May 17, 2021
File No. 25221008.02

TECHNICAL MEMORANDUM

TO: Trevor Bannister, WDNR

FROM: Sherren Clark and Eric Oelkers, SCS Engineers

SUBJECT: Land and Gas Reclamation Landfill – Changed Site Conditions

SCS Engineers (SCS) prepared this memo on behalf of Glacier Ridge Landfill, LLC (GRL) in response to Recommendation #1 in the 5-Year Review Report. The memo documents the observed changes in site conditions resulting from the relocation of waste from the former Land and Gas Reclamation Landfill (LGRL).

As established in the 1994 Record of Decision (ROD) for LGRL, the site consists of two operable units (OUs). OU1 is the source control remedy, and OU2 is the groundwater remedy (long-term monitoring). The OU1 source control remedy originally included installation of a clay cap and expansion of the landfill gas collection system, which were completed in the early 1990s. The relocation of the LGRL waste in 2014 through 2016 essentially completed the OU1 response by removing the source.

The LGRL waste removal has been documented in Construction Documentation Reports that were prepared by Cornerstone Environmental Group (Cornerstone) after each of the three phases of waste removal and submitted to the Wisconsin Department of Natural Resources (WDNR). This memo references information contained in those reports to document the changes that have occurred with respect to the OU1 and OU2 remedies selected in the ROD.

In recognition of the completion of source control activities under OU1 through source removal, finalization of the Explanation of Significant Differences (ESD) is an appropriate next step.

CHRONOLOGY AND INFORMATION SOURCES

A chronology of the approval and implementation process for the LGRL waste removal is provided below. Milestone reports and approvals leading up to the waste removal are listed, followed by the dates of the waste removal activities and corresponding documentation reports. Planning and approvals for the waste relocation were integral to the planning and approvals for the Southeast Expansion of GRL (Subtitle D landfill) into the former LGRL area after the waste was removed; therefore, many of the document titles reference the GRL Southeast Expansion. The Southeast Expansion documents and approvals included detailed plans and conditions for the LGRL waste relocation.

Waste Relocation Chronology

Date	Event
7/23/2009	Initial Site Report, Southeast Expansion, Veolia ES Glacier Ridge Landfill, submitted by BT Squared
12/8/2010	Feasibility Report, Proposed Southeast Expansion, Veolia ES Glacier Ridge Landfill, submitted by BT Squared
6/30/2011	Addendum No. 1 – Feasibility Report, Proposed Southeast Expansion, Veolia ES Glacier Ridge Landfill, submitted by BT Squared
4/17/2012	WDNR Determination of Site Feasibility, Veolia ES Glacier Ridge Landfill Southeastern Horizontal and Vertical Landfill Expansion, License #3068
4/23/2013	Plan of Operation, Advanced Disposal Services Glacier Ridge Landfill, Southeast Expansion, submitted by SCS Engineers (SCS), including LGRL Waste Removal Plan; Addendum 1 submitted 6/28/2013; Addendum 2 submitted 10/3/2013
10/13/2013	WDNR approval of Southeast Expansion Plan of Operation and Hazardous Waste Remediation Variance
12/2013	LGRL Waste Removal Plan for Glacier Ridge Landfill Expansion, Revision 1, issued by SCS
3/10/2014 to 7/18/2014	Phase A of LGRL waste excavation
2/13/2015	Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, submitted by Cornerstone Environmental Group (Cornerstone)
2/3/2015 to 5/5/2015	Phase B of LGRL waste excavation
10/29/15	Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase B Waste Relocation, submitted by Cornerstone
1/4/2016 to 3/21/2016	Phase C of LGRL waste excavation
12/23/16	Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase C Waste Relocation, submitted by Cornerstone

For reference, a site map with monitoring well and private well locations is provided on **Figure 1**. Drawings from the Plan of Operation showing the phasing of the waste relocation are provided as **Attachment A**. Selected text, tables, and drawings from the waste relocation construction documentation reports are provided as **Attachments B**, **C**, and **D**.

ACTIONS MODIFYING SITE CONDITIONS

Waste Removal

The volumes of waste removed during each phase of excavation are summarized below. Soil within the waste was not segregated from the waste. No salvageable waste was identified during the waste relocation process.

