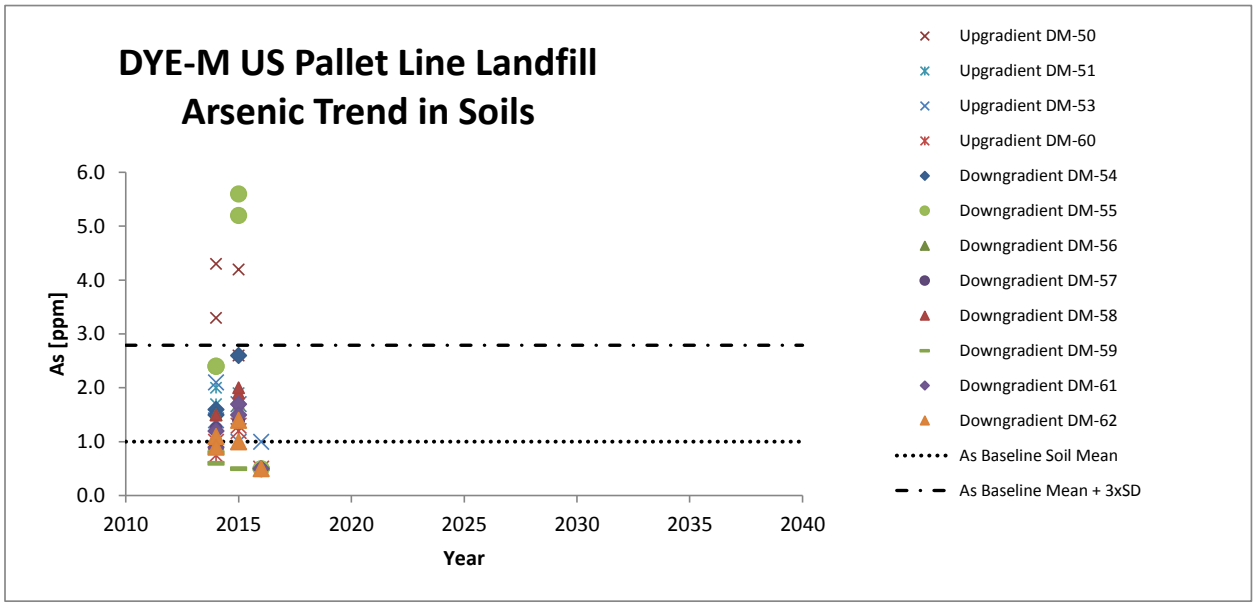


*Pb Baseline Arithmetic Mean equals the baseline detection limit



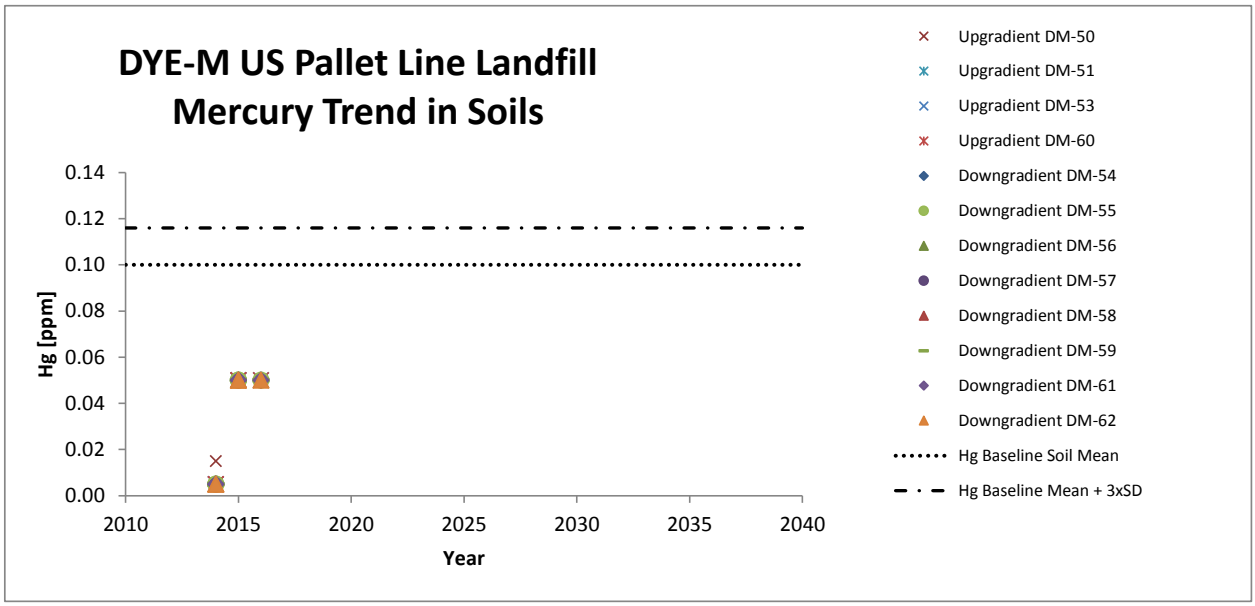
DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



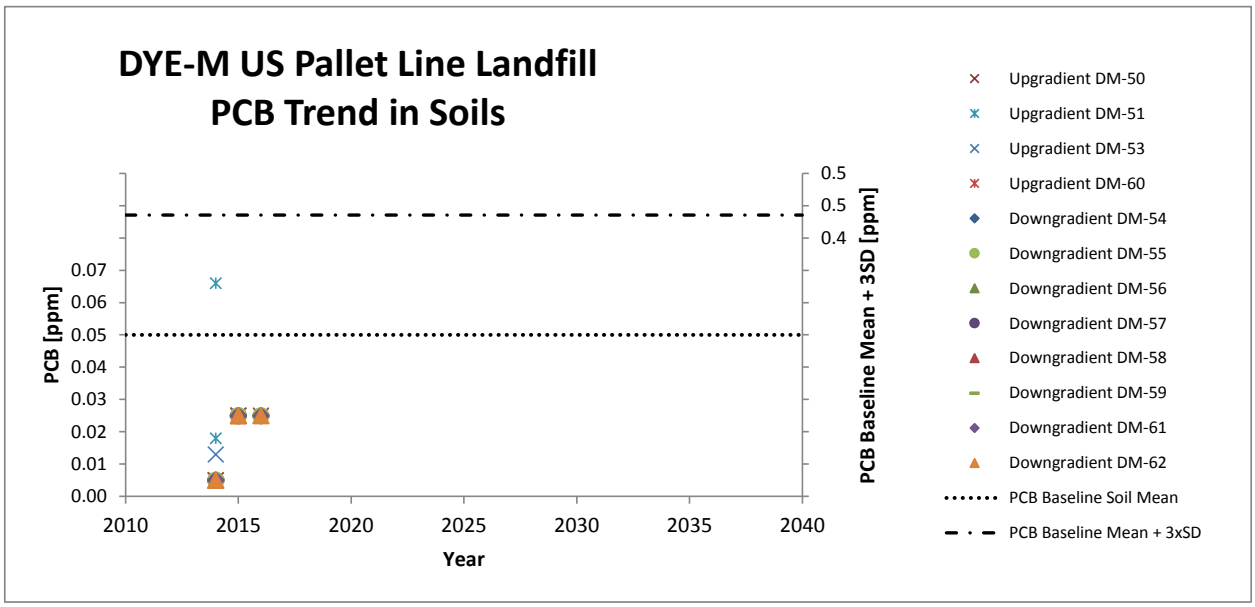


*As Baseline Mean is equal to the baseline detection limit

DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

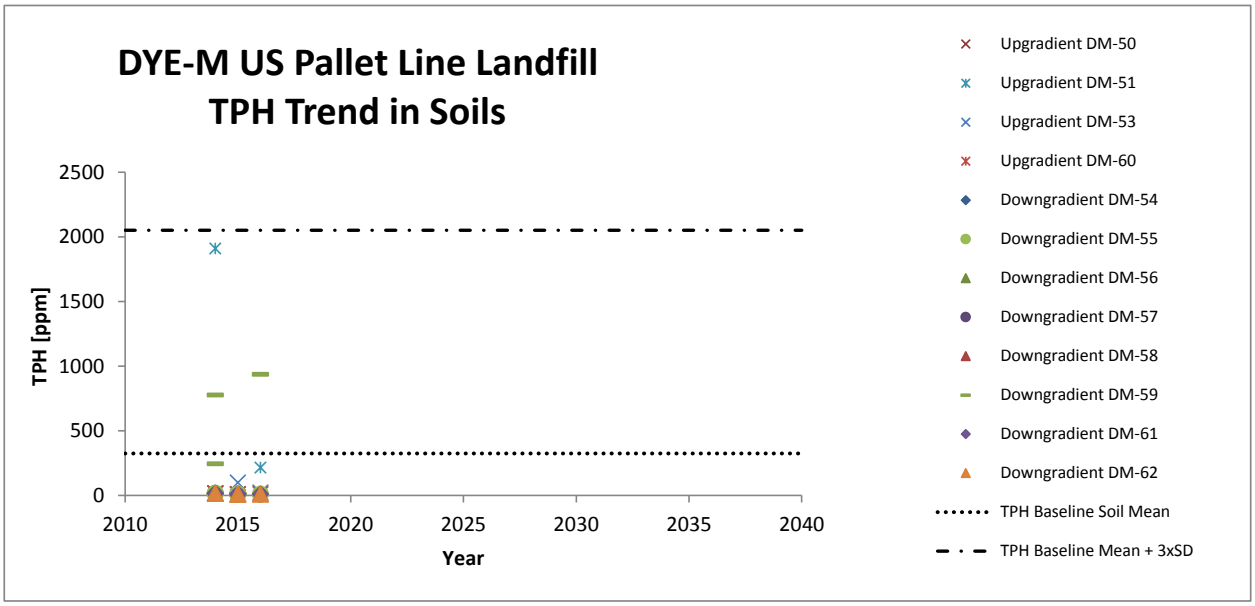


*Hg Baseline Arithmetic Mean equals the baseline detection limit



PCB Baseline Arithmetic Mean equals the baseline detection limit

DYE-M US Pallet Line Landfill Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Background Data - Arithmetic Mean						59	137	19	1.0	10	70	223	1.00	0.50	0.0002				N/A
Baseline Data - Arithmetic Mean						**35**	**79**	**14**	**1.0**	**12**	**70**	**90**	**1.3**	**0.10**	**0.11**	10	13	88	**106**
Baseline Data - Standard Deviation						14	65	5.8	0.0	12	19	43	0.82	0.000	0.13				230
Baseline Data Mean + 3xStandard Deviation						77	276	31	1.0	49	127	220	3.8	0.10	0.51				796
Baseline Detection Llimits						3.0	5.0	5.0	1.0	10	15	20	1.0	0.10	0.003				10
**** If baseline or background arithmetic mean was below the detection limit, the mean has been modified to match the detection limit value.***																			
DEW Line Cleanup Tier I Criteria										*200*					*1*				
DEW Line Cleanup Tier II Criteria & Hydrocarbon Action Level						*100*	*100*	*50*	*5*	*500*	*500*	*250*	*30*	*2.0*	*5*				*2500*
Monitoring Data																			**TPH Sum will appear when F1, F2 and F3 fractions are entered.**
Upgradient																			
	DM-11 surface																		
14-8308	DM-11	2014	Year 1	Phase I	5-10	**47**	**84**	**15**	<1.0	**14**	**65**	73	**3.0**	<0.010	0.013	<10	<10	<10	15
14-8309 interlab	DM-11	2014	Year 1	Phase I	5-10	**43**	*156*	**20**	<0.5	**14**	**62**	70	**1.5**	<0.1	<0.05	<5	<10	<50	33
DM-11 (0-15)	DM-11	2015	Year 2	Phase I	0-15	**58**	79	**20.8**	<0.5	**14.3**	61.4	82.6	**3.6**	<0.1	<0.05	<7	<4	<8	10
DM-11a	DM-11	2016	Year 3	Phase I	0-15	**59.6**	77.7	**16.8**	<0.5	**14.7**	57.8	75.1	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-11 depth																		
14-8310/11	DM-11	2014	Year 1	Phase I	40-45	**42**	71	11.0	<1.0	**14.5**	**78.5**	85.5	**4.9**	<0.010	0.16	<10	<10	<10	15
Not sampled - refusal	DM-11	2015	Year 2	Phase I															#N/A
Not sampled - refusal	DM-11	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
Downgradient																			
	DM-12 surface																		
14-8305	DM-12	2014	Year 1	Phase I	5-10	**51.0**	**93.0**	**15.0**	<1.0	**23**	**91.0**	86.0	**2.60**	0.0340	*1.7*	<10	<10	110	**120**
DM-12 (0-15)	DM-12	2015	Year 2	Phase I	0-15	**45.4**	72.9	**15.2**	<0.5	**84.5**	**91.1**	**107**	**4**	<0.1	0.08	<7	<4	<8	10
DM-12a	DM-12	2016	Year 3	Phase I	0-15	**35.2**	79.2	13	<0.5	**17.4**	61.8	76.5	<1.0	<0.1	*1.17*	<7	<4	46	52
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-12 depth																		
14-8307	DM-12	2014	Year 1	Phase I	20-30	**48**	**87**	13.0	<1.0	**23**	**94**	**100**	**3.7**	0.0160	0.76	<10	<10	140	**150**
DM-12 (30-40)	DM-12	2015	Year 2	Phase I	30-40	**39.6**	**86.9**	**14.4**	<0.5	**21.8**	**70.5**	79.5	**2.7**	<0.1	0.35	<7	<4	75	81
Not sampled - refusal	DM-12	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-13 surface																		
14-8303	DM-13	2014	Year 1	Phase I	5-10	26	22	6.2	<1.0	12	**74**	24	1.00	0.0130	0.34	<10	<10	<10	15
DM-13 (0-15)	DM-13	2015	Year 2	Phase I	0-15	24.5	52.4	11.8	<0.5	**14.7**	64.2	46.1	**2.3**	<0.1	<0.05	<7	<4	55	61
DM-13a	DM-13	2016	Year 3	Phase I	0-15	**47.7**	54.6	10.7	<0.5	**22.3**	**80.2**	45	<1.0	<0.1	0.32	<7	<4	92	98
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A

DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-13 depth																		
14-8304	DM-13	2014	Year 1	Phase I	40-45	28	57	11	<1.0	**14**	67	40	**1.4**	<0.010	0.012	<10	<10	<10	15
DM-13 (40-50)	DM-13	2015	Year 2	Phase I	40-50	16.7	38.3	10.6	<0.5	11.6	62.8	28.3	**2**	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	DM-13	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-14 surface																		
14-8312	DM-14	2014	Year 1	Phase I	5-10	31	**89**	13.0	<1.0	**19**	**85**	**130**	**1.60**	<0.010	0.12	<10	<10	<10	15
DM-14 (0-20)	DM-14	2015	Year 2	Phase I	0-20	**41.5**	61	12.3	<0.5	9.1	**71.9**	39.6	**2.2**	<0.1	<0.05	<7	<4	<8	10
DM-14a	DM-14	2016	Year 3	Phase I	0-15	**36.3**	67.4	13	<0.5	**13.9**	66.9	61.8	<1.0	<0.1	*1.14*	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-14 depth																		
14-8313	DM-14	2014	Year 1	Phase I	40-50	20	42	8.4	<1.0	<10	59	56	1.00	<0.010	<0.010	<10	<10	<10	15
DM-14 (20-40)	DM-14	2015	Year 2	Phase I	20-40	**43.4**	56.6	12	<0.5	8	65.7	30.5	**1.5**	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	DM-14	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-15 surface																		
14-8314	DM-15	2014	Year 1	Phase I	0-10	31.0	78.0	11.0	<1.0	**35**	**78**	47	1.10	0.0110	0.097	<10	<10	<10	15
DM-15 (0-15)	DM-15	2015	Year 2	Phase I	0-15	26.8	**83**	**15**	<0.5	9.9	47.4	42.6	**3.7**	<0.1	<0.05	<7	<4	<8	10
DM-15a	DM-15	2016	Year 3	Phase I	0-15	**35.9**	66.4	12.4	<0.5	10.7	51.6	56.9	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-15 depth																		
not sampled	DM-15 depth	2014	Year 1	Phase I															#N/A
DM-15 (30-40)	DM-15	2015	Year 2	Phase I	30-40	24.4	76.8	**13.9**	<0.5	10.6	46.8	42	**1.9**	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	DM-15	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-16 surface																		
14-8315	DM-16	2014	Year 1	Phase I	0-10	*150.0*	27.0	12.0	<1.0	**13**	**130**	32	**2.50**	<0.010	<0.010	<10	<10	<10	15
DM-16 (0-15)	DM-16	2015	Year 2	Phase I	0-15	**53.3**	40.4	11.8	<0.5	8.5	**75.2**	29.5	**2.4**	<0.1	<0.05	<7	<4	<8	10
DM-16a	DM-16	2016	Year 3	Phase I	0-15	**38.6**	43.2	11.6	<0.5	8.7	66.5	38.7	<1.0	<0.1	<0.05	<7	<4	<8	10
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-16 depth																		
14-8317	DM-16	2014	Year 1	Phase I	40-50	*100*	23	10	<1.0	<10	**97**	24.0	**2.00**	<0.010	<0.010	25	5100	85	*5210*
DM-16 (30-40)	DM-16	2015	Year 2	Phase I	30-40	**45.2**	61.3	13.2	<0.5	8.1	64	37.3	**2.1**	<0.1	<0.05	<7	<4	<8	10
Not sampled - refusal	DM-16	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

DYE-M US Helipad Regrade Area - Summary of Monitoring Soil Analytical Data

Sample ID	Location	Year	Monitoring Year	Monitoring Phase	Depth (cm)	Cu (mg/kg)	Ni (mg/kg)	Co* (mg/kg)	Cd* (mg/kg)	Pb (mg/kg)	Zn* (mg/kg)	Cr* (mg/kg)	As (mg/kg)	Hg* (mg/kg)	Total PCB (mg/kg)	F1 C_6-C_{10} (mg/kg)	F2 C_{10}-C_{16} (mg/kg)	F3 C_{16}-C_{34} (mg/kg)	Modified TPH^ - Total C6-C34 (mg/kg)
	DM-17 surface																		
14-8318	DM-17	2014	Year 1	Phase I	0-10	**44**	*180*	**20**	<1.0	11	64	76	1.30	<0.010	0.014	<10	<10	<10	15
14-8319 interlab	DM-17	2014	Year 1	Phase I	0-10	24	30	8.0	<0.5	3	38	58	0.91	<0.1	<0.05	<5	<10	<50	33
DM-17 (0-20)	DM-17	2015	Year 2	Phase I	0-15	*125*	41.9	**15.9**	<0.5	10.1	**157**	20.7	**3.7**	<0.1	<0.05	<7	<4	<8	10
DM-17a	DM-17	2016	Year 3	Phase I	0-15	**42.9**	64.5	11.6	<0.5	**22**	59	36.5	<1.0	<0.1	0.13	<7	<4	81	87
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
	DM-17 depth																		
14-8320/21	DM-17	2014	Year 1	Phase I	20-25	31	*170*	**18**	<1.0	12	48	79.0	0.95	<0.010	<0.010	<10	<10	<10	15
DM-17 (20-40) Dup Avg	DM-17	2015	Year 2	Phase I	20-40	*180*	44	**15.7**	<0.5	10	**123**	19	**2.1**	<0.1	<0.1	<6	<7	<29	21
Not sampled - refusal	DM-17	2016	Year 3	Phase I															#N/A
			Year 4	Phase I															#N/A
			Year 5	Phase I															#N/A
			Year 7	Phase II															#N/A
			Year 10	Phase II															#N/A
			Year 15	Phase II															#N/A
			Year 25	Phase II															#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A
																			#N/A

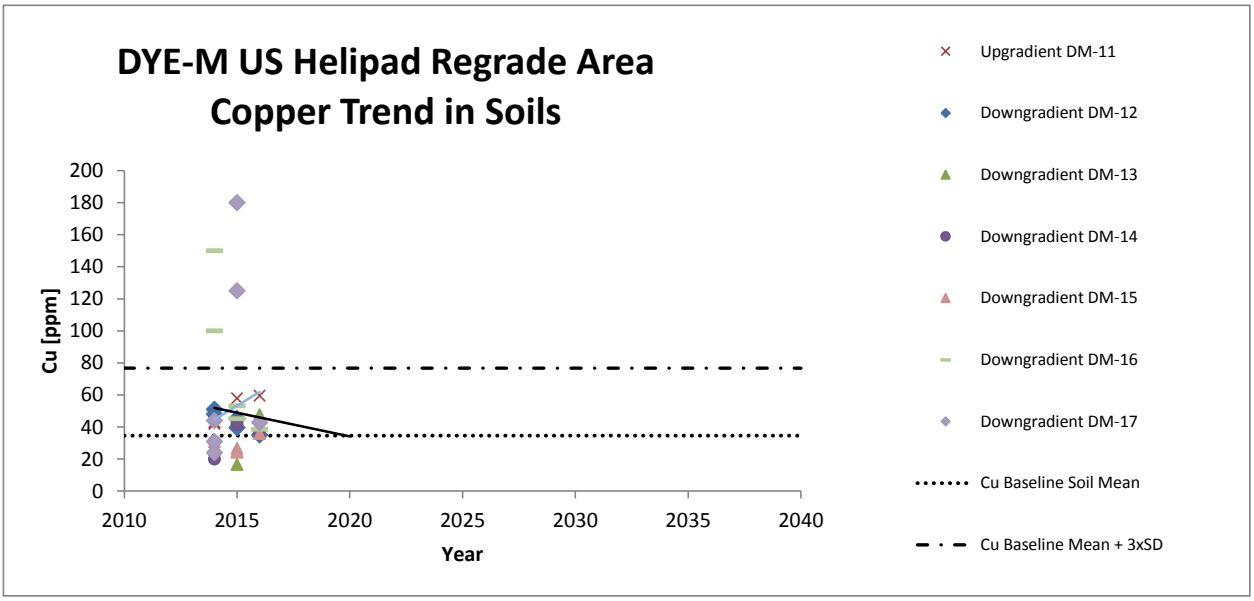
Note: Modified TPH Total (C_6-C_{34}) has been calculated by adding results for F1, F2 and F3.