The total mass of volatile organic compounds (VOCs) removed as part of the waste removal was calculated based on the median value for total concentrations of VOCs detected in each of the 24 samples of waste collected during waste characterization investigation activities in 2006 and 2007 (SCS 2013 Waste Removal Plan, Table 1). Because the waste samples collected during the waste characterization investigation were selected for analysis based in part on field screening indicating the potential presence of contamination, the estimated VOC mass based on these test results is likely biased high relative to the concentrations in the waste as a whole. The median total VOC concentration for the waste samples (38 milligrams per kilogram [mg/kg]) was used rather than the mean concentration (100 mg/kg) because it is believed to be more representative of typical waste. An estimated dry waste density of 1,200 pounds per cubic yard was assumed.

Waste Relocation Quantities and Estimated VOC Mass Removed

Phase	Typical Waste (cubic yards)	Suspicious Waste (cubic yards)	Salvageable Waste (cubic yards)	Estimated VOC Mass Removed (pounds)
A	584,394	120	0	27,000
B	413,758	20,472	0	20,000
C	301,252	8,410	0	14,000
Total	**1,299,404**	**29,002**	**0**	**Approx. 61,000**

The VOC mass removal calculations for the waste are provided in **Attachment E**.

Soil Excavation Below Waste

Soil excavation below the LGRL waste consists of two categories: 1) soil between the bottom of the waste and the design subbase grades for the GRL Southeast Expansion, which was excavated to facilitate construction of the GRL southeast expansion; and 2) soil below the subbase grades that was excavated for the purposes of contaminant remediation in accordance with the Waste Removal Plan.

For soil excavation from the bottom of LGRL waste to the subbase grades, the total mass of VOCs removed was calculated for each Phase based on the soil samples collected after the waste was removed, as documented in the waste removal documentation reports prepared by Cornerstone. Samples were typically collected from test pits excavated from the post-waste-removal soil surface to the approximate subbase grade. The depth to the subbase grade ranged from 0 to approximately

18 feet. The sample results were used to separate contaminated soil from soil meeting NR 720 standards that could be beneficially used on site without restrictions. The total VOC mass removal for each Phase was calculated based on the volume of contaminated soil reported in the documentation report and the average total VOC concentration for samples identified as contaminated (at least one VOC result above the NR 720 standard). For Phase C, the volume of contaminated soil was estimated based on the total estimated volume of soil between the LGRL waste and the subbase grades (133,600 cubic yards, from Sheet 10 in **Attachment A**) and the percent of the soil samples that exceeded an NR 720 soil standard (33 percent). A soil dry unit weight of 3,100 pounds per cubic yard (115 pounds per cubic foot) was assumed based on soil testing results from the 2010 Glacier Ridge Feasibility Report.

Each Phase of waste removal also included some targeted soil excavation below the subbase grades in one or more areas where higher VOC concentrations were present. For the excavation below the subbase, the total mass of VOCs removed was calculated based on the volume of contaminated soil reported in the documentation report and the average VOC concentration for the samples collected from the targeted soil excavation area.

Contaminated Soil Excavation Quantities and Estimated VOC Mass Removed

Phase	Excavation to Subbase (cubic yards)	Excavation Below Subbase (cubic yards)	Average VOC Concentration (mg/kg)	Estimated VOC Mass Removed (pounds)
A	8,497		18	470
		570	207	370
B	89,014		10	2,800
		800	158	390
C	Approx. 44,000		141	19,000
		2,856	4	35
Total	**Approx. 142,000**	**4,200**		**Approx. 23,000**

The VOC mass removal calculations and assumptions for the excavated soil are provided in **Attachment E**.

Remaining VOC Concentrations in Soil

The estimated remaining VOC concentrations in soil following the soil excavation are summarized in **Table 1**. These results include the deepest sample from each post-waste-removal test pit (at approximate subbase grade), plus additional test pit or confirmation samples in the areas of targeted excavation below the subbase. The sample location maps and complete soil sample summary tables from the previously submitted waste removal documentation reports for each Phase are included in **Attachments B**, **C**, and **D**. The laboratory reports were provided in the documentation reports. During the data review for Phase C, SCS noted that the sample results from the base of the Phase C targeted soil excavation (SS-28 to SS-36) were not included in the previously submitted Phase C documentation report. The laboratory report for these samples is included in **Attachment D**.