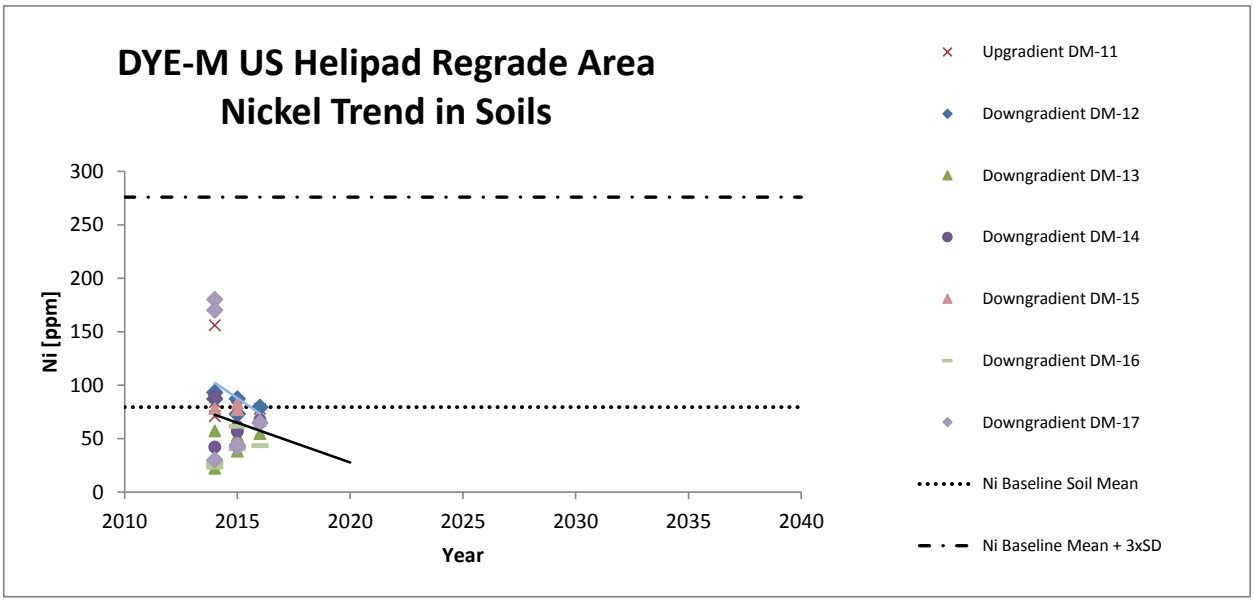
Legend

XX	sample exceeds background
XX	**sample exceeds baseline**
XX	*sample exceeds DLCU Tier I criteria*
XX	*sample exceeds DLCU Tier II criteria*

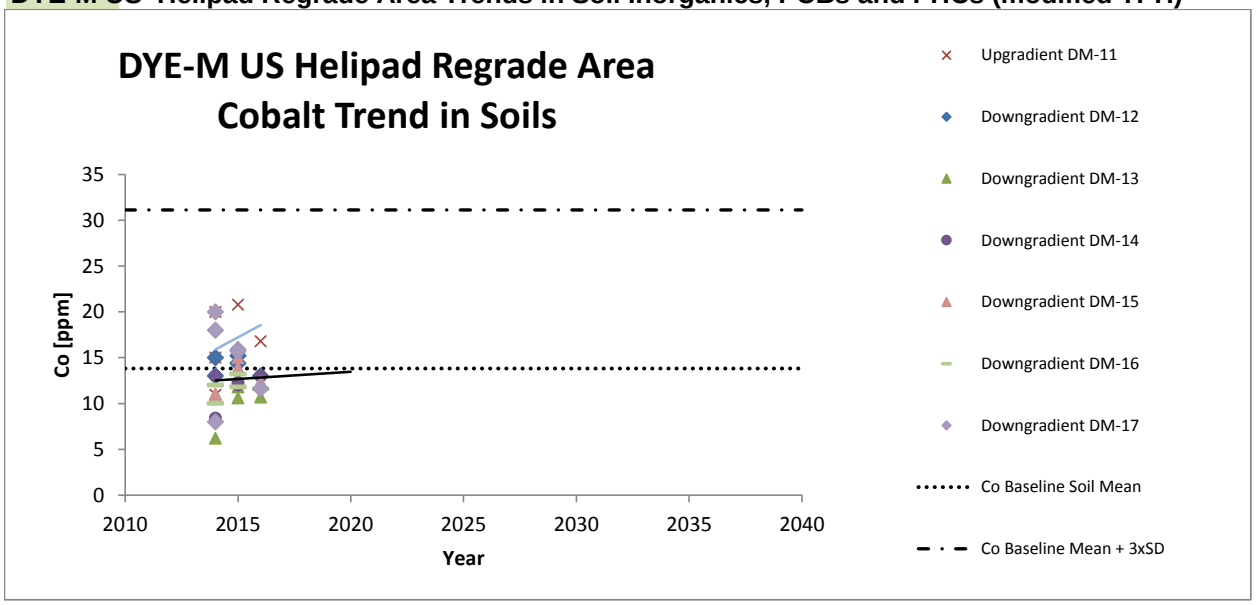
DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

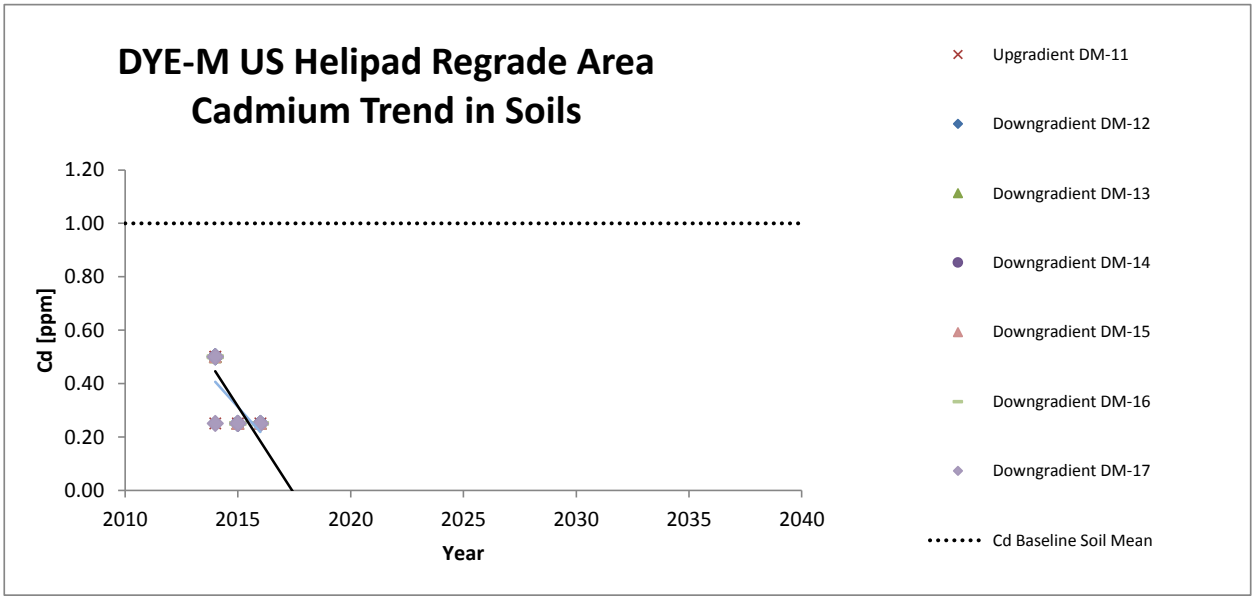
Where results are below detection, half of the detection limit has been used in the charts.





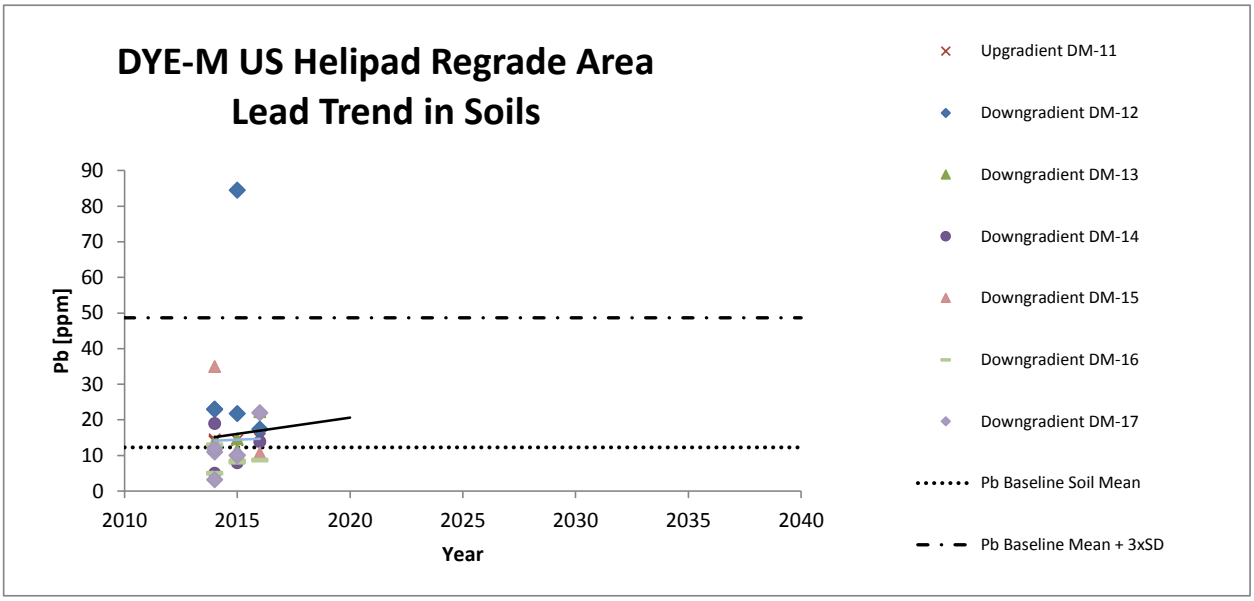
DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

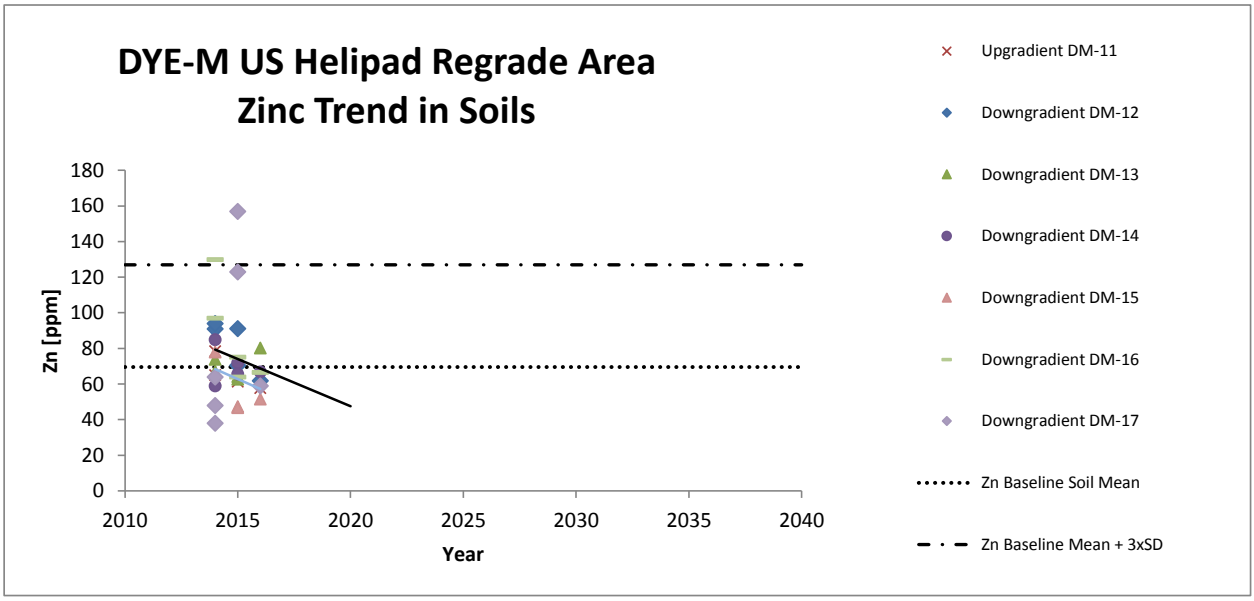




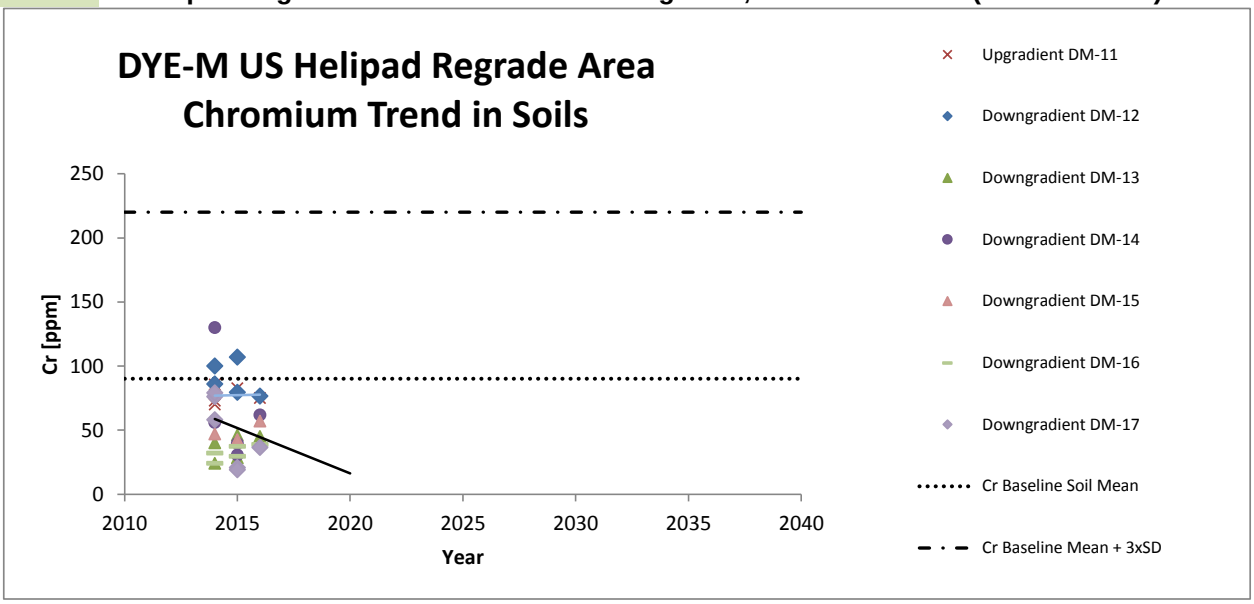
*Cd Baseline SD = 0

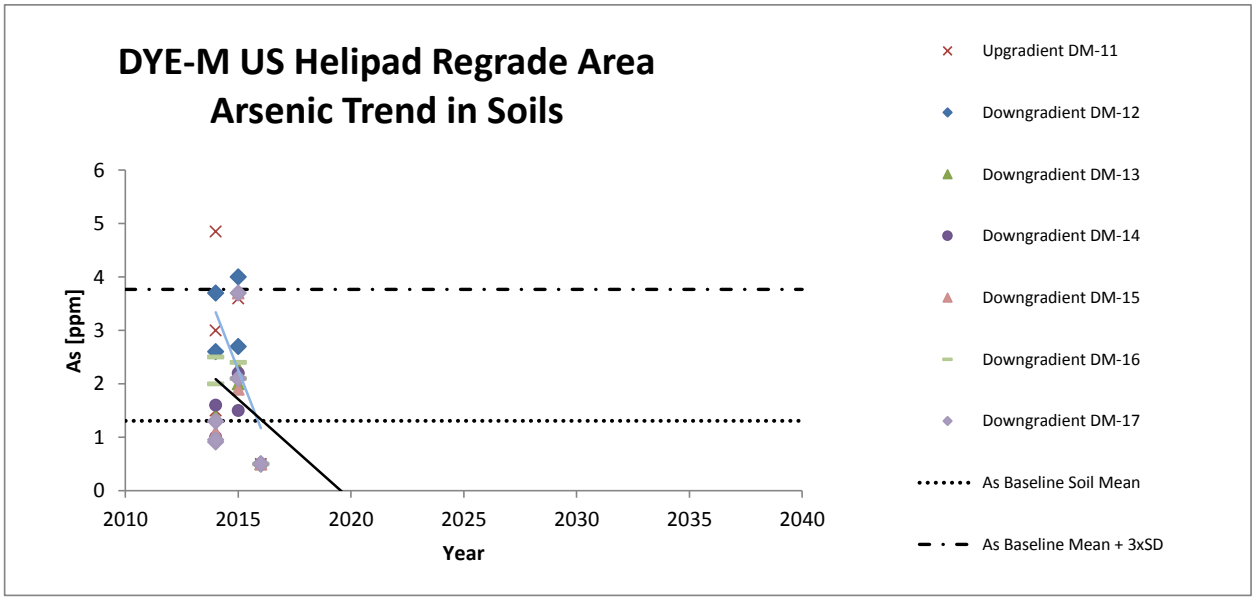
DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



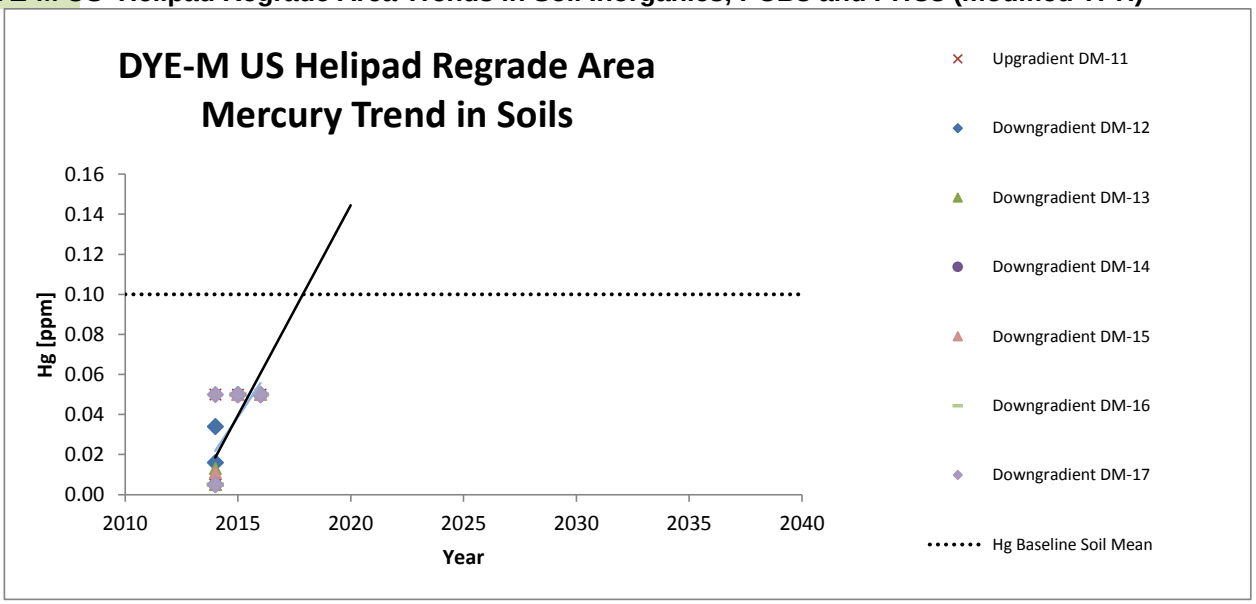


DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)

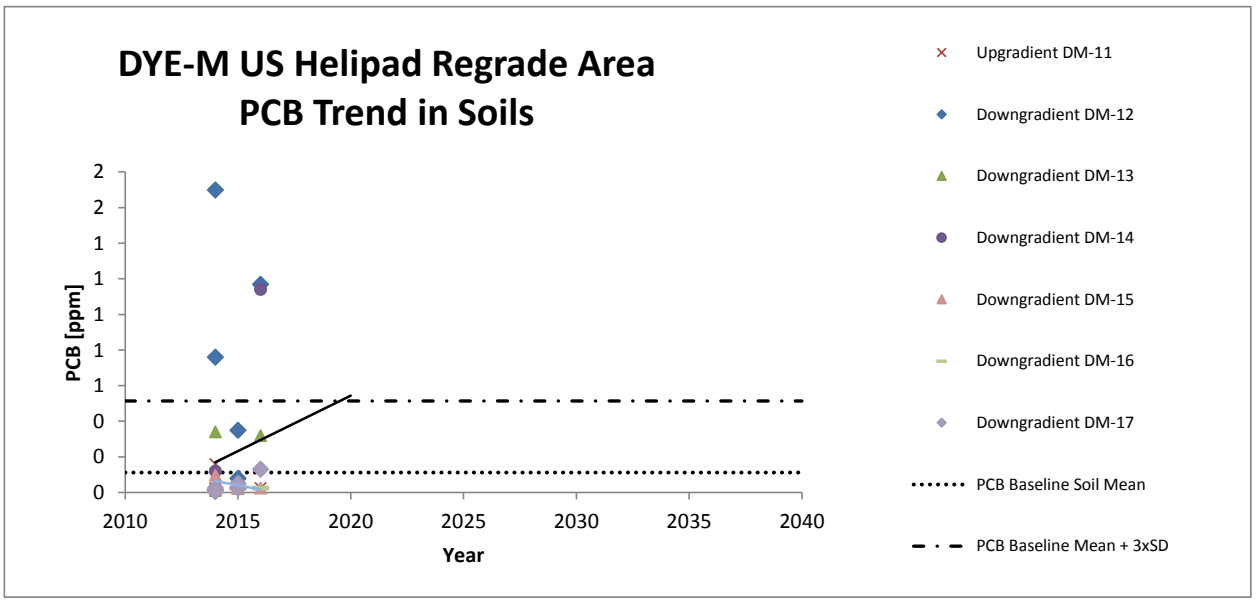




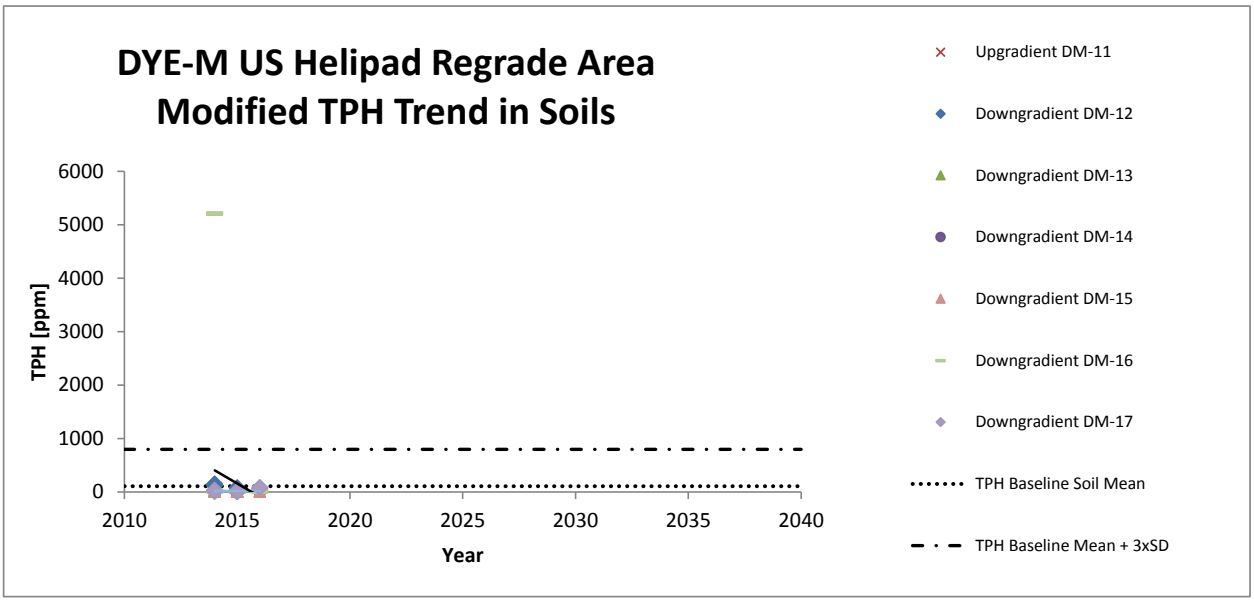
DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



*Hg Baseline Arithmetic Mean is equal to the baseline detection limit.
Hg Baseline SD = 0



DYE-M US Helipad Regrade Area Trends in Soil Inorganics, PCBs and PHCs (modified TPH)



^ Modified TPH is Sum of F1, F2 and F3 fractions (C_6 - C_{34})

APPENDIX D

Photograph Log

Visual Inspection Photographs

Thermistor Photographs

Monitoring Well Photographs

Soil Sampling Photographs

PHOTOS

Photo 1: DYE-M – Lower Site NWS Landfill, facing northwest (ATT188_Photo188.jpg) 1
Photo 2: DYE-M – Lower Site NWS Landfill, facing northwest (ATT189_Photo189.jpg) 1
Photo 3: DYE-M – Lower Site NWS Landfill, facing east (ATT190_Photo190.jpg) 2
Photo 4: DYE-M – Lower Site NWS Landfill, facing south (ATT191_Photo191.jpg) 2
Photo 5: DYE-M – Lower Site NWS Landfill, facing east (ATT192_Photo192.jpg) 3
Photo 6: DYE-M – Lower Site NWS Landfill – southeast slope – Feature B – Sparse vegetation, facing northeast. (ATT408_Photo408.jpg) 3
Photo 7: DYE-M – Lower Site NWS Landfill – southwest slope – Feature B – Sparse vegetation, facing northwest. (ATT410_Photo410.jpg) 4
Photo 8: DYE-M – Lower Site NWS Landfill – northwest slope – Feature B – Sparse vegetation, facing northeast. (ATT411_Photo411.jpg) 4
Photo 9: DYE-M – Lower Site NWS Landfill – northeast slope – Feature B – Sparse vegetation, facing southeast. (ATT413_Photo413.jpg) 5
Photo 10: DYE-M – Lower Site NWS Landfill – Cover surface – Feature C – Tire tracks, facing west. (ATT409_Photo409.jpg) 5
Photo 11: DYE-M – Lower Site NWS Landfill – Cover surface – Feature D – Sparse vegetation, facing east. (ATT412_Photo412.jpg) 6
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Photo 1: *DYE-M – Lower Site NWS Landfill, facing northwest (ATT188_Photo188.jpg)*



Photo 2: *DYE-M – Lower Site NWS Landfill, facing northwest (ATT189_Photo189.jpg)*



Photo 3: *DYE-M – Lower Site NWS Landfill, facing east (ATT190_Photo190.jpg)*



Photo 4: *DYE-M – Lower Site NWS Landfill, facing south (ATT191_Photo191.jpg)*



Photo 5: *DYE-M – Lower Site NWS Landfill, facing east (ATT192_Photo192.jpg)*



Photo 6: *DYE-M – Lower Site NWS Landfill – southeast slope – Feature B – Sparse vegetation, facing northeast. (ATT408_Photo408.jpg)*



Photo 7: *DYE-M – Lower Site NWS Landfill – southwest slope – Feature B – Sparse vegetation, facing northwest. (ATT410_Photo410.jpg)*



Photo 8: *DYE-M – Lower Site NWS Landfill – northwest slope – Feature B – Sparse vegetation, facing northeast. (ATT411_Photo411.jpg)*



Photo 9: *DYE-M – Lower Site NWS Landfill – northeast slope – Feature B – Sparse vegetation, facing southeast. (ATT413_Photo413.jpg)*



Photo 10: *DYE-M – Lower Site NWS Landfill – Cover surface – Feature C – Tire tracks, facing west. (ATT409_Photo409.jpg)*



Photo 11: DYE-M – Lower Site NWS Landfill – Cover surface – Feature D – Sparse vegetation, facing east. (ATT412_Photo412.jpg)



Photo 12: DYE-M – Lower Site NWS Landfill – northeast slope – Feature E – Minor settlement, facing northeast. (ATT414_Photo414.jpg)



Photo 13: DYE-M – Lower Site NWS Landfill– Feature F – Tension crack 1 m above crest, facing southwest. (ATT420_Photo420.jpg)



Photo 14: DYE-M – Lower Site NWS Landfill – Soil sampling – DM-07 before excavation (ATT425_Photo425.jpg)



Photo 15: DYE-M – Lower Site NWS Landfill – Soil sampling – DM-07 after excavation (ATT426_Photo426.jpg)



Photo 16: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-07 after backfilling (ATT427_Photo427.jpg)



Photo 17: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-08 before excavation (ATT415_Photo415.jpg)



Photo 18: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-08 after excavation (ATT416_Photo416.jpg)



Photo 19: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-08 after backfilling (ATT417_Photo417.jpg)



Photo 20: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-09 before excavation (ATT418_Photo418.jpg)



Photo 21: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-09 after excavation (ATT419_Photo419.jpg)



Photo 22: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-09 after backfilling (ATT421_Photo421.jpg)



Photo 23: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-10 before excavation (ATT422_Photo422.jpg)



Photo 24: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-10 after excavation (ATT423_Photo423.jpg)



Photo 25: DYE-M – Lower Site NWS Landfill – Soil sampling –DM-10 after backfilling (ATT424_Photo424.jpg)



Photo 26: DYE-M – Lower Site Tier II Disposal Facility, facing northwest (ATT180_Photo180.jpg)



Photo 27: DYE-M – Lower Site Tier II Disposal Facility, facing southwest. (ATT181_Photo181.jpg)



Photo 28: DYE-M – Lower Site Tier II Disposal Facility, facing northeast (ATT182_Photo182.jpg)



Photo 29: DYE-M – Lower Site Tier II Disposal Facility, facing northeast (ATT183_Photo183.jpg)



Photo 30: DYE-M – Lower Site Tier II Disposal Facility, facing northwest – Feature N (white discolouration) visible in distance (ATT184_Photo184.jpg)



Photo 31: DYE-M – Lower Site Tier II Disposal Facility, facing south – North end of Feature I (minor crack) on slope not visible in this photo (see Photo 43) (ATT185_Photo185.jpg)



Photo 32: DYE-M – Lower Site Tier II Disposal Facility, facing west (ATT186_Photo186.jpg)

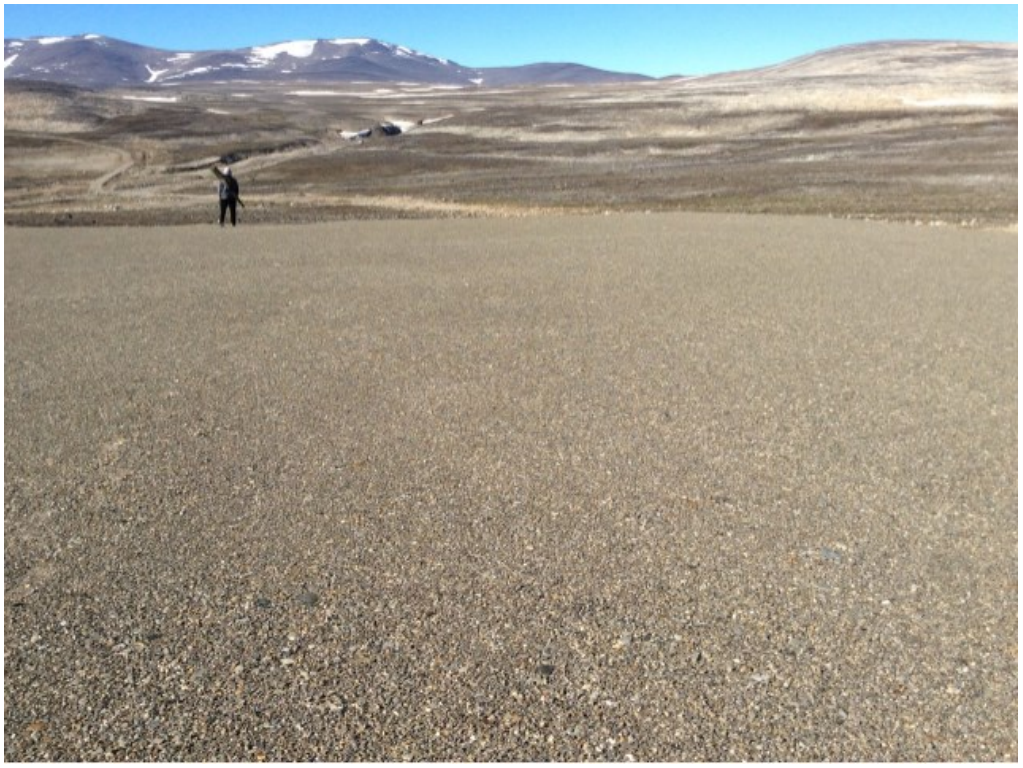


Photo 33: *DYE-M – Lower Site Tier II Disposal Facility, facing north (ATT187_Photo187.jpg)*



Photo 34: *DYE-M – Lower Site Tier II Disposal Facility – Cover surface – Feature B – Minor self-armouring erosion, facing south east (ATT383_Photo383.jpg)*



Photo 35: *DYE-M – Lower Site Tier II Disposal Facility – Along the north slope – Feature C – Self-armouring erosion with fines washing to bottom of slope (each 20 m x 0.3-0.4 m) facing northeast. (ATT382_Photo382.jpg)*



Photo 36: *DYE-M – Lower Site Tier II Disposal Facility – north slope – Feature D – Sparse vegetation, facing northeast. (ATT381_Photo381.jpg)*



Photo 37: DYE-M – Lower Site Tier II Disposal Facility – south slope – Feature D – Sparse vegetation, facing southwest. (ATT387_Photo387.jpg)



Photo 38: DYE-M – Lower Site Tier II Disposal Facility – west slope – Feature D – Sparse vegetation, facing northwest. (ATT394_Photo394.jpg)



Photo 39: *DYE-M – Lower Site Tier II Disposal Facility – Middle west side – Feature E – Wet and soft area - facing northeast. (ATT398_Photo398.jpg)*



Photo 40: *DYE-M – Lower Site Tier II Disposal Facility – north slope – Feature F – Sloughing, wet, facing northeast. (Marginal) (ATT399_Photo399.jpg)*



Photo 41: DYE-M – Lower Site Tier II Disposal Facility – west slope – Feature G – Self-armouring erosion, facing northwest. (each 15 m x 0.3-0.4 m) (Marginal) (ATT392_Photo392.jpg)



Photo 42: DYE-M – Lower Site Tier II Disposal Facility – west slope – Feature H – Minor sloughing – dry, facing north. (ATT396_Photo396.jpg)



Photo 43: DYE-M – Lower Site Tier II Disposal Facility – Along west slope near toe – Feature I – Minor crack, facing northwest. (ATT395_Photo395.jpg)

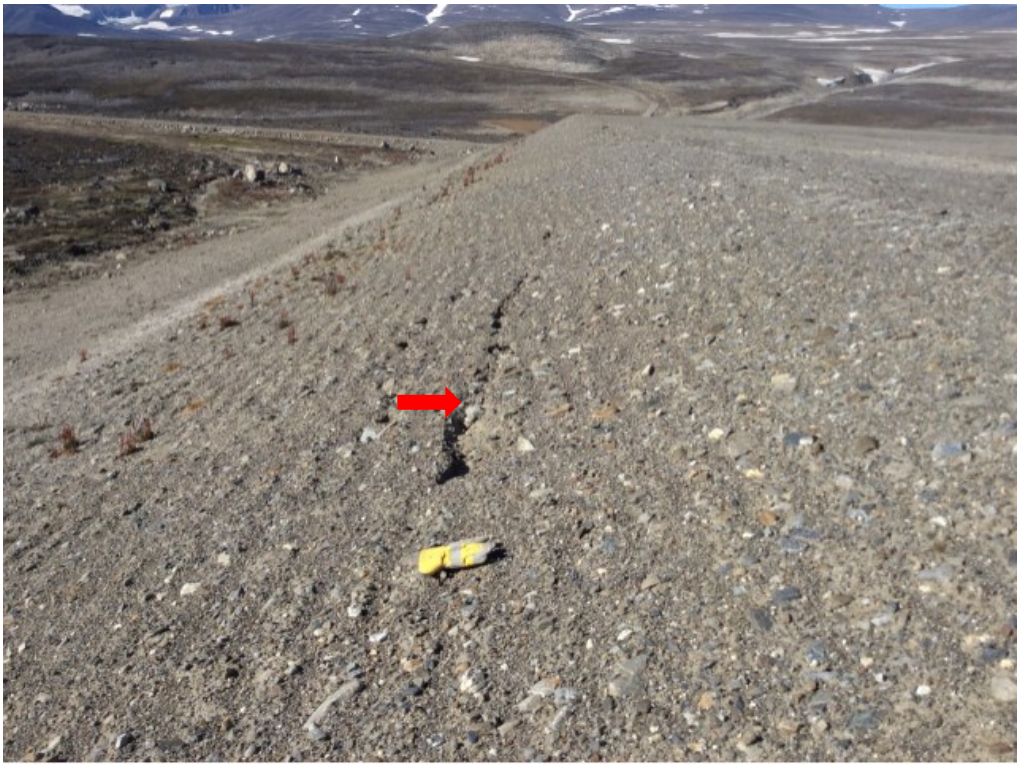


Photo 44: DYE-M – Lower Site Tier II Disposal Facility – Near crest on west slope – Feature J – Tension crack, weathered, facing northwest. (ATT390_Photo390.jpg)

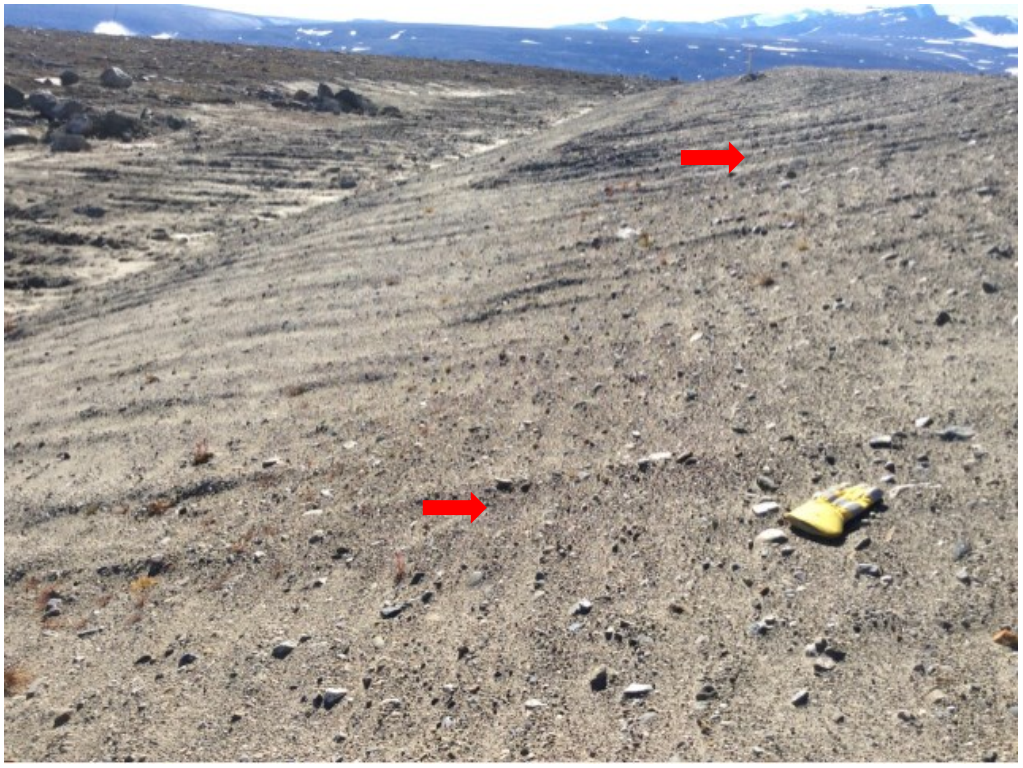


Photo 45: *DYE-M – Lower Site Tier II Disposal Facility – south slope – Feature K – Self-armouring erosion, facing southwest. (each 15 m x 0.3-0.4 m) (ATT389_Photo389.jpg)*



Photo 46: *DYE-M – Lower Site Tier II Disposal Facility – east toe – Previous ponded water at toe (Feature M) not observed in 2016, facing east. (ATT379_Photo379.jpg)*

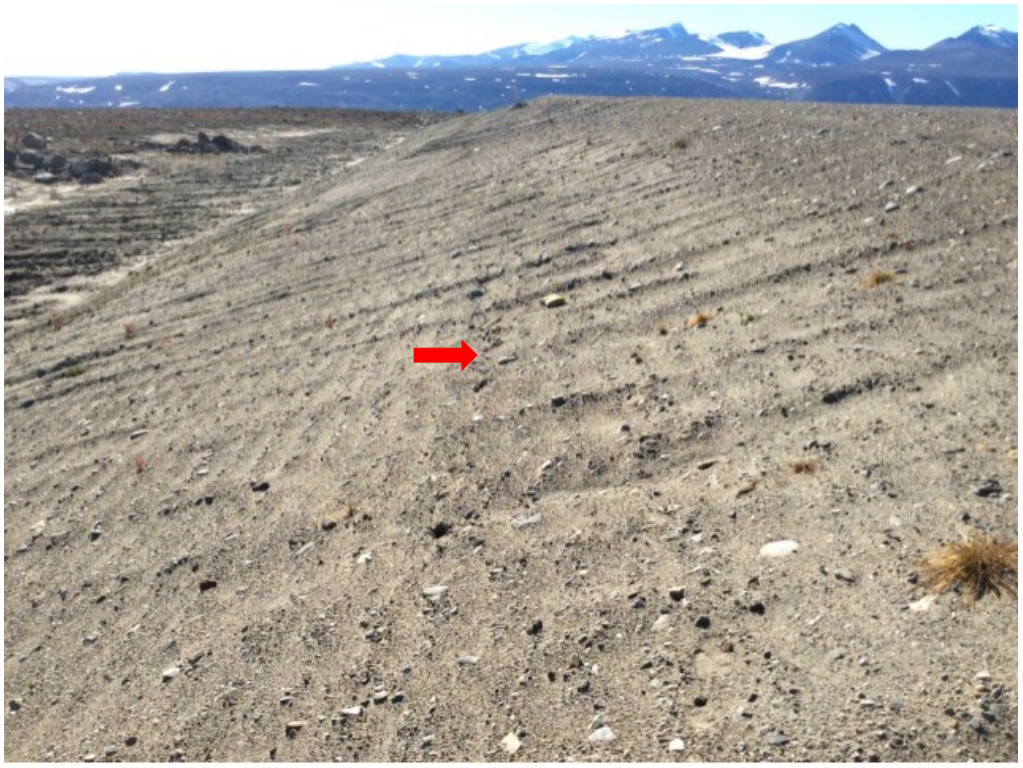


Photo 47: DYE-M – Lower Site Tier II Disposal Facility – Feature L – Weathered tension cracking on slope, 4 m below crest, facing southwest. (ATT388_Photo388.jpg)



Photo 48: DYE-M – Lower Site Tier II Disposal Facility – Feature M – Minor thaw creep cracking near toe of slope, facing northeast. (ATT391_Photo391.jpg)