Average VOC concentrations in the remaining soil below the subbase are significantly lower than in the excavated soil. Concentrations above the NR 720 soil standards were detected in some samples, for chlorinated VOCs (CVOCs), petroleum VOCs, and 2-butanone (also known as methylethylketone (MEK)). Of these, only CVOCs have been identified as contaminants of concern in the groundwater

investigations at the site. Because the subbase grades for the GRL expansion were designed to be just above the water table, the majority of the contaminated soil above the water table was removed with the soil excavation.

Operation and Monitoring System Changes

The LGRL operating and monitoring systems in place prior to the waste removal project included the landfill gas collection and control system and the environmental monitoring system. The landfill gas system included gas extraction wells, header and lateral piping, blower, flare, and condensate tank. The landfill gas collection system was dismantled and the gas extraction wells were abandoned as the waste removal progressed.

Environmental monitoring system components affected by the waste removal included groundwater monitoring wells, leachate head wells, and gas monitoring probes. Portions of the environmental monitoring system that were located with the LGRL footprint and/or within the construction limits of the GRL Southeast Expansion were abandoned. Groundwater monitoring wells that were outside the construction limits were maintained for future monitoring.

All operation and monitoring systems associated with OU1 (source control) were removed with the waste removal. The remaining monitoring system components are groundwater monitoring wells associated with OU2 (groundwater).

Monitoring system changes completed for each phase were as follows:

- Phase A
  - Leachate head wells MW-2 and MW-3 abandoned by removal
  - Monitoring wells MW13AR, MW13R, P303A, P5R and P421B abandoned by over-drilling

- Phase B
  - Leachate head well MW-4 abandoned by removal
  - Gas probes GMP-1 through GMP-4 abandoned by removal (screened within waste)
  - Monitoring wells MW311R and P311A abandoned by over-drilling

- Phase C
  - Monitoring well MW407 abandoned by over-drilling

Monitoring well nest MW-428/P-428A was installed in the same area of the site as the former MW-407 after the Phase C waste removal was completed and the Southeast Expansion perimeter berm was constructed in this area.

The LGRL groundwater monitoring system remaining after completion of the waste removal included the following wells:

- Wells in approved landfill environmental monitoring plan under Waste and Materials Management (WMM) program: MW-1AR, MW-1RR, MW-6R, MW-7R, MW-8R, MW-201, MW-201A, MW-201B, MW-203A, MW-210, MW-210A, MW-210B, MW-214, MW-214A, W-3AR, W-3R, W-163, and W-163A

- Wells installed for bedrock groundwater investigation under WDNR Remediation & Redevelopment (R&R) program: MW-1B, P-401D, P-402E, P-422B, P-423D, P-424D, P-424SS, P-426D, and P-429SS

Glacier Ridge Landfill Construction

After each phase of waste removal, a phase of liner construction for the GRL Southeast Expansion was completed, on the following schedule:

- 2014: LGRL waste removal Phase A, Southeast Expansion Phase 6
- 2015: LGRL waste removal Phase B, Southeast Expansion Phase 7
- 2016: LGRL waste removal Phase C, Southeast Expansion Phase 8

Additional phases of GRL have been constructed since the completion of the waste removal and will be constructed in the future, but are outside the LGRL footprint.

Construction of the GRL Phases 6, 7, and 8 in the LGRL footprint provides several benefits for OU2, including the following:

- **Waste and soil removal:** Excavation to achieve the design subbase grades removed all of the LGRL waste and a significant volume of VOC-impacted soil that was below the waste but above the water table. These materials are no longer a continuing source of VOCs to the groundwater.

- **Composite liner:** Construction of the composite liner and leachate collection system provides a cap above the remaining VOC-impacted soil and groundwater in the source area. The liner includes 4 feet of compacted clay overlain by a 60-mil high density polyethylene liner. The leachate collection system includes a stone drainage layer sloped to leachate collection piping to minimize hydraulic head on the liner system. These elements reduce infiltration reaching the impacted soil and groundwater relative to the pre-waste removal conditions.