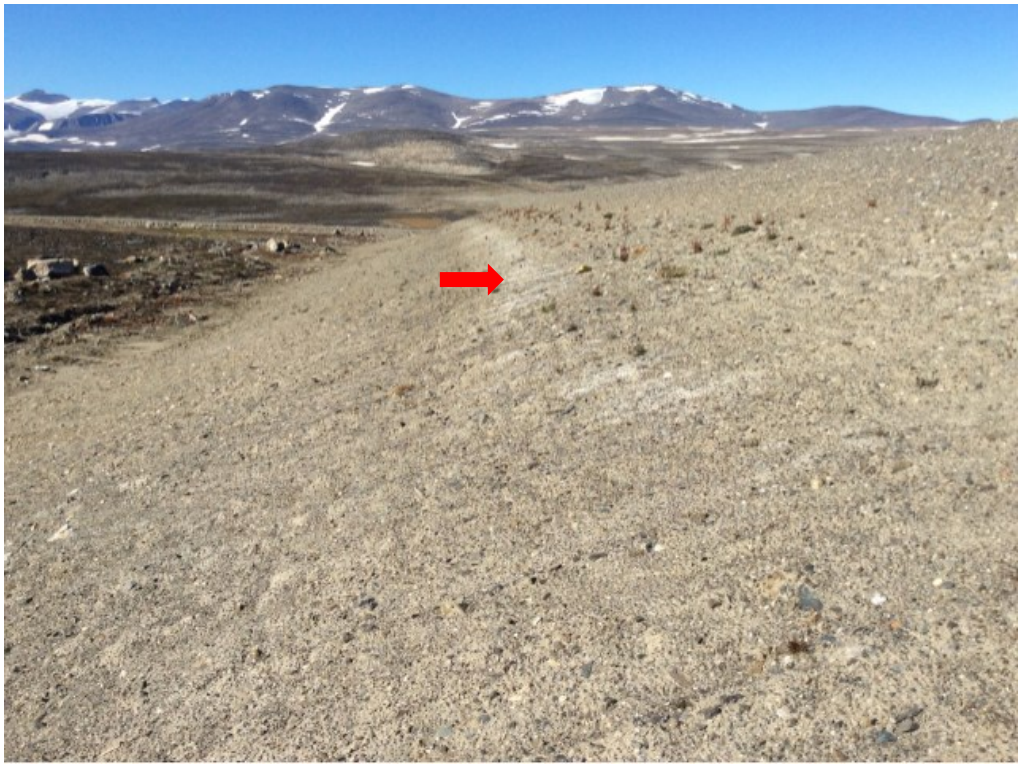


Photo 49: *DYE-M – Lower Site Tier II Disposal Facility – Feature N – White discolouration on slope, full length of west slope, ~1 m wide band, facing northwest. (ATT393_Photo393.jpg)*



Photo 50: *DYE-M – Lower Site Tier II Disposal Facility – Feature O – Weathered tension crack, 3 m from crest, facing northwest. (ATT397_Photo397.jpg)*



Photo 51: *DYE-M – Lower Site Tier II Disposal Facility – Feature P – Narrow erosion channel (possibly weathered crack) from crest surface to north slope, facing northwest. (ATT400_Photo400.jpg)*



Photo 52: *DYE-M – Lower Site Tier II Disposal Facility – Feature A – Light vehicle tracks on crest of landfill, facing northeast. (ATT401_Photo401.jpg)*



Photo 53: DYE-M – Lower Site Tier II Disposal Facility – Feature Q – self-armouring erosion with accumulation of fines, facing north. (ATT402_Photo402.jpg)



Photo 54: DYE-M – Lower Site Tier II Disposal Facility – Feature R – Weathered cracking on surface of landfill cover, facing north. (ATT403_Photo403.jpg)



Photo 55: DYE-M – Lower Site Tier II Disposal Facility – Feature S – Weathered cracking on surface of landfill cover, facing west. (ATT404_Photo404.jpg)



Photo 56: DYE-M – Lower Site Tier II Disposal Facility –Background Thermistor (ATT385_Photo385.jpg)

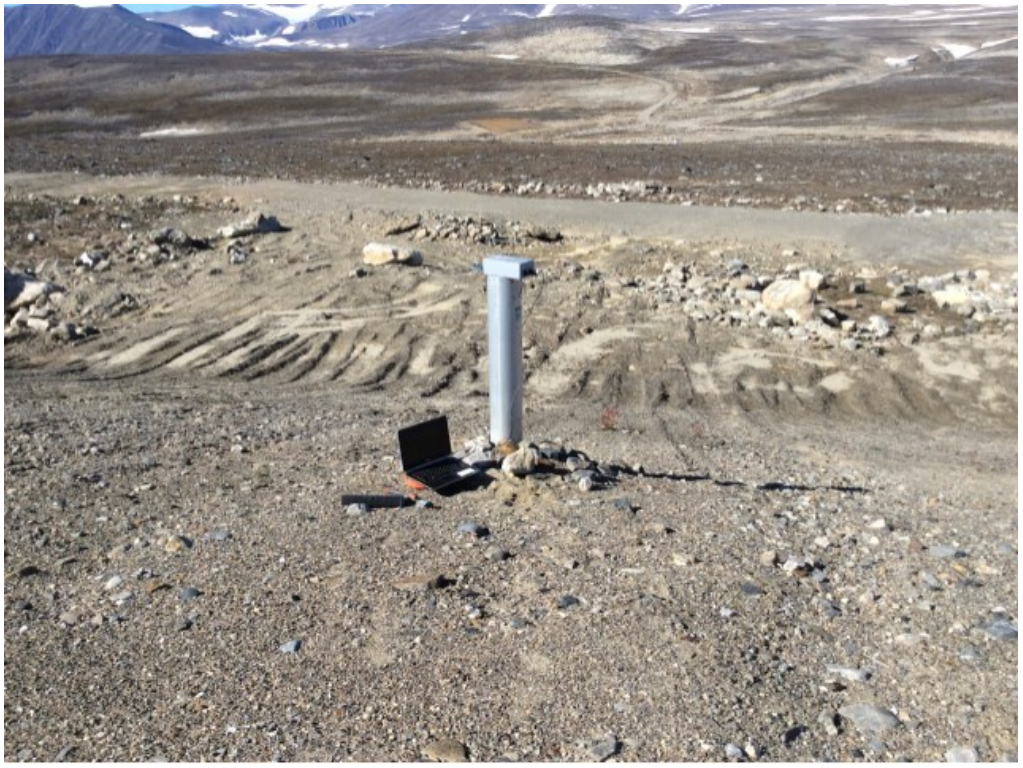


Photo 57: DYE-M – Lower Site Tier II Disposal Facility – Thermistor VT-1 (ATT380_Photo380.jpg)



Photo 58: DYE-M – Lower Site Tier II Disposal Facility – Thermistor VT-2 (ATT384_Photo384.jpg)

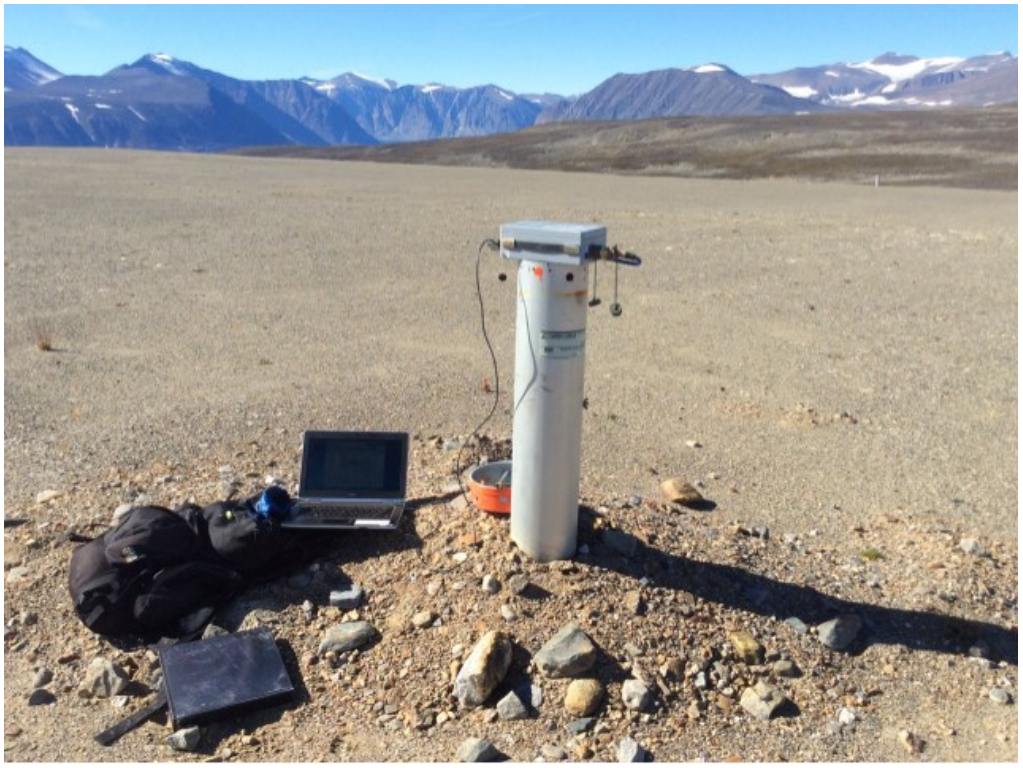


Photo 59: DYE-M – Lower Site Tier II Disposal Facility – Thermistor VT-3 (ATT378_Photo378.jpg)

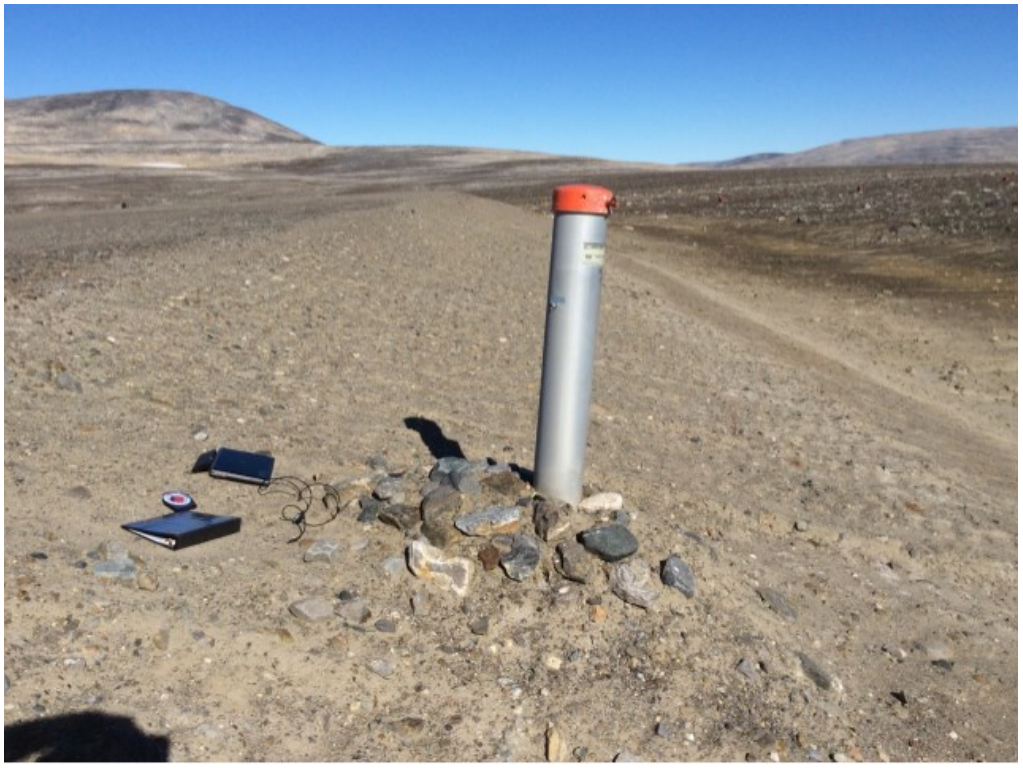


Photo 60: DYE-M – Lower Site Tier II Disposal Facility – Thermistor VT-4 (ATT386_Photo386.jpg)



Photo 61: DYE-M – Lower Site Tier II Disposal Facility – Monitoring well –MW05-13 (ATT192_Photo192.jpg)



Photo 62: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 before excavation (ATT193_Photo193.jpg)



Photo 63: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 after excavation (ATT194_Photo194.jpg)



Photo 64: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 after backfilling (ATT195_Photo195.jpg)



Photo 65: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 before excavation (ATT200_Photo200.jpg)



Photo 66: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 after excavation (ATT201_Photo201.jpg)



Photo 67: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-13 after backfilling (ATT202_Photo202.jpg)



Photo 68: DYE-M – Lower Site Tier II Disposal Facility – Monitoring well –MW05-15 (ATT203_Photo203.jpg)



Photo 69: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-15 before excavation (ATT204_Photo204.jpg)



Photo 70: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-15 after excavation (ATT205_Photo205.jpg)



Photo 71: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-15 after backfilling (ATT206_Photo206.jpg)



Photo 72: DYE-M – Lower Site Tier II Disposal Facility – Monitoring well –MW05-16 (ATT207_Photo207.jpg)



Photo 73: *DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-16 before excavation (ATT208_Photo208.jpg)*



Photo 74: *DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-16 after excavation (ATT209_Photo209.jpg)*



Photo 75: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW05-16 after backfilling (ATT210_Photo210.jpg)



Photo 76: DYE-M – Lower Site Tier II Disposal Facility – Monitoring well –MW12-01 (ATT196_Photo196.jpg)



Photo 77: *DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW12-01 before excavation (ATT197_Photo197.jpg)*



Photo 78: *DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW12-01 after excavation (ATT198_Photo198.jpg)*



Photo 79: DYE-M – Lower Site Tier II Disposal Facility – Soil sampling –MW12-01 after backfilling (ATT199_Photo199.jpg)



Photo 80: DYE-M – Lower Site Crossroads Landfill, facing north (ATT167_Photo167.jpg)

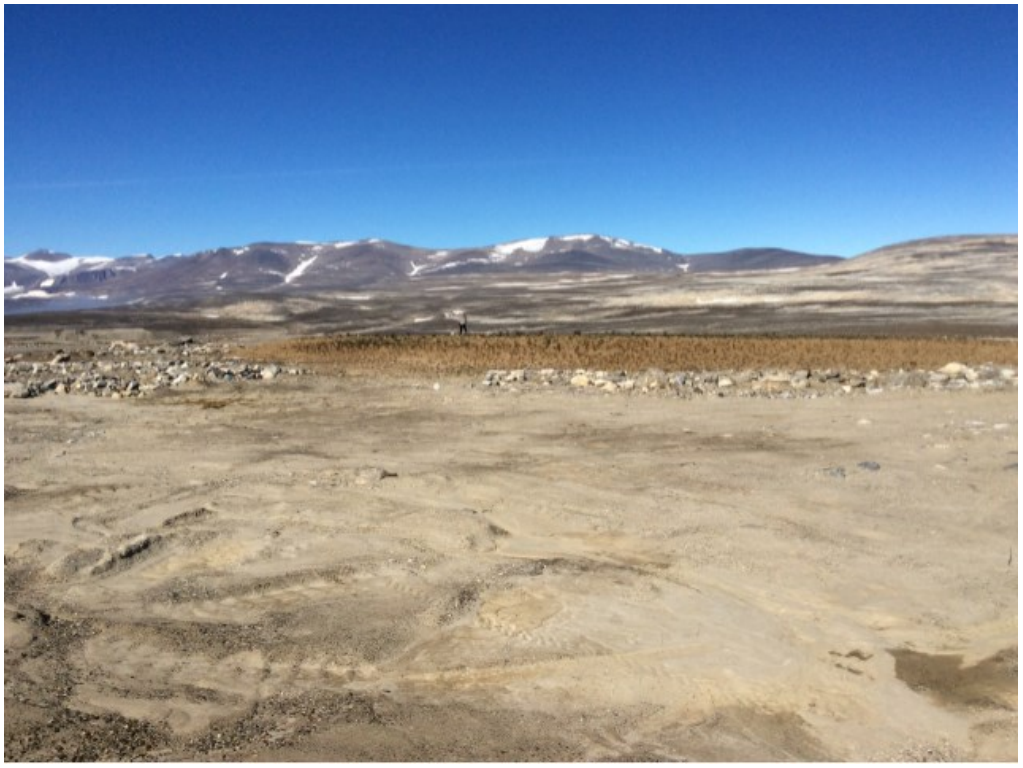


Photo 81: DYE-M – Lower Site Crossroads Landfill, facing northwest (ATT168_Photo168.jpg)



Photo 82: DYE-M – Lower Site Crossroads Landfill, facing northwest (ATT169_Photo169.jpg)



Photo 83: DYE-M – Lower Site Crossroads Landfill, facing southeast (ATT170_Photo170.jpg)



Photo 84: DYE-M – Lower Site Crossroads Landfill, facing east – Feature B – sparse vegetation (ATT171_Photo171.jpg)



Photo 85: DYE-M – Lower Site Crossroads Landfill, facing west (ATT172_Photo172.jpg)



Photo 86: DYE-M – Lower Site Foundation Landfill, facing southeast (ATT173_Photo173.jpg)



Photo 87: DYE-M – Lower Site Foundation Landfill, facing south (ATT174_Photo174.jpg)



Photo 88: DYE-M – Lower Site Foundation Landfill, facing south (ATT175_Photo175.jpg)



Photo 89: DYE-M – Lower Site Foundation Landfill, facing west (ATT176_Photo176.jpg)



Photo 90: DYE-M – Lower Site Foundation Landfill, facing northwest (ATT177_Photo177.jpg)



Photo 91: DYE-M – Lower Site Foundation Landfill, facing southeast (ATT178_Photo178.jpg)



Photo 92: DYE-M – Lower Site Foundation Landfill, facing east (ATT179_Photo179.jpg)



Photo 93: *DYE-M – Lower Site Crossroads Landfill – Slopes and crest surface – Feature B – Sparse grass. Entire surface (crest and slopes) is now vegetated, facing north. (ATT363_Photo363.jpg)*



Photo 94: *DYE-M – Lower Site Crossroads Landfill – southwest toe – Previously observed ponded water (Feature F) was not observed in 2016, facing east. (ATT362_Photo362.jpg)*



Photo 95: DYE-M – Lower Site Crossroads Landfill – southeast slope – Previously observed (Feature G) minor thaw creep tension cracks not observed in 2016, facing north. (ATT365_Photo365.jpg)



Photo 96: DYE-M – Lower Site Crossroads Landfill – northeast slope – Previously observed (Feature H) minor thaw crack not observed in 2016, facing west. (ATT364_Photo364.jpg)



Photo 97: DYE-M – Lower Site Crossroads Landfill – north slope – previously observed (Feature I) crack not observed in 2016, facing east. (ATT367_Photo367.jpg)



Photo 98: DYE-M – Lower Site Crossroads Landfill – Crest surface – Previously observed (Feature J) tire/dozer tracks are weathered and not observed in 2016, facing south. (ATT366_Photo366.jpg)



Photo 99: DYE-M – Lower Site Crossroads Landfill – Feature K – Settlement, facing southwest. (ATT368_Photo368.jpg)



Photo 100: DYE-M – Lower Site Crossroads Landfill – Feature L – Tension cracking 1 m from toe of slope, facing southeast. (ATT369_Photo369.jpg)



Photo 101: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-01 before excavation (ATT189_Photo189.jpg)



Photo 102: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-01 after excavation (ATT190_Photo190.jpg)



Photo 103: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-01 after backfilling (ATT191_Photo191.jpg)



Photo 104: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-02 before excavation (ATT183_Photo183.jpg)



Photo 105: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-02 after excavation (ATT184_Photo184.jpg)



Photo 106: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-02 after backfilling (ATT185_Photo185.jpg)



Photo 107: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-03 before excavation (ATT186_Photo186.jpg)



Photo 108: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-03 after excavation (ATT187_Photo187.jpg)



Photo 109: DYE-M – Lower Site Crossroads Landfill – Soil sampling –DM-03 after backfilling (ATT188_Photo188.jpg)



Photo 110: DYE-M – Lower Site Foundation Landfill – Crest at south end and east slope – Feature D – Moderately vegetated, facing east. (ATT375_Photo375.jpg)



Photo 111: DYE-M – Lower Site Foundation Landfill – northwest and west slopes – Feature D – Moderate grass vegetation, facing northeast. (ATT377_Photo377.jpg)



Photo 112: DYE-M – Lower Site Foundation Landfill – south crest – Feature K – Minor thaw crack, facing southwest (ATT373_Photo373.jpg)



Photo 113: DYE-M – Lower Site Foundation Landfill – southeast slope – Feature L – Minor thaw crack, facing northeast. (ATT374_Photo374.jpg)



Photo 114: DYE-M – Lower Site Foundation Landfill – Cover surface – Feature M – Minor settlement depression, facing southeast. (ATT371_Photo371.jpg)



Photo 115: DYE-M – Lower Site Foundation Landfill – north crest corner – Feature N – Minor thaw crack, facing south. (ATT370_Photo370.jpg)



Photo 116: DYE-M – Lower Site Foundation Landfill – Feature O – Minor self-armouring erosion, accumulation of fines at toe of slope, facing south. (ATT372_Photo372.jpg)



Photo 117: DYE-M – Lower Site Foundation Landfill – Feature P – Tension cracking, facing south. (ATT376_Photo376.jpg)



Photo 118: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-04 before excavation (ATT174_Photo174.jpg)



Photo 119: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-04 after excavation (ATT175_Photo175.jpg)



Photo 120: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-04 after backfilling (ATT176_Photo176.jpg)



Photo 121: DYE-M – Lower Site Foundation Landfill –DM-05 before excavation (ATT180_Photo180.jpg)



Photo 122: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-05 after excavation (ATT181_Photo181.jpg)



Photo 123: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-05 after backfilling (ATT182_Photo182.jpg)



Photo 124: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-06 before excavation (ATT177_Photo177.jpg)



Photo 125: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-06 after excavation (ATT178_Photo178.jpg)



Photo 126: DYE-M – Lower Site Foundation Landfill – Soil sampling –DM-06 after backfilling (ATT179_Photo179.jpg)



Photo 127: DYE-M – Lower Site Powerhouse Landfill, facing south (ATT160_Photo160.jpg)



Photo 128: DYE-M – Lower Site Powerhouse Landfill, facing northwest (ATT161_Photo161.jpg)



Photo 129: DYE-M – Lower Site Powerhouse Landfill, facing northwest (ATT162_Photo162.jpg)



Photo 130: DYE-M – Lower Site Powerhouse Landfill, facing southeast. (ATT163_Photo163.jpg)



Photo 131: DYE-M – Lower Site Powerhouse Landfill, facing northeast. (ATT164_Photo164.jpg)



Photo 132: DYE-M – Lower Site Powerhouse Landfill, facing northwest. (ATT165_Photo165.jpg)



Photo 133: DYE-M – Lower Site Powerhouse Landfill, facing north. (ATT166_Photo166.jpg)



Photo 134: DYE-M – Lower Site Powerhouse Landfill – east toe – Previously observed (Feature B) ponded water at toe not observed in 2016, facing north. (ATT359_Photo359.jpg)



Photo 135: DYE-M – Lower Site Powerhouse Landfill – Feature C – Erosion at crest edge, facing south. (ATT360_Photo360.jpg)



Photo 136: DYE-M – Lower Site Powerhouse Landfill – Thermistor VT-5 (ATT358_Photo358.jpg)



Photo 137: DYE-M – Lower Site Powerhouse Landfill – Thermistor VT-6 (ATT357_Photo357.jpg)



Photo 138: DYE-M – Lower Site Powerhouse Landfill – Thermistor VT-7 (ATT361_Photo361.jpg)



Photo 139: DYE-M – Lower Site Powerhouse Landfill – Water sampling –MW05-05 (ATT170_Photo170.jpg)



Photo 140: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-05 before excavation (ATT171_Photo171.jpg)



Photo 141: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-05 after excavation (ATT172_Photo172.jpg)



Photo 142: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-05 after backfilling (ATT173_Photo173.jpg)



Photo 143: DYE-M – Lower Site Powerhouse Landfill – Water sampling –MW05-06 (ATT166_Photo166.jpg)



Photo 144: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-06 before excavation (ATT167_Photo167.jpg)



Photo 145: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-06 after excavation (ATT168_Photo168.jpg)



Photo 146: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-06 after backfilling (ATT169_Photo169.jpg)



Photo 147: DYE-M – Lower Site Powerhouse Landfill – Water sampling –MW05-07 (ATT162_Photo162.jpg)



Photo 148: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-07 before excavation (ATT163_Photo163.jpg)



Photo 149: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-07 after excavation (ATT164_Photo164.jpg)



Photo 150: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-07 after backfilling (ATT165_Photo165.jpg)



Photo 151: DYE-M – Lower Site Powerhouse Landfill – Water sampling –MW05-08 (ATT158_Photo158.jpg)



Photo 152: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-08 before excavation (ATT159_Photo159.jpg)



Photo 153: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-08 after excavation (ATT160_Photo160.jpg)



Photo 154: DYE-M – Lower Site Powerhouse Landfill – Soil sampling –MW05-08 after backfilling (ATT161_Photo161.jpg)



Photo 155: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing northeast. (ATT147_Photo147.jpg)



Photo 156: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing northeast. (ATT148_Photo148.jpg)



Photo 157: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT149_Photo149.jpg)



Photo 158: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing southeast (ATT150_Photo150.jpg)



Photo 159: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing northwest (ATT151_Photo151.jpg)



Photo 160: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing west (ATT152_Photo152.jpg)



Photo 161: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT153_Photo153.jpg)

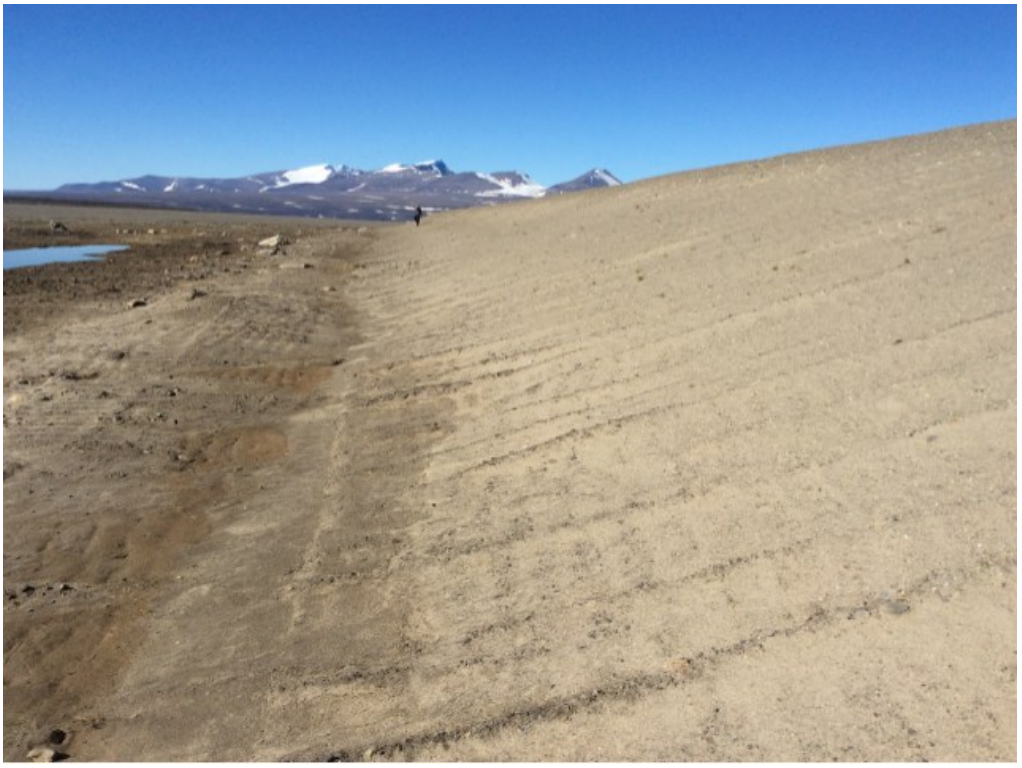


Photo 162: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing southwest (ATT154_Photo154.jpg)



Photo 163: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing east (ATT155_Photo155.jpg)



Photo 164: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing northwest (ATT156_Photo156.jpg)



Photo 165: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing north (ATT157_Photo157.jpg)



Photo 166: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing south (ATT158_Photo158.jpg)

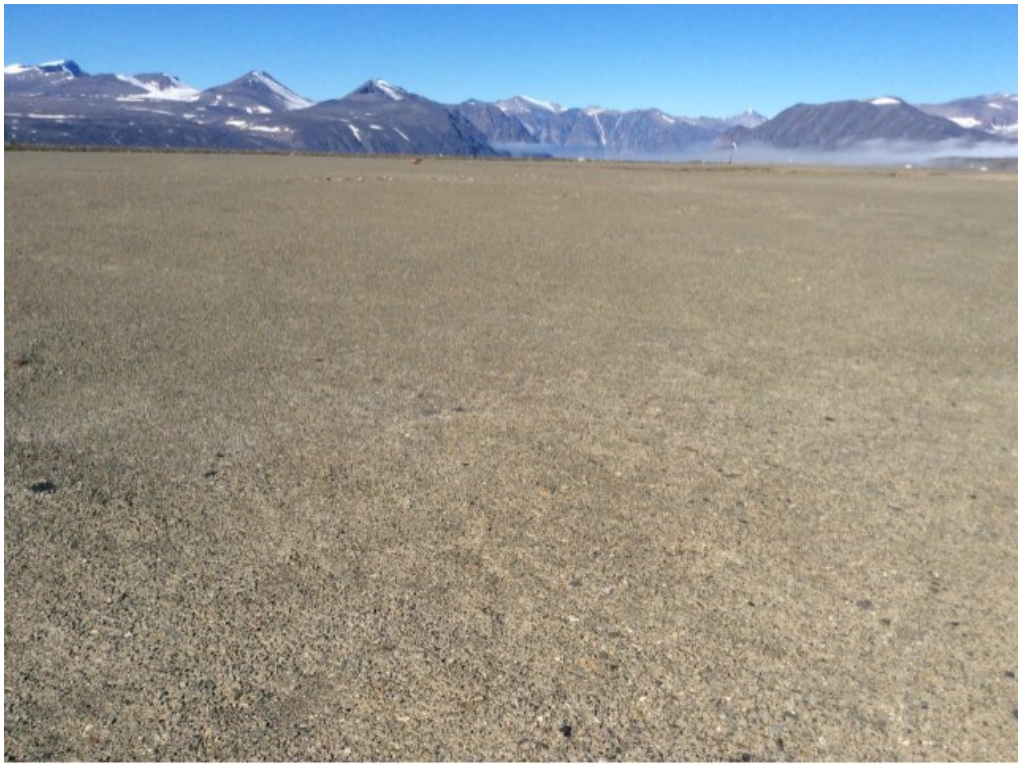


Photo 167: DYE-M – Lower Site Non-Hazardous Waste Landfill, facing south (ATT159_Photo159.jpg)



Photo 168: DYE-M – Lower Site Non Hazardous Waste Landfill – east slope – Feature C – Previously noted tire tracks. Not observed in 2016, facing northwest. (ATT349_Photo349.jpg)



Photo 169: DYE-M – Lower Site Non Hazardous Waste Landfill – West slope and toe – Previously observed ponded water at toe (Feature E) not observed in 2016, facing northwest. (ATT354_Photo354.jpg)



Photo 170: DYE-M – Lower Site Non Hazardous Waste Landfill – south toe – Feature F – Ponded water, facing southwest. (ATT350_Photo350.jpg)



Photo 171: DYE-M – Lower Site Non Hazardous Waste Landfill – south slope – Feature G – Sparse grass, facing southwest. (ATT348_Photo348.jpg)



Photo 172: DYE-M – Lower Site Non Hazardous Waste Landfill – east slope – Feature H – Self-armouring erosion, facing southwest. (ATT347_Photo347.jpg)



Photo 173: DYE-M – Lower Site Non Hazardous Waste Landfill – east toe – Previously observed ponded water at toe (Feature I) not observed in 2016, facing south. (ATT346_Photo346.jpg)



Photo 174: DYE-M – Lower Site Non Hazardous Waste Landfill – north slope – Feature J – Previously observed tire tracks, facing south. (ATT338_Photo338.jpg)



Photo 175: DYE-M – Lower Site Non Hazardous Waste Landfill – Along west crest 7 m from edge – Feature K – Minor crack, facing north. (ATT356_Photo356.jpg)



Photo 176: DYE-M – Lower Site Non Hazardous Waste Landfill – Along crest edge – Feature L – Minor thaw crack, facing northeast. (ATT343_Photo343.jpg)



Photo 177: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature L – Tension crack near toe of slope, facing northeast. (ATT334_Photo334.jpg)



Photo 178: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature L – Tension crack near toe of slope, facing north. (ATT335_Photo335.jpg)



Photo 179: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature M – Sparse vegetation on slope, facing northeast. (ATT336_Photo336.jpg)



Photo 180: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature N – Erosion/settlement on slope, facing northeast. (ATT337_Photo337.jpg)



Photo 181: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature O – Series of self-armouring erosion channels, with accumulation of fines towards the toe of the slope, facing northeast. (ATT339_Photo339.jpg)



Photo 182: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature P – Tension crack halfway down slope, facing southwest. (ATT340_Photo340.jpg)

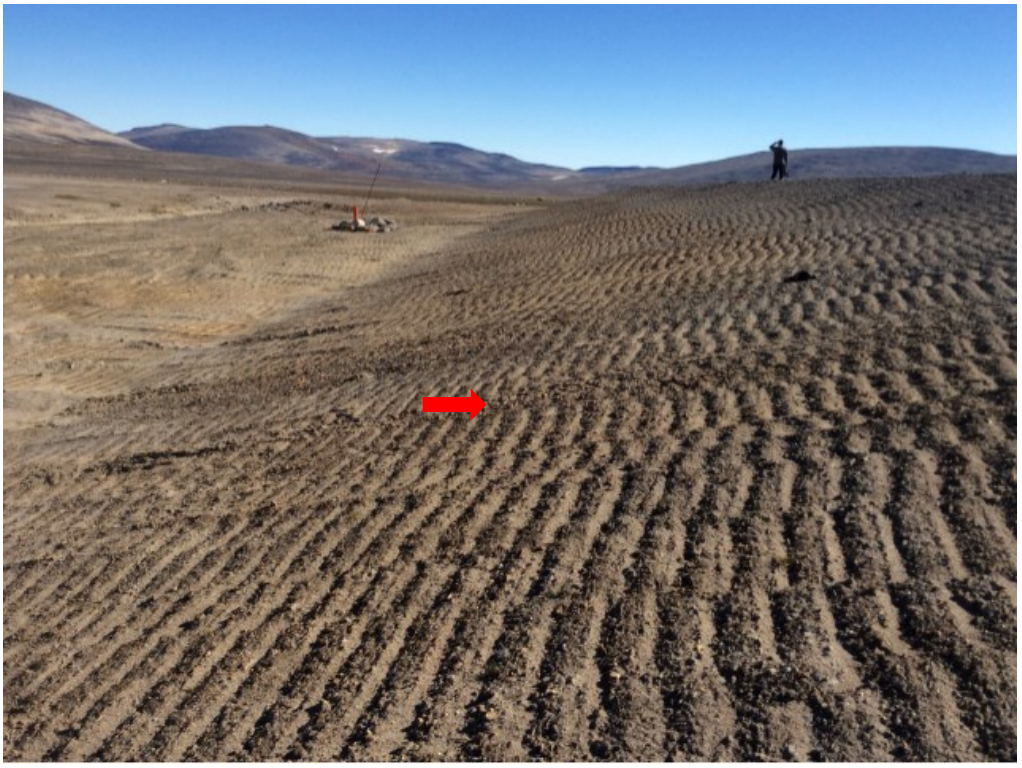


Photo 183: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature Q – Series of self-armouring erosion channels, accumulation of fines at toe of slope, facing northeast. (ATT341_Photo341.jpg)



Photo 184: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature R – Weathered tension crack at crest, facing northeast. (ATT342_Photo342.jpg)



Photo 185: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature S – Series of self-armouring erosion, accumulation of fines at toe of slope, facing southeast. (ATT344_Photo344.jpg)



Photo 186: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature G – Sparse vegetation, facing southeast. (ATT345_Photo345.jpg)



Photo 187: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature T – Parallel tension cracking halfway up slope, facing southwest. (ATT351_Photo351.jpg)



Photo 188: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature U – Tension cracking near toe of slope, facing northeast. (ATT352_Photo352.jpg)



Photo 189: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature V – Tension cracking, facing southwest. (ATT353_Photo353.jpg)



Photo 190: DYE-M – Lower Site Non-Hazardous Waste Landfill – Feature D – Area of self-armouring erosion, accumulation of fines at toe. Area comprises most of west slope, facing northwest. (ATT355_Photo355.jpg)

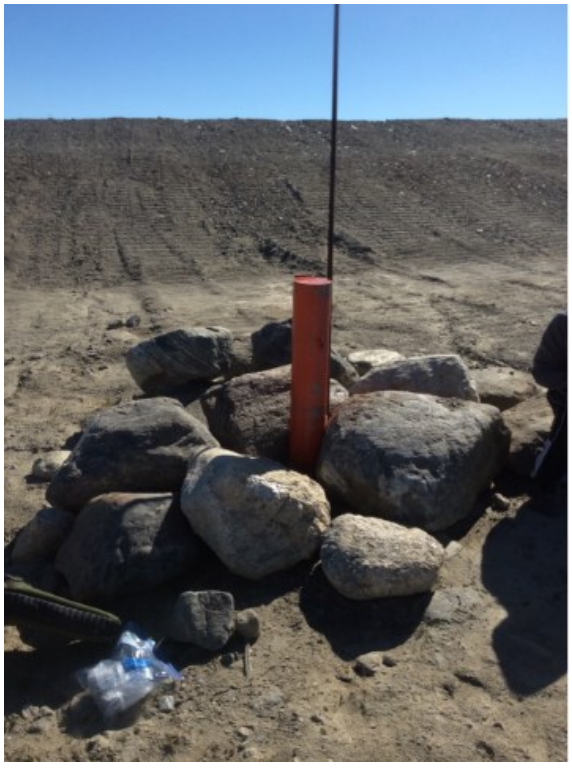


Photo 191: DYE-M – Lower Site Non-Hazardous Waste Landfill – Water sampling –MW05-09 (ATT441_Photo441.jpg)



Photo 192: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-09 before excavation (ATT440_Photo440.jpg)



Photo 193: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-09 after excavation (ATT442_Photo442.jpg)



Photo 194: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-09 after backfilling (ATT443_Photo443.jpg)



Photo 195: DYE-M – Lower Site Non-Hazardous Waste Landfill – Water sampling – MW09-27 (ATT432_Photo432.jpg)



Photo 196: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-27 before excavation (ATT433_Photo433.jpg)



Photo 197: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-27 after excavation (ATT434_Photo434.jpg)



Photo 198: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-27 after backfilling (ATT435_Photo435.jpg)



Photo 199: DYE-M – Lower Site Non-Hazardous Waste Landfill – Water sampling –MW09-26 (ATT428_Photo428.jpg)



Photo 200: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-26 before excavation (ATT429_Photo429.jpg)



Photo 201: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-26 after excavation (ATT430_Photo430.jpg)



Photo 202: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-26 after backfilling (ATT431_Photo431.jpg)



Photo 203: DYE-M – Lower Site Non-Hazardous Waste Landfill – Water sampling –MW09-28 (ATT444_Photo444.jpg)



Photo 204: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-28 before excavation (ATT445_Photo445.jpg)



Photo 205: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-28 after excavation (ATT446_Photo446.jpg)



Photo 206: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW09-28 after backfilling (ATT447_Photo447.jpg)



Photo 207: DYE-M – Lower Site Non-Hazardous Waste Landfill – Water sampling –MW05-12 (ATT436_Photo436.jpg)



Photo 208: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-12 before excavation (ATT437_Photo437.jpg)



Photo 209: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-12 after excavation (ATT438_Photo438.jpg)



Photo 210: DYE-M – Lower Site Non-Hazardous Waste Landfill – Soil sampling –MW05-12 after backfilling (ATT439_Photo439.jpg)

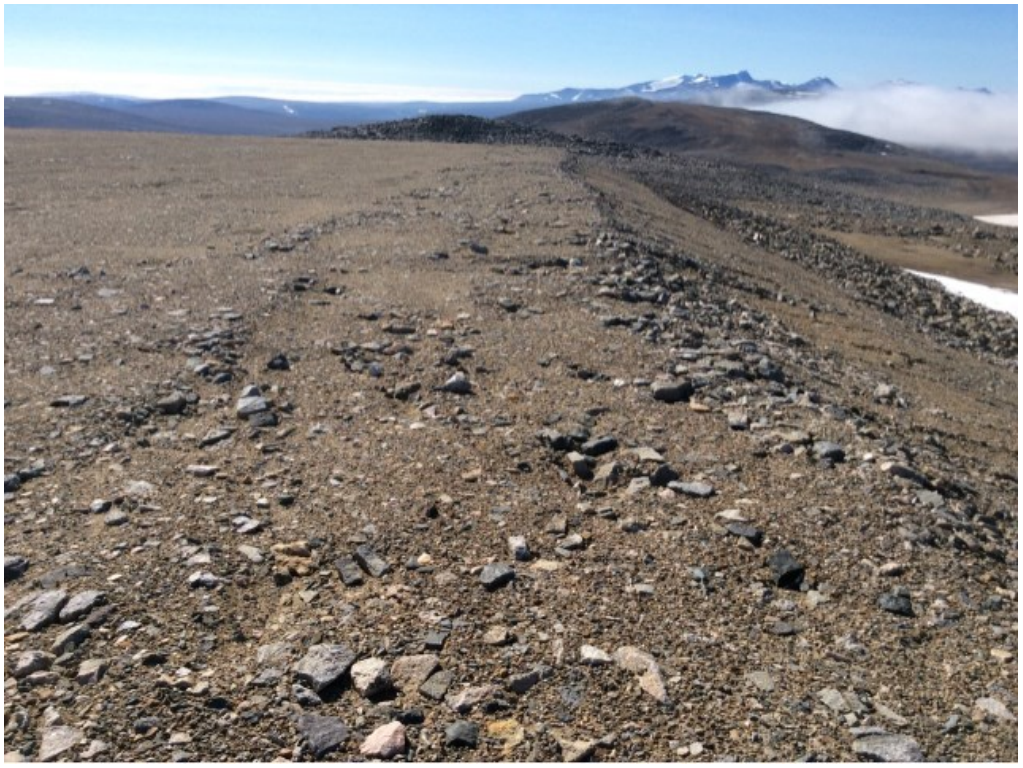


Photo 211: DYE-M – Upper Site Tier II Disposal Facility, facing southwest (ATT125_Photo125.jpg)



Photo 212: DYE-M – Upper Site Tier II Disposal Facility, facing southwest (ATT126_Photo126.jpg)



Photo 213: DYE-M – Upper Site Tier II Disposal Facility, facing southeast (ATT127_Photo127.jpg)



Photo 214: DYE-M – Upper Site Tier II Disposal Facility, facing southeast (ATT128_Photo128.jpg)



Photo 215: DYE-M – Upper Site Tier II Disposal Facility, facing northeast (ATT129_Photo129.jpg)



Photo 216: DYE-M – Upper Site Tier II Disposal Facility, facing southwest (ATT130_Photo130.jpg)



Photo 217: DYE-M – Upper Site Tier II Disposal Facility, facing northwest (ATT131_Photo131.jpg)



Photo 218: DYE-M – Upper Site Tier II Disposal Facility, facing south (ATT132_Photo132.jpg)



Photo 219: DYE-M – Upper Site Tier II Disposal Facility, facing east (ATT133_Photo133.jpg)



Photo 220: DYE-M – Upper Site Tier II Disposal Facility – northwest slope – Feature B – Self-armouring erosion channels every 2-3 m, facing northeast. (ATT320_Photo320.jpg)



Photo 221: DYE-M – Upper Site Tier II Disposal Facility – west crest corner – Feature C – Rough area, facing west. (ATT321_Photo321.jpg)



Photo 222: DYE-M – Upper Site Tier II Disposal Facility – southwest slope – Feature D – Sparse vegetation, facing east. (ATT323_Photo323.jpg)



Photo 223: DYE-M – Upper Site Tier II Disposal Facility – southeast slope – Feature E – Self-armouring erosion and accumulation of fines, facing southwest. (ATT328_Photo328.jpg)

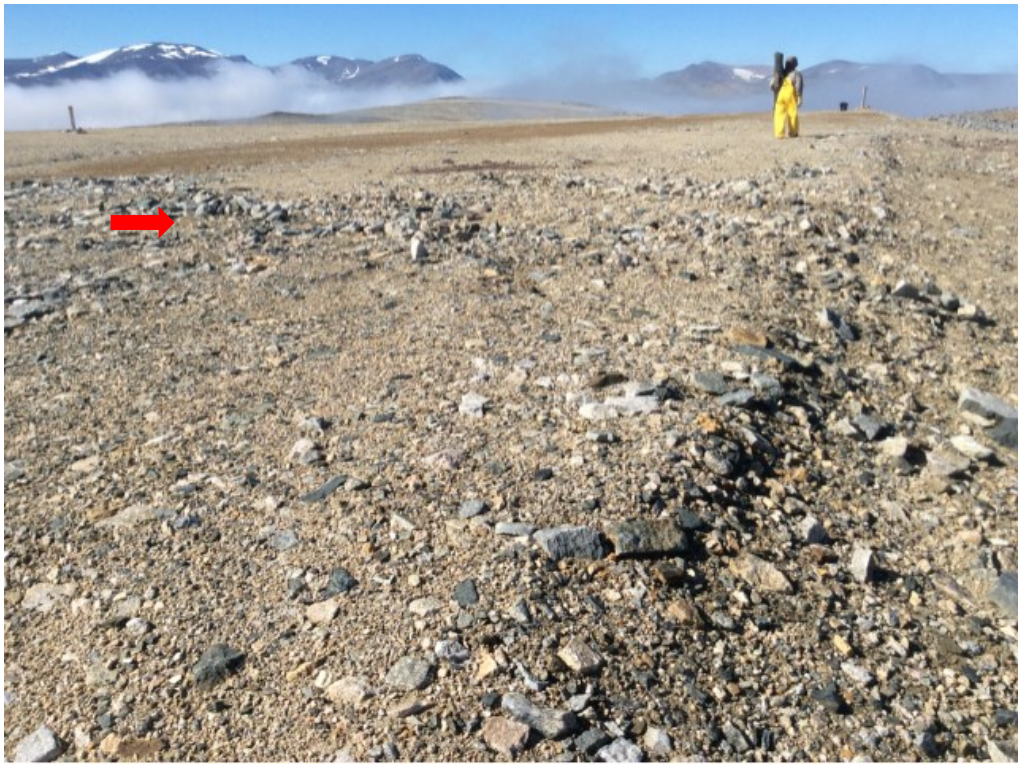


Photo 224: DYE-M – Upper Site Tier II Disposal Facility – east crest corner – Feature F – Rough area, facing west. (ATT325_Photo325.jpg)



Photo 225: DYE-M – Upper Site Tier II Disposal Facility – Feature G – Tension cracking 3 m above slope, facing southwest. (ATT326_Photo326.jpg)



Photo 226: DYE-M – Upper Site Tier II Disposal Facility – Thermistor sampling – Background thermistor (ATT329_Photo329.jpg)



Photo 227: DYE-M – Upper Site Tier II Disposal Facility – Thermistor sampling –VT-10 (ATT327_Photo327.jpg)



Photo 228: DYE-M – Upper Site Tier II Disposal Facility – Thermistor sampling –VT-11 (ATT319_Photo319.jpg)



Photo 229: DYE-M – Upper Site Tier II Disposal Facility – Thermistor sampling –VT-8 (ATT322_Photo322.jpg)



Photo 230: DYE-M – Upper Site Tier II Disposal Facility – Thermistor sampling –VT-9 (ATT324_Photo324.jpg)



Photo 231: DYE-M – Upper Site Tier II Disposal Facility – Water sampling –MW07-22 (ATT138_Photo138.jpg)



Photo 232: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-22 before excavation (ATT139_Photo139.jpg)



Photo 233: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-22 after excavation (ATT140_Photo140.jpg)



Photo 234: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-22 after backfilling (ATT141_Photo141.jpg)



Photo 235: DYE-M – Upper Site Tier II Disposal Facility –MW07-23 (ATT142_Photo142.jpg)



Photo 236: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-23 before excavation (ATT143_Photo143.jpg)



Photo 237: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-23 after excavation (ATT144_Photo144.jpg)



Photo 238: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW07-23 after backfilling (ATT145_Photo145.jpg)



Photo 239: DYE-M – Upper Site Tier II Disposal Facility – Water sampling –MW08-24 (ATT146_Photo146.jpg)



Photo 240: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW08-24 before excavation (ATT147_Photo147.jpg)



Photo 241: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW08-24 after excavation (ATT148_Photo148.jpg)



Photo 242: DYE-M – Upper Site Tier II Disposal Facility –MW08-24 after backfilling (ATT149_Photo149.jpg)



Photo 243: DYE-M – Upper Site Tier II Disposal Facility – Water sampling –MW08-25 (ATT150_Photo150.jpg)



Photo 244: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW08-25 before excavation (ATT151_Photo151.jpg)



Photo 245: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW08-25 after excavation (ATT152_Photo152.jpg)



Photo 246: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW08-25 after backfilling (ATT153_Photo153.jpg)



Photo 247: DYE-M – Upper Site Tier II Disposal Facility – Water sampling –MW12-02 (ATT154_Photo154.jpg)



Photo 248: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW12-2 before excavation (ATT155_Photo155.jpg)



Photo 249: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW12-2 after excavation (ATT156_Photo156.jpg)



Photo 250: DYE-M – Upper Site Tier II Disposal Facility – Soil sampling –MW12-2 after backfilling (ATT157_Photo157.jpg)



Photo 251: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT117_Photo117.jpg)



Photo 252: DYE-M – Upper Site West Landfill (West Lobe), facing west (ATT118_Photo118.jpg)



Photo 253: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT119_Photo119.jpg)



Photo 254: DYE-M – Upper Site West Landfill (West Lobe), facing north (ATT120_Photo120.jpg)



Photo 255: DYE-M – Upper Site West Landfill (West Lobe), facing east (ATT121_Photo121.jpg)



Photo 256: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT122_Photo122.jpg)



Photo 257: DYE-M – Upper Site West Landfill (West Lobe), facing west (ATT123_Photo123.jpg)



Photo 258: DYE-M – Upper Site West Landfill (West Lobe), facing north (ATT124_Photo124.jpg)



Photo 259: DYE-M – Upper Site West Landfill (West Lobe), facing north (ATT134_Photo134.jpg)



Photo 260: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT135_Photo135.jpg)



Photo 261: DYE-M – Upper Site West Landfill (West Lobe), facing east (ATT136_Photo136.jpg)



Photo 262: DYE-M – Upper Site West Landfill (West Lobe), facing northeast (ATT137_Photo137.jpg)



Photo 263: DYE-M – Upper Site West Landfill (West Lobe), facing east (ATT138_Photo138.jpg)



Photo 264: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT139_Photo139.jpg)



Photo 265: DYE-M – Upper Site West Landfill (West Lobe), facing east. (ATT140_Photo140.jpg)



Photo 266: DYE-M – Upper Site West Landfill (West Lobe), facing southwest. (ATT141_Photo141.jpg)



Photo 267: DYE-M – Upper Site West Landfill (West Lobe), facing northeast. (ATT142_Photo142.jpg)



Photo 268: DYE-M – Upper Site West Landfill (West Lobe), facing southeast. (ATT143_Photo143.jpg)



Photo 269: DYE-M – Upper Site West Landfill (West Lobe), facing southwest (ATT144_Photo144.jpg)



Photo 270: DYE-M – Upper Site West Landfill (West Lobe), facing south (ATT145_Photo145.jpg)



Photo 271: DYE-M – Upper Site West Landfill (West Lobe), facing north. (ATT146_Photo146.jpg)



Photo 272: DYE-M – Upper Site West Landfill (West Lobe) – Cover surface west end – Feature A – Minor self-armouring erosion, facing southwest. (ATT330_Photo330.jpg)



Photo 273: DYE-M – Upper Site West Landfill (West Lobe) – southwest – Feature C – Running water and erosion along toe beyond riprap, facing south. (ATT313_Photo313.jpg)



Photo 274: DYE-M – Upper Site West Landfill (West Lobe) – Cover surface near southwest slope – Feature D – Self-armouring erosion, facing southwest. (ATT314_Photo314.jpg)



Photo 275: DYE-M – Upper Site West Landfill (West Lobe) – southwest slope – Feature E – Small erosion channel, facing west. (ATT315_Photo315.jpg)



Photo 276: DYE-M – Upper Site West Landfill (West Lobe) – north toe – Feature F – Some erosion at toe, facing west. (ATT332_Photo332.jpg)

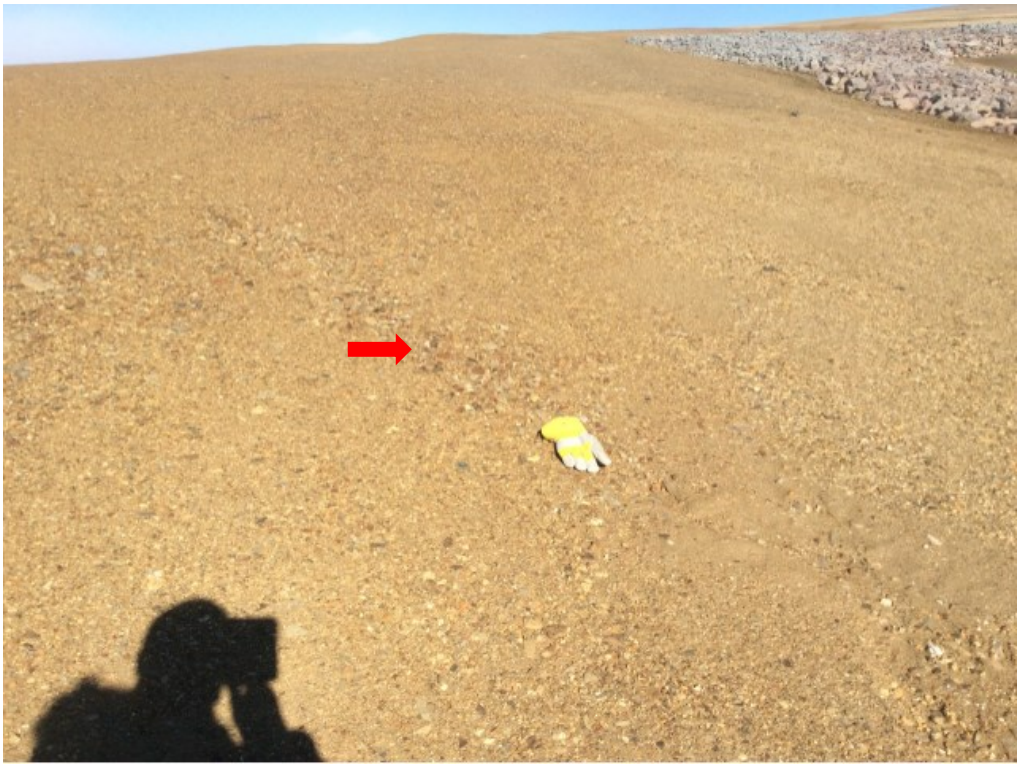


Photo 277: DYE-M – Upper Site West Landfill (West Lobe) – Cover surface – Feature G – Some minor self-armouring erosion (Acceptable), facing west. (ATT331_Photo331.jpg)



Photo 278: DYE-M – Upper Site West Landfill (West Lobe) – south slope – Feature H – Self-armouring erosion, facing west. (ATT318_Photo318.jpg)



Photo 279: DYE-M – Upper Site West Landfill (West Lobe) – Feature I – Cracking on surface of landfill, facing south. (ATT312_Photo312.jpg)



Photo 280: DYE-M – Upper Site West Landfill (West Lobe) – Feature J – Minor tension cracking, facing west. (ATT316_Photo316.jpg)



Photo 281: DYE-M – Upper Site West Landfill (West Lobe) – Feature K – Weathered tension cracking, facing west. (ATT317_Photo317.jpg)



Photo 282: DYE-M – Upper Site West Landfill (West Lobe) –Feature L – Series of self-armouring erosion channels, facing south. (ATT333_Photo333.jpg)



Photo 283: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-31 before excavation (ATT103_Photo103.jpg)



Photo 284: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-31 after excavation (ATT104_Photo104.jpg)



Photo 285: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-31 after backfilling (ATT105_Photo105.jpg)



Photo 286: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-32 before excavation (ATT106_Photo106.jpg)



Photo 287: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-32 after excavation (ATT107_Photo107.jpg)



Photo 288: DYE-M – Upper Site West Landfill (West Lobe) –DM-32 after backfilling (ATT108_Photo108.jpg)



Photo 289: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-33 before excavation (ATT109_Photo109.jpg)



Photo 290: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-33 after excavation (ATT110_Photo110.jpg)



Photo 291: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-33 after backfilling (ATT111_Photo111.jpg)



Photo 292: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-34 before excavation (ATT112_Photo112.jpg)



Photo 293: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-34 after excavation (ATT113_Photo113.jpg)



Photo 294: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-34 after backfilling (ATT114_Photo114.jpg)



Photo 295: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-35 before excavation (ATT94_Photo94.jpg)



Photo 296: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-35 after excavation (ATT95_Photo95.jpg)



Photo 297: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-35 after backfilling (ATT96_Photo96.jpg)



Photo 298: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-36 before excavation (ATT97_Photo97.jpg)



Photo 299: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling – Feature DM36 after excavation (ATT98_Photo98.jpg)

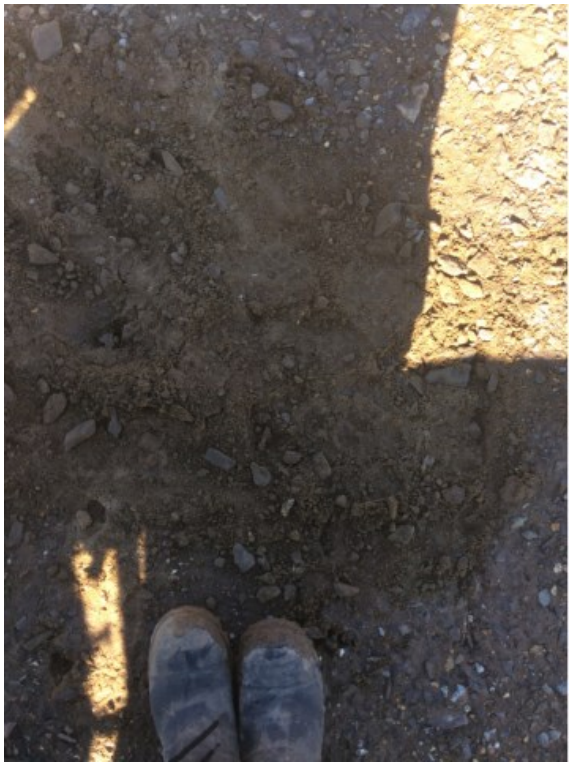


Photo 300: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-36 after backfilling (ATT99_Photo99.jpg)



Photo 301: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-37 before excavation (ATT100_Photo100.jpg)



Photo 302: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-37 after excavation (ATT101_Photo101.jpg)



Photo 303: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-37 after backfilling (ATT102_Photo102.jpg)



Photo 304: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-38 before excavation (ATT115_Photo115.jpg)



Photo 305: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-38 after excavation (ATT116_Photo116.jpg)



Photo 306: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-38 after backfilling (ATT117_Photo117.jpg)



Photo 307: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-39 before excavation (ATT118_Photo118.jpg)



Photo 308: DYE-M – Upper Site West Landfill (West Lobe) – Soil sampling –DM-39 after excavation (ATT119_Photo119.jpg)



Photo 309: DYE-M – Upper Site West Landfill (West Lobe) –DM-39 after backfilling (ATT120_Photo120.jpg)



Photo 310: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing north (ATT105_Photo105.jpg)



Photo 311: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing west (ATT106_Photo106.jpg)



Photo 312: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing west (ATT107_Photo107.jpg)



Photo 313: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing east (ATT108_Photo108.jpg)



Photo 314: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing south (ATT109_Photo109.jpg)

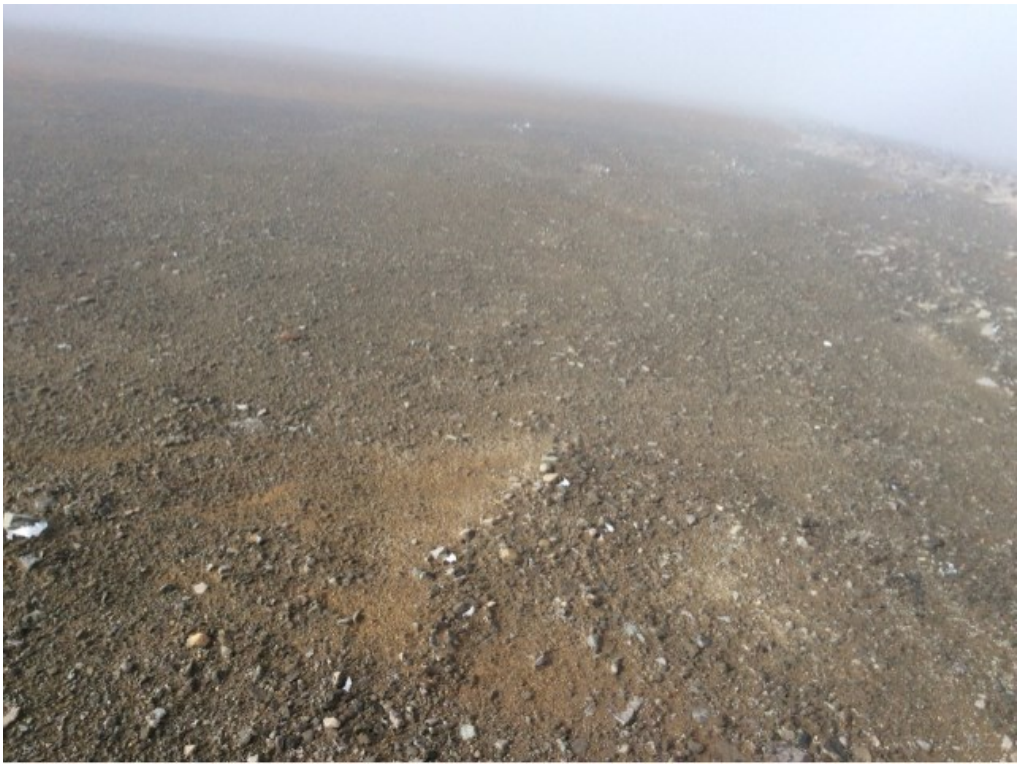


Photo 315: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing west (ATT110_Photo110.jpg)



Photo 316: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing west (ATT111_Photo111.jpg)



Photo 317: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing north (ATT112_Photo112.jpg)



Photo 318: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing south (ATT113_Photo113.jpg)



Photo 319: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing north (ATT114_Photo114.jpg)



Photo 320: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing north (ATT115_Photo115.jpg)



Photo 321: DYE-M – Upper Site West Landfill (Centre and East Lobes), facing west (ATT116_Photo116.jpg)



Photo 322: DYE-M – Upper Site West Landfill (Centre and East Lobes) – north slope – Feature B – Weathered tension cracks, facing south. (ATT302_Photo302.jpg)

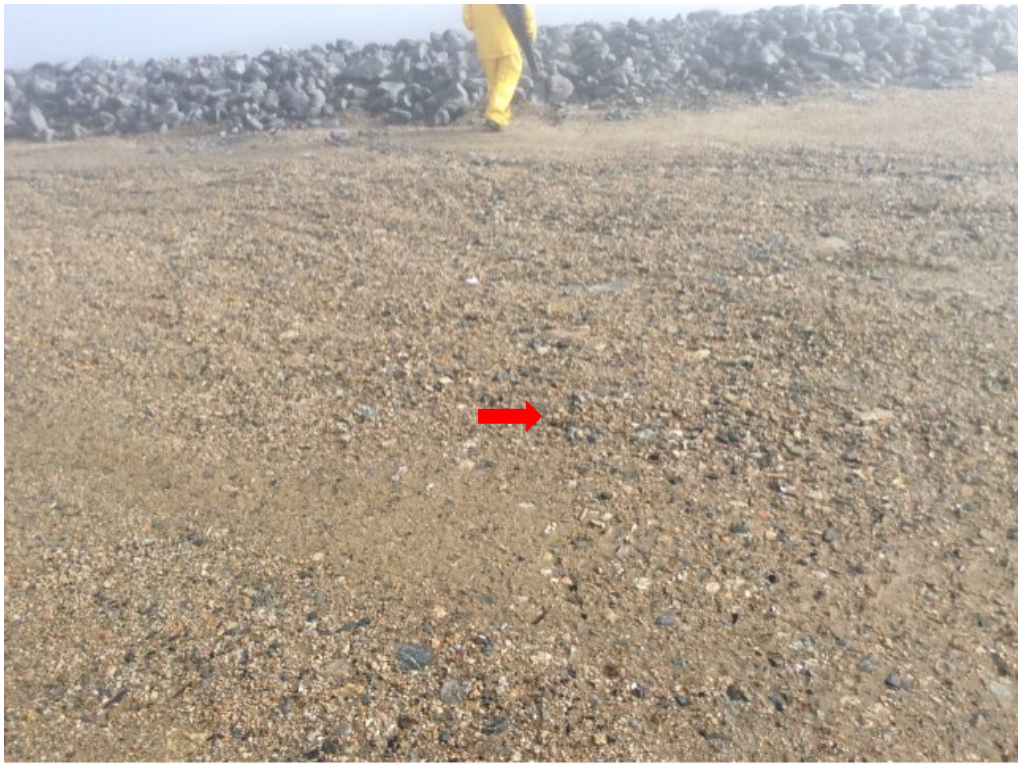


Photo 323: DYE-M – Upper Site West Landfill (Centre and East Lobes) – east slope – Feature D – Self-armouring erosion with fines washing downslope, facing east. (Acceptable) (ATT300_Photo300.jpg)



Photo 324: DYE-M – Upper Site West Landfill (Centre and East Lobes) – east slope – Feature D – Self-armouring erosion with fines washing downslope, facing south. (Acceptable) (ATT301_Photo301.jpg)



Photo 325: DYE-M – Upper Site West Landfill (Centre and East Lobes) – north slope – Feature E – Self-armouring erosion, facing south. (ATT303_Photo303.jpg)



Photo 326: DYE-M – Upper Site West Landfill (Centre and East Lobes) – north slope – Feature F – Self-armouring erosion transporting fines down slope, facing east (Acceptable) (ATT305_Photo305.jpg)



Photo 327: DYE-M – Upper Site West Landfill (Centre and East Lobes) – west slope – Feature G – Self-armouring erosion (ATT308_Photo308.jpg), facing west.



Photo 328: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Cover surface – Feature H – Minor self-armouring erosion, facing west. (Acceptable) (ATT310_Photo310.jpg)



Photo 329: DYE-M – Upper Site West Landfill (Centre and East Lobes) – southwest corner – Feature I – Thaw creep cracks at SW corner, facing east. (Acceptable) (ATT309_Photo309.jpg)



Photo 330: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Feature E – Area of self-armouring erosion with accumulation of fines, facing south. (ATT304_Photo304.jpg)



Photo 331: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Feature J – Area of self-armouring erosion with accumulation of fines, facing north. (ATT306_Photo306.jpg)



Photo 332: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Feature K – Area of self-armouring erosion with accumulation of fines at toe of slope, facing northwest. (ATT307_Photo307.jpg)



Photo 333: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Feature L – Rough/uneven surface, facing east. (ATT311_Photo311.jpg)



Photo 334: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-40 before excavation (ATT91_Photo91.jpg)



Photo 335: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-40 after excavation (ATT92_Photo92.jpg)



Photo 336: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-40 after backfilling (ATT93_Photo93.jpg)



Photo 337: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-41 before excavation (ATT88_Photo88.jpg)



Photo 338: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-41 after excavation (ATT89_Photo89.jpg)



Photo 339: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-41 after backfilling (ATT90_Photo90.jpg)



Photo 340: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-42 before excavation (ATT85_Photo85.jpg)



Photo 341: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-42 after excavation (ATT86_Photo86.jpg)



Photo 342: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-42 after backfilling (ATT87_Photo87.jpg)



Photo 343: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-43 before excavation (ATT82_Photo82.jpg)



Photo 344: DYE-M – Upper Site West Landfill (Centre and east Lobes) – Soil sampling –DM-43 after excavation (ATT83_Photo83.jpg)



Photo 345: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-43 after backfilling (ATT84_Photo84.jpg)



Photo 346: DYE-M – Upper Site west Landfill (Centre and East Lobes) – Soil sampling –DM-44 before excavation (ATT79_Photo79.jpg)



Photo 347: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-44 after excavation (ATT80_Photo80.jpg)



Photo 348: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-44 after backfilling (ATT81_Photo81.jpg)



Photo 349: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-45 before excavation (ATT76_Photo76.jpg)



Photo 350: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-45 after excavation (ATT77_Photo77.jpg)



Photo 351: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-45 after backfilling (ATT78_Photo78.jpg)



Photo 352: DYE-M – Upper Site West Landfill (Centre and East Lobes) –DM-46 before excavation (ATT73_Photo73.jpg)



Photo 353: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-46 after excavation (ATT74_Photo74.jpg)



Photo 354: DYE-M – Upper Site West Landfill (Centre and East Lobes) –DM-46 after backfilling (ATT75_Photo75.jpg)



Photo 355: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-47 before excavation (ATT64_Photo64.jpg)



Photo 356: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-47 after excavation (ATT65_Photo65.jpg)



Photo 357: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-47 after backfilling (ATT66_Photo66.jpg)



Photo 358: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-48 before excavation (ATT70_Photo70.jpg)



Photo 359: DYE-M – Upper Site west Landfill (Centre and East Lobes) – Soil sampling –DM-48 after excavation (ATT71_Photo71.jpg)



Photo 360: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling – Feature DM-48 after backfilling (ATT72_Photo72.jpg)



Photo 361: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling – DM-49 before excavation (ATT67_Photo67.jpg)



Photo 362: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-49 after excavation (ATT68_Photo68.jpg)



Photo 363: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-49 after backfilling (ATT69_Photo69.jpg)



Photo 364: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-50 before excavation (ATT55_Photo55.jpg)*



Photo 365: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-50 after excavation (ATT56_Photo56.jpg)*



Photo 366: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-50 after backfilling (ATT57_Photo57.jpg)*



Photo 367: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling – DM-51 before excavation (ATT58_Photo58.jpg)*



Photo 368: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-51 after excavation (ATT59_Photo59.jpg)*



Photo 369: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-51 after backfilling (ATT60_Photo60.jpg)*



Photo 370: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-52 before excavation (ATT61_Photo61.jpg)



Photo 371: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-52 after excavation (ATT62_Photo62.jpg)



Photo 372: DYE-M – Upper Site West Landfill (Centre and East Lobes) – Soil sampling –DM-52 after backfilling (ATT63_Photo63.jpg)



Photo 373: DYE-M – Upper Site Pallet Line Landfill, facing south. (ATT44_Photo44.jpg)



Photo 374: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT45_Photo45.jpg)



Photo 375: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT46_Photo46.jpg)



Photo 376: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT47_Photo47.jpg)



Photo 377: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT48_Photo48.jpg)



Photo 378: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT49_Photo49.jpg)



Photo 379: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT50_Photo50.jpg)



Photo 380: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT51_Photo51.jpg)



Photo 381: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT52_Photo52.jpg)



Photo 382: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT53_Photo53.jpg)



Photo 383: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT54_Photo54.jpg)



Photo 384: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT55_Photo55.jpg)



Photo 385: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT56_Photo56.jpg)



Photo 386: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT57_Photo57.jpg)



Photo 387: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT58_Photo58.jpg)



Photo 388: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT59_Photo59.jpg)



Photo 389: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT60_Photo60.jpg)



Photo 390: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT61_Photo61.jpg)



Photo 391: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT62_Photo62.jpg)



Photo 392: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT63_Photo63.jpg)



Photo 393: DYE-M – Upper Site Pallet Line Landfill, facing west (ATT64_Photo64.jpg)



Photo 394: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT65_Photo65.jpg)



Photo 395: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT66_Photo66.jpg)



Photo 396: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT67_Photo67.jpg)



Photo 397: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT68_Photo68.jpg)



Photo 398: DYE-M – Upper Site Pallet Line Landfill, facing west (ATT69_Photo69.jpg)



Photo 399: DYE-M – Upper Site Pallet Line Landfill, facing northeast (ATT70_Photo70.jpg)



Photo 400: DYE-M – Upper Site Pallet Line Landfill, facing west (ATT71_Photo71.jpg)



Photo 401: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT72_Photo72.jpg)



Photo 402: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT73_Photo73.jpg)



Photo 403: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT74_Photo74.jpg)



Photo 404: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT75_Photo75.jpg)



Photo 405: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT76_Photo76.jpg)



Photo 406: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT77_Photo77.jpg)



Photo 407: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT78_Photo78.jpg)

Photo 408: Not taken but number kept in photo log to maintain correct photo numbers that follow.



Photo 409: DYE-M – Upper Site Pallet Line Landfill, facing north (ATT79_Photo79.jpg)



Photo 410: DYE-M – Upper Site Pallet Line Landfill, facing south (ATT80_Photo80.jpg)



Photo 411: DYE-M – Upper Site Pallet Line Landfill, facing northeast (ATT81_Photo81.jpg)



Photo 412: DYE-M – Upper Site Pallet Line Landfill, facing east (ATT82_Photo82.jpg)



Photo 413: DYE-M – Upper Site Pallet Line Landfill, facing west (ATT83_Photo83.jpg)



Photo 414: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT84_Photo84.jpg)



Photo 415: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT85_Photo85.jpg)



Photo 416: DYE-M – Upper Site Pallet Line Landfill, facing southwest (ATT86_Photo86.jpg)



Photo 417: DYE-M – Upper Site Pallet Line Landfill, facing south – Previously reported segregated material (Feature G) considered as-built and not related to landfill performance (ATT87_Photo87.jpg)



Photo 418: DYE-M – Upper Site Pallet Line Landfill – Lobe 2 – Internal slope – Feature A – Minor self-armouring erosion, facing east. (Acceptable) (ATT292_Photo292.jpg)



Photo 419: DYE-M – Upper Site Pallet Line Landfill – Lobe 1 - west slope of the south side extension – Feature C – Minor cracking, facing north. (ATT277_Photo277.jpg)



Photo 420: DYE-M – Upper Site Pallet Line Landfill between Lobes 2 and 5 – Feature I – Ponded water on cover draining south, facing southeast. (ATT291_Photo291.jpg)



Photo 421: DYE-M – Upper Site Pallet Line Landfill – Lobe 1 – south slope – Feature K – Minor crack, facing north. (ATT279_Photo279.jpg)

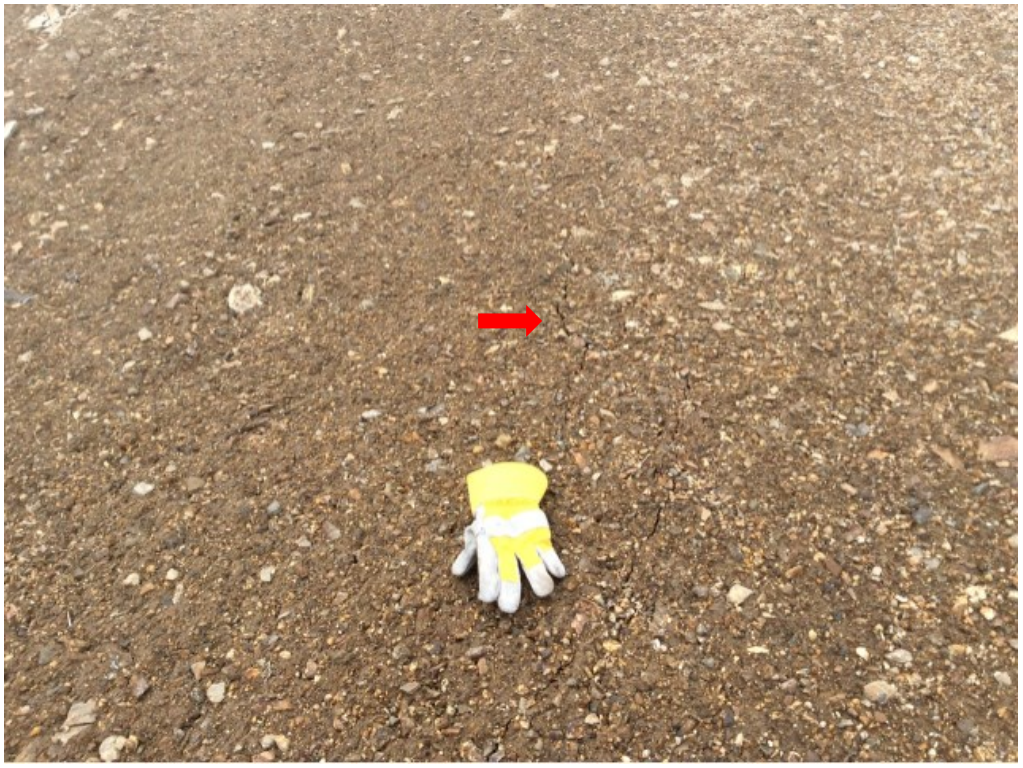


Photo 422: DYE-M – Upper Site Pallet Line Landfill – Lobe 1 – south slope – Feature L – Series of minor cracks, facing east. (Acceptable) (ATT278_Photo278.jpg)



Photo 423: DYE-M – Upper Site Pallet Line Landfill between Lobes 1 and 2 – Previously observed ponded water (Feature M) not observed in 2016, facing south. (ATT275_Photo275.jpg)



Photo 424: DYE-M – Upper Site Pallet Line Landfill – Lobe 5 – east toe – Feature O – Ponded water, facing east. (ATT290_Photo290.jpg)



Photo 425: DYE-M – Upper Site Pallet Line Landfill – Lobe 5, south slope – Feature Q – Minor tension crack and settlement, facing west. (ATT289_Photo289.jpg)



Photo 426: DYE-M – Upper Site Pallet Line Landfill – Lobe 2 southeast slope – Feature R – Minor erosion into boulders at toe, facing west. (ATT288_Photo288.jpg)



Photo 427: DYE-M – Upper Site Pallet Line Landfill – Lobe 2 southeast slope – Feature S – Uneven ground, potential settlement, facing southwest. (ATT287_Photo287.jpg)



Photo 428: DYE-M – Upper Site Pallet Line Landfill – Lobe 2 southeast slope – Feature T – Self-armouring erosion, facing west. (Acceptable) (ATT285_Photo285.jpg)



Photo 429: DYE-M – Upper Site Pallet Line Landfill between Abandoned Lobe and Lobe 1 – Feature U – Two small sinkholes at toe of landfill slope, facing north. (ATT264_Photo264.jpg)



Photo 430: DYE-M – Upper Site Pallet Line Landfill between Lobes 2 and 5 – Feature U – Two small sinkholes at toe of landfill slope, facing north. (ATT265_Photo265.jpg)

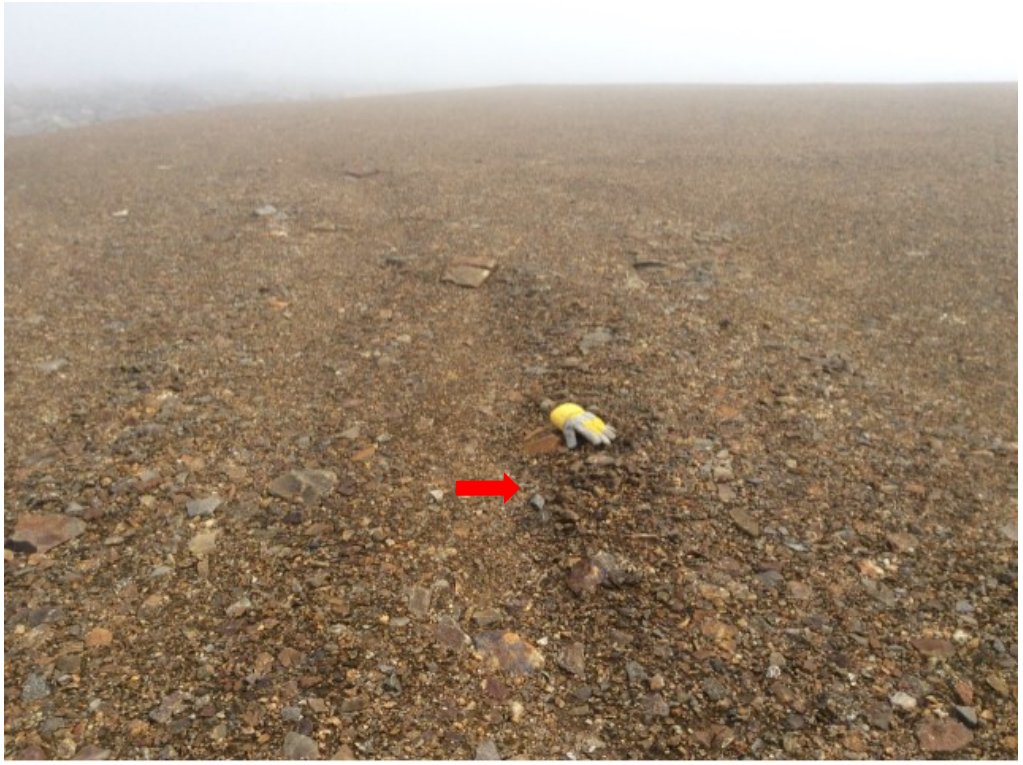


Photo 431: DYE-M – Upper Site Pallet Line Landfill – Inspection sampling – Feature V – Rough surface and self-armouring erosion, facing south. (ATT266_Photo266.jpg)



Photo 432: DYE-M – Upper Site Pallet Line Landfill – Feature W – Minor erosion channel with accumulation of fines at toe of slope, facing north. (ATT267_Photo267.jpg)



Photo 433: DYE-M – Upper Site Pallet Line Landfill – Feature W – Minor erosion channel with fines accumulation at toe of slope, facing north. (ATT268_Photo268.jpg)



Photo 434: DYE-M – Upper Site Pallet Line Landfill – Feature X – Tracked vehicle tracks, facing northeast. (ATT269_Photo269.jpg)

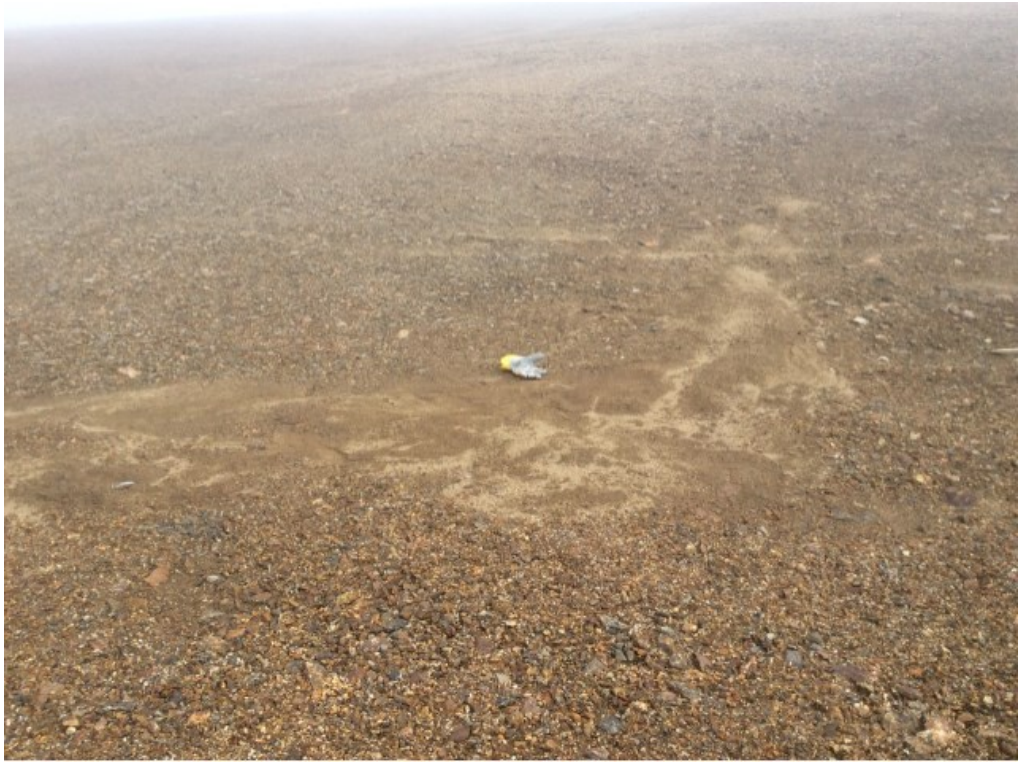


Photo 435: DYE-M – Upper Site Pallet Line Landfill – Feature Y – Self-armouring erosion, accumulation of fines in small depression, facing east. (ATT270_Photo270.jpg)



Photo 436: DYE-M – Upper Site Pallet Line Landfill – Feature Z – Seepage with sheen at toe of slope, facing southeast. (ATT271_Photo271.jpg)



Photo 437: DYE-M – Upper Site Pallet Line Landfill – Inspection sampling – Feature AA – Tension cracking 1 m below crest, facing south (ATT272_Photo272.jpg)



Photo 438: DYE-M – Upper Site Pallet Line Landfill – Inspection sampling – Feature AB – Parallel tension cracking, below crest of landfill facing south (ATT273_Photo273.jpg)



Photo 439: DYE-M – Upper Site Pallet Line Landfill – Feature AB – Parallel tension cracking, below crest of landfill, facing south. (ATT274_Photo274.jpg)



Photo 440: DYE-M – Upper Site Pallet Line Landfill – Feature AC – Tension cracking near toe of slope, facing west. (ATT276_Photo276.jpg)



Photo 441: DYE-M – Upper Site Pallet Line Landfill – Feature AD – Tension cracking 3 m below crest of landfill, facing southwest. (ATT280_Photo280.jpg)



Photo 442: DYE-M – Upper Site Pallet Line Landfill – Feature AE – Tension cracking 1 m below crest of landfill, facing west. (ATT281_Photo281.jpg)



Photo 443: DYE-M – Upper Site Pallet Line Landfill – Inspection sampling – Feature AF – Tension cracking at crest, facing west. (ATT282_Photo282.jpg)



Photo 444: DYE-M – Upper Site Pallet Line Landfill – Feature AG – Minor settlement, facing east. (ATT283_Photo283.jpg)



Photo 445: DYE-M – Upper Site Pallet Line Landfill – Feature B – Self-armouring erosion with fines accumulating at toe, facing north. (ATT284_Photo284.jpg)



Photo 446: DYE-M – Upper Site Pallet Line Landfill – Feature T – Minor cracking and self-armoring erosion, facing north. (ATT286_Photo286.jpg)



Photo 447: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-53 before excavation (ATT405_Photo405.jpg)



Photo 448: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-53 after excavation (ATT406_Photo406.jpg)



Photo 449: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-53 after backfilling (ATT407_Photo407.jpg)



Photo 450: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-54 before excavation (ATT37_Photo37.jpg)



Photo 451: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-54 after excavation (ATT38_Photo38.jpg)



Photo 452: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-54 after backfilling (ATT39_Photo39.jpg)



Photo 453: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-55 before excavation (ATT28_Photo28.jpg)



Photo 454: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-55 after excavation (ATT29_Photo29.jpg)



Photo 455: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-55 after backfilling (ATT30_Photo30.jpg)



Photo 456: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-56 before excavation (ATT31_Photo31.jpg)



Photo 457: DYE-M – Upper Site Pallet Line Landfill – Between Lobes 5 and 6 – DM-56 after excavation (ATT32_Photo32.jpg)



Photo 458: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-56 after backfilling (ATT33_Photo33.jpg)



Photo 459: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-57 before excavation (ATT34_Photo34.jpg)



Photo 460: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-57 after excavation (ATT35_Photo35.jpg)



Photo 461: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-57 after backfilling (ATT36_Photo36.jpg)



Photo 462: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-58 before excavation (ATT40_Photo40.jpg)



Photo 463: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-58 after excavation (ATT41_Photo41.jpg)



Photo 464: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-58 after backfilling (ATT42_Photo42.jpg)



Photo 465: DYE-M – Upper Site Pallet Line Landfill – Soil sampling – DM-59 before excavation (ATT43_Photo43.jpg)



Photo 466: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-59 after excavation (ATT44_Photo44.jpg)



Photo 467: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-59 after backfilling (ATT45_Photo45.jpg)



Photo 468: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-60 before excavation (ATT52_Photo52.jpg)



Photo 469: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-60 after excavation (ATT53_Photo53.jpg)



Photo 470: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-60 after backfilling (ATT54_Photo54.jpg)



Photo 471: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-61 before excavation (ATT49_Photo49.jpg)



Photo 472: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-61 after excavation (ATT50_Photo50.jpg)



Photo 473: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-61 after backfilling (ATT51_Photo51.jpg)



Photo 474: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-62 before excavation (ATT46_Photo46.jpg)



Photo 475: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-62 after excavation (ATT47_Photo47.jpg)



Photo 476: DYE-M – Upper Site Pallet Line Landfill – Soil sampling –DM-62 after backfilling (ATT48_Photo48.jpg)



Photo 477: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing north (ATT88_Photo88.jpg)



Photo 478: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing north – Feature A – Regraded area with tire tracks (ATT89_Photo89.jpg)



Photo 479: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing south (ATT90_Photo90.jpg)



Photo 480: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west (ATT91_Photo91.jpg)



Photo 481: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing southwest. (ATT92_Photo92.jpg)



Photo 482: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west.(ATT93_Photo93.jpg)



Photo 483: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west. (ATT94_Photo94.jpg)



Photo 484: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing east – Feature B – segregated cover material (ATT95_Photo95.jpg)



Photo 485: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west (ATT96_Photo96.jpg)



Photo 486: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west (ATT97_Photo97.jpg)



Photo 487: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing west (ATT98_Photo98.jpg)



Photo 488: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing south (ATT99_Photo99.jpg)



Photo 489: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing south (ATT100_Photo100.jpg)



Photo 490: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing southeast (ATT101_Photo101.jpg)



Photo 491: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing east (ATT102_Photo102.jpg)



Photo 492: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing northeast (ATT103_Photo103.jpg)



Photo 493: DYE-M – Upper Site Non-Hazardous Waste Landfill, facing northeast (ATT104_Photo104.jpg)



Photo 494: DYE-M – Upper Site Non Hazardous Waste Landfill – east slope – Feature A – Regraded area with tire tracks, facing southeast. (Acceptable) (ATT294_Photo294.jpg)



Photo 495: DYE-M – Upper Site Non Hazardous Waste Landfill – southeast corner of crest – Feature B – Previously observed segregated cover material, no change, facing west. (Acceptable) (ATT293_Photo293.jpg)



Photo 496: DYE-M – Upper Site Non Hazardous Waste Landfill – Cover surface – Feature B – Area of cover material segregation, facing west. (Acceptable) (ATT296_Photo296.jpg)



Photo 497: DYE-M – Upper Site Non Hazardous Waste Landfill – Near warehouse – Feature B – Area of cover material segregation, facing north. (Acceptable) (ATT297_Photo297.jpg)



Photo 498: DYE-M – Upper Site Non Hazardous Waste Landfill – Cover surface – Previously observed Feature C – Ponded water not observed in 2016, facing north. (ATT299_Photo299.jpg)



Photo 499: DYE-M – Upper Site Non Hazardous Waste Landfill – Cover surface along north crest – Previously observed Feature D – Ponded water and wet area not observed in 2016, facing southeast. (ATT298_Photo298.jpg)



Photo 500: DYE-M – Upper Site Non Hazardous Waste Landfill – Water sampling –MW06-19 (ATT134_Photo134.jpg)



Photo 501: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling –MW06-19 before excavation (ATT135_Photo135.jpg)



Photo 502: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling –MW06-19 after excavation (ATT136_Photo136.jpg)



Photo 503: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling –MW06-19 after backfilling (ATT137_Photo137.jpg)



Photo 504: DYE-M – Upper Site Non Hazardous Waste Landfill – Water sampling –MW06-20 (ATT130_Photo130.jpg)



Photo 505: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling –MW06-20 before excavation (ATT131_Photo131.jpg)



Photo 506: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling –MW06-20 after excavation (ATT132_Photo132.jpg)



Photo 507: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW06-20 after backfilling (ATT133_Photo133.jpg)



Photo 508: DYE-M – Upper Site Non Hazardous Waste Landfill – Water sampling – MW07-21 (ATT126_Photo126.jpg)



Photo 509: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW07-21 before excavation (ATT127_Photo127.jpg)



Photo 510: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW07-21 after excavation (ATT128_Photo128.jpg)



Photo 511: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW07-21 after backfilling (ATT129_Photo129.jpg)



Photo 512: DYE-M – Upper Site Non Hazardous Waste Landfill – Water sampling – MW06-18 (ATT124_Photo124.jpg)



Photo 513: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW6-18 before excavation (ATT121_Photo121.jpg)



Photo 514: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW6-18 after excavation (ATT122_Photo122.jpg)



Photo 515: DYE-M – Upper Site Non Hazardous Waste Landfill – Soil sampling – MW6-18 after backfilling (ATT123_Photo123.jpg)



Photo 516: DYE-M – Upper Site Non-Hazardous Waste Landfill – east landfill crest – Feature E – Weathered tension crack 5 m from crest edge, facing south. (ATT295_Photo295.jpg)



Photo 517: DYE-M – Upper Site NWS Landfill, facing northwest (ATT2_Photo2.jpg)



Photo 518: DYE-M – Upper Site NWS Landfill, facing southwest (ATT3_Photo3.jpg)



Photo 519: DYE-M – Upper Site NWS Landfill, facing south (ATT4_Photo4.jpg)



Photo 520: DYE-M – Upper Site NWS Landfill, facing south (ATT5_Photo5.jpg)



Photo 521: DYE-M – Upper Site NWS Landfill, facing west (ATT6_Photo6.jpg)



Photo 522: DYE-M – Upper Site NWS Landfill, facing north (ATT7_Photo7.jpg)



Photo 523: DYE-M – Upper Site NWS Landfill, facing west (ATT8_Photo8.jpg)



Photo 524: DYE-M – Upper Site NWS Landfill, facing north (ATT9_Photo9.jpg)



Photo 525: DYE-M – Upper Site NWS Landfill, facing east (ATT10_Photo10.jpg)



Photo 526: DYE-M – Upper Site NWS Landfill, facing north (ATT11_Photo11.jpg)



Photo 527: DYE-M – Upper Site NWS Landfill, facing east (ATT12_Photo12.jpg)



Photo 528: DYE-M – Upper Site NWS Landfill, facing south (ATT13_Photo13.jpg)



Photo 529: DYE-M – Upper Site NWS Landfill, facing east (ATT14_Photo14.jpg)



Photo 530: DYE-M – Upper Site NWS Landfill, facing east (ATT15_Photo15.jpg)



Photo 531: DYE-M – Upper Site NWS Landfill, facing south (ATT16_Photo16.jpg)



Photo 532: DYE-M – Upper Site NWS Landfill – Feature C – minor erosion channels, facing west (ATT17_Photo17.jpg)



Photo 533: DYE-M – Upper Site NWS Landfill – Lower south slope – Feature B – Debris, steel cable, facing south. (Acceptable) (ATT212_Photo212.jpg)



Photo 534: DYE-M – Upper Site NWS Landfill – Upper south slope – Feature C – Minor erosion channels, total of 6 channels, 2 to 10 m apart, facing northwest. (Acceptable) (ATT211_Photo211.jpg)



Photo 535: DYE-M – Upper Site NWS Landfill – west of cover surface – Feature D – Minor erosion, facing east. (ATT213_Photo213.jpg)



Photo 536: DYE-M – Upper Site NWS Landfill – Soil sampling –DM-18 before excavation (ATT2_Photo2.jpg)



Photo 537: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-18 after excavation (ATT3_Photo3.jpg)



Photo 538: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-18 after backfilling (ATT5_Photo5.jpg)



Photo 539: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-19 before excavation (ATT15_Photo15.jpg)



Photo 540: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-19 after excavation (ATT16_Photo16.jpg)



Photo 541: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-19 after backfilling (ATT17_Photo17.jpg)



Photo 542: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 before excavation (ATT9_Photo9.jpg)



Photo 543: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after excavation (ATT10_Photo10.jpg)



Photo 544: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after backfilling (ATT11_Photo11.jpg)



Photo 545: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 before excavation (ATT12_Photo12.jpg)



Photo 546: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after excavation (ATT13_Photo13.jpg)



Photo 547: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after backfilling (ATT14_Photo14.jpg)



Photo 548: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 before excavation (ATT6_Photo6.jpg)



Photo 549: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after excavation (ATT7_Photo7.jpg)



Photo 550: DYE-M – Upper Site NWS Landfill – Soil sampling – DM-21 after backfilling (ATT8_Photo8.jpg)



Photo 551: DYE-M – Upper Site South Landfill West, facing south. (ATT18_Photo18.jpg)



Photo 552: DYE-M – Upper Site South Landfill West, facing west. (ATT19_Photo19.jpg)



Photo 553: DYE-M – Upper Site South Landfill West, facing west. (ATT20_Photo20.jpg)



Photo 554: DYE-M – Upper Site South Landfill West, facing southwest (ATT21_Photo21.jpg)



Photo 555: DYE-M – Upper Site South Landfill West, facing southwest (ATT22_Photo22.jpg)



Photo 556: DYE-M – Upper Site South Landfill West, facing southwest (ATT23_Photo23.jpg)



Photo 557: DYE-M – Upper Site South Landfill West, facing south – Feature C – Minor self-armouring erosion with accumulation of fines below (ATT24_Photo24.jpg)



Photo 558: DYE-M – Upper Site South Landfill West, facing south (ATT25_Photo25.jpg)



Photo 559: DYE-M – Upper Site South Landfill West, facing southwest (ATT26_Photo26.jpg)



Photo 560: DYE-M – Upper Site South Landfill West, facing northeast (ATT27_Photo27.jpg)



Photo 561: DYE-M – Upper Site South Landfill West, facing northeast (ATT28_Photo28.jpg)



Photo 562: DYE-M – Upper Site South Landfill West, facing east (ATT29_Photo29.jpg)



Photo 563: DYE-M – Upper Site South Landfill West, facing north (ATT30_Photo30.jpg)



Photo 564: DYE-M – Upper Site South Landfill West, facing east (ATT31_Photo31.jpg)



Photo 565: DYE-M – Upper Site South Landfill West, facing south (ATT32_Photo32.jpg)



Photo 566: DYE-M – Upper Site South Landfill West, facing south (ATT33_Photo33.jpg)



Photo 567: DYE-M – Upper Site South Landfill West, facing south – Feature J – Self-armouring erosion channel (ATT34_Photo34.jpg)



Photo 568: DYE-M – Upper Site South Landfill West, facing west – Feature I – Self-armouring erosion (ATT35_Photo35.jpg)



Photo 569: DYE-M – Upper Site South Landfill west – south slope – Feature A – Sparse vegetation, facing south. (ATT215_Photo215.jpg)



Photo 570: DYE-M – Upper Site South Landfill West – Cover surface – Feature C – Erosion with accumulation of fines, facing south. (Acceptable) (ATT214_Photo214.jpg)



Photo 571: DYE-M – Upper Site South Landfill West – Cover surface – Feature E – Minor erosion self-armouring with accumulation of fines below, facing south west. (ATT221_Photo221.jpg)



Photo 572: DYE-M – Upper Site South Landfill West – Cover surface – Feature F – Minor erosion channel from the middle of landfill towards south, facing north. (ATT216_Photo216.jpg)



Photo 573: DYE-M – Upper Site South Landfill West – Cover surface – Feature G – Minor self-armouring erosion, facing north. (Acceptable) (ATT220_Photo220.jpg)



Photo 574: DYE-M – Upper Site South Landfill West – Cover surface – Feature H – Minor self-armouring erosion channel, facing south west. (Acceptable) (ATT222_Photo222.jpg)



Photo 575: DYE-M – Upper Site South Landfill West – Feature I – Minor self-armouring erosion with accumulation of fines, facing southeast. (ATT217_Photo217.jpg)

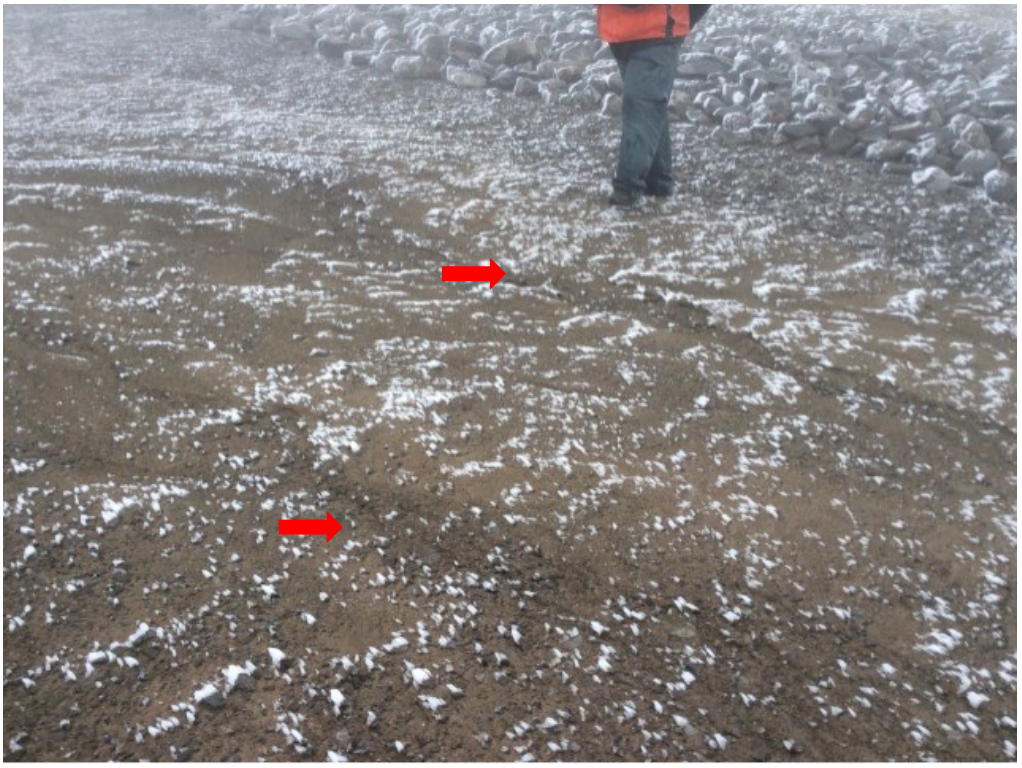


Photo 576: DYE-M – Upper Site South Landfill West – Feature J – Series of erosion channels with accumulation of fines, facing east. (ATT218_Photo218.jpg)



Photo 577: DYE-M – Upper Site South Landfill West – Feature K – Sparse vegetation, facing south. (ATT219_Photo219.jpg)



Photo 578: DYE-M – Upper Site South Landfill West – Feature L – Minor tension cracking on north crest, facing south. (ATT239_Photo239.jpg)



Photo 579: DYE-M – Upper Site South Landfill West – Soil sampling – DM-23 before excavation (ATT240_Photo240.jpg)



Photo 580: DYE-M – Upper Site South Landfill West – Soil sampling – DM-23 after excavation (ATT241_Photo241.jpg)



Photo 581: DYE-M – Upper Site South Landfill West – Soil sampling – DM-23 after backfilling (ATT242_Photo242.jpg)



Photo 582: DYE-M – Upper Site South Landfill West – Soil sampling – DM-24 before excavation (ATT18_Photo18.jpg)



Photo 583: DYE-M – Upper Site South Landfill West – Soil sampling – DM-24 after excavation (ATT19_Photo19.jpg)



Photo 584: DYE-M – Upper Site South Landfill West – Soil sampling – DM-24 after backfilling (ATT20_Photo20.jpg)



Photo 585: DYE-M – Upper Site South Landfill West – Soil sampling – DM-25 before excavation (ATT21_Photo21.jpg)



Photo 586: DYE-M – Upper Site South Landfill West – Soil sampling – DM-25 after excavation (ATT22_Photo22.jpg)



Photo 587: DYE-M – Upper Site South Landfill West – Soil sampling – DM-25 after backfilling (ATT23_Photo23.jpg)



Photo 588: DYE-M – Upper Site South Landfill West – Soil sampling – DM-26 before excavation (ATT24_Photo24.jpg)



Photo 589: DYE-M – Upper Site South Landfill West – Soil sampling – DM-26 after excavation (ATT25_Photo25.jpg)



Photo 590: DYE-M – Upper Site South Landfill West – Soil sampling – DM-26 after backfilling (ATT26_Photo26.jpg)



Photo 591: DYE-M – Upper Site South Landfill West – Soil sampling – DM-27 before excavation (ATT27_Photo27.jpg)



Photo 592: DYE-M – Upper Site South Landfill West – Soil sampling – DM-27 after excavation (ATT228_Photo228.jpg)



Photo 593: DYE-M – Upper Site South Landfill West – Soil sampling – DM-27 after backfilling (ATT229_Photo229.jpg)



Photo 594: DYE-M – Upper Site South Landfill West – Soil sampling – DM-28 before excavation (ATT230_Photo230.jpg)



Photo 595: DYE-M – Upper Site South Landfill West – Soil sampling – DM-28 after excavation (ATT231_Photo231.jpg)



Photo 596: DYE-M – Upper Site South Landfill West – Soil sampling – DM-28 after backfilling (ATT232_Photo232.jpg)



Photo 597: DYE-M – Upper Site South Landfill West – Soil sampling – DM-29 before excavation (ATT233_Photo233.jpg)



Photo 598: DYE-M – Upper Site South Landfill West – Soil sampling – DM-29 after excavation (ATT234_Photo234.jpg)



Photo 599: DYE-M – Upper Site South Landfill West – Soil sampling – DM-29 after backfilling (ATT235_Photo235.jpg)



Photo 600: DYE-M – Upper Site South Landfill West – Soil sampling – DM-30 before excavation (ATT236_Photo236.jpg)



Photo 601: DYE-M – Upper Site South Landfill West – Soil sampling – DM-30 after excavation (ATT237_Photo237.jpg)



Photo 602: DYE-M – Upper Site South Landfill West – Soil sampling – DM-30 after backfilling (ATT238_Photo238.jpg)



Photo 603: DYE-M – Upper Site Helipad Landfill, facing east (ATT36_Photo36.jpg)



Photo 604: DYE-M – Upper Site Helipad Landfill, facing east (ATT37_Photo37.jpg)



Photo 605: DYE-M – Upper Site Helipad Landfill, facing southeast (ATT38_Photo38.jpg)



Photo 606: DYE-M – Upper Site Helipad Landfill, facing southwest (ATT39_Photo39.jpg)



Photo 607: DYE-M – Upper Site Helipad Landfill, facing southwest (ATT40_Photo40.jpg)



Photo 608: DYE-M – Upper Site Helipad Landfill, facing west (ATT41_Photo41.jpg)



Photo 609: DYE-M – Upper Site Helipad Landfill – Feature B – rough area, facing east (ATT42_Photo42.jpg)



Photo 610: DYE-M – Upper Site Helipad Landfill – Feature B – rough area, facing south (ATT43_Photo43.jpg)



Photo 611: DYE-M – Upper Site Helipad Landfill – Cover surface – Feature A – Minor settlement, facing west. (Acceptable) (ATT226_Photo226.jpg)



Photo 612: DYE-M – Upper Site Helipad Landfill – south slope – Feature B – Rough area, facing west. (Acceptable) (ATT227_Photo227.jpg)



Photo 613: DYE-M – Upper Site Helipad Landfill – Cover surface – Feature C – Settlement, facing southeast. (Acceptable) (ATT224_Photo224.jpg)



Photo 614: DYE-M – Upper Site Helipad Landfill – Cover surface – Feature D – Tire tracks (Acceptable); no ponded water in 2016, facing south. (ATT225_Photo225.jpg)



Photo 615: DYE-M – Upper Site Helipad Landfill – Adjacent to helipad, facing east. (ATT223_Photo223.jpg)



Photo 616: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-11 before excavation (ATT261_Photo261.jpg)



Photo 617: DYE-M – Upper Site Helipad Landfill – Soil sampling – DM-11 after excavation (ATT262_Photo262.jpg)



Photo 618: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-11 after backfilling (ATT263_Photo263.jpg)



Photo 619: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-12 before excavation (ATT258_Photo258.jpg)



Photo 620: DYE-M – Upper Site Helipad Landfill – Soil sampling – DM-12 after excavation (ATT259_Photo259.jpg)



Photo 621: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-12 after backfilling (ATT260_Photo260.jpg)



Photo 622: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-13 before excavation (ATT255_Photo255.jpg)



Photo 623: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-13 after excavation (ATT256_Photo256.jpg)



Photo 624: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-13 after backfilling (ATT257_Photo257.jpg)



Photo 625: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-14 before excavation (ATT252_Photo252.jpg)



Photo 626: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-14 after excavation (ATT253_Photo253.jpg)



Photo 627: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-14 after backfilling (ATT254_Photo254.jpg)



Photo 628: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-15 before excavation (ATT249_Photo249.jpg)



Photo 629: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-15 after excavation (ATT250_Photo250.jpg)



Photo 630: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-15 after backfilling (ATT251_Photo251.jpg)



Photo 631: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-16 before excavation (ATT246_Photo246.jpg)



Photo 632: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-16 after excavation (ATT247_Photo247.jpg)



Photo 633: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-16 after backfilling (ATT248_Photo248.jpg)



Photo 634: DYE-M – Upper Site Helipad Landfill – Soil sampling – DM-17 before excavation (ATT243_Photo243.jpg)



Photo 635: DYE-M – Upper Site Helipad Landfill – Soil sampling – DM-17 after excavation (ATT244_Photo244.jpg)



Photo 636: DYE-M – Upper Site Helipad Landfill – Soil sampling –DM-17 after backfilling (ATT245_Photo245.jpg)

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