- **Underdrain:** Installation and operation of a groundwater underdrain system below the GRL liner system removes VOC-impacted groundwater from the source area. The underdrain is designed to maintain separation between the bottom of the liner and the water table, using drainage piping installed below the liner. The groundwater from the underdrain can be treated by an air stripper, if necessary, and the discharge is covered by a general Wisconsin Pollution Discharge Elimination System (WPDES) permit. Operation of the underdrain from 2016 through 2020 removed over 82 million gallons of VOC-impacted groundwater and approximately 25 pounds of VOCs. The VOC mass removal calculations for the underdrain operation are provided in **Attachment E**.

OBSERVED OR ANTICIPATED CHANGES IN SITE CONDITIONS

The major change in site conditions is the complete removal of the LGRL waste and underlying soil, and subsequent construction of the GRL Southeast Expansion in the former LGRL footprint as discussed above.

With respect to groundwater conditions (OU2), the LGRL waste relocation is anticipated to improve groundwater conditions below and downgradient from the former LGRL. This improvement will not occur immediately. The ongoing monitoring programs in the shallow and deep aquifers will continue to monitor progress toward achieving the groundwater remediation objectives. Groundwater monitoring results to date were summarized in the 2019 Annual Report dated May 29, 2020.

In the shallow aquifer monitoring well sampling, no significant short-term changes were observed that appeared to be directly related to the waste removal. The planning for the waste removal anticipated a possible short-term increase in impacts due to removing the LGRL final cover and temporarily opening up the site; however, significant increases in VOC concentrations were not observed. In general, VOC concentrations in the shallow aquifer continued to follow long-term trends. Conclusions from the 2019 Annual Report related to the shallow aquifer monitoring activities included the following:

- Consistent with previous observations, the primary CVOC plume in the shallow aquifer extends north-northeast from the north end of LGRL. CVOCs have also been detected at lower concentrations in monitoring wells adjacent to the east and south limits of the former LGRL.

- CVOC concentrations within the shallow plume continue to indicate that the overall mass of CVOCs in the groundwater has decreased with time, particularly in the source area.

- Vinyl chloride concentrations at the furthest downgradient mid-depth piezometer (MW214A) increased beginning in 2008, but now appear to have leveled off. This well nest is located approximately 1,500 feet from the downgradient property line.

In the bedrock aquifer, the only significant change that occurred during or after the LGRL waste removal was the detection of cis-1,2-dichloroethene (DCE) in samples from water supply well PW-J, which is owned by GRL and is part of the routine monitoring program for GRL. Although DCE is one of the primary CVOCs associated with the LGRL groundwater impacts, it has not been determined conclusively whether LGRL is the source of DCE at PW-J. DCE was first detected in the October 2016 sample and in 2019 and 2020 concentrations were near the NR 140 preventive action limit (PAL) of 7 micrograms per liter (µg/L), ranging from 6.8 to 8.4 µg/L. Additional investigation of the PW-J area is in progress, including geophysical logging of the well completed in 2020 and installation of one or more monitoring wells planned for 2021.

Conclusions from the 2019 Annual Report related to the bedrock groundwater investigation activities included the following:

- Groundwater flow direction in the bedrock aquifer in 2019 was to the northeast, consistent with the northeastern flow direction observed during all previous monitoring events, with the exception of October 2018.

- The lack of CVOCs in groundwater samples from monitoring well P429SS suggests that CVOC contamination in the sandstone aquifer does not extend to the northeast beyond the Andrew Oechsner property.

- Hydrogeologic and laboratory analytical data from the P424D/P424SS monitoring well nest on the All-Line property continue to support that horizontal movement of the CVOCs away from LGRL in groundwater is primarily occurring in the upper, fractured zone of the dolomite.

- Given the apparently low hydraulic conductivity of the lower portion of the dolomite and the low vertical hydraulic gradient across the lower dolomite observed at the P424 well nest, there appears to be little potential for significant vertical flow within the dolomite under ambient conditions.

- CVOC concentrations in the monitoring wells along the center of the bedrock plume, including P402E, P424D, and P423D, continue to show mostly stable or decreasing long-term concentration trends, with continuing decreasing concentrations in 2019.

- The slight increasing trend of DCE concentrations in PW-28, and the consistent presence of low concentrations of DCE in PW-19 with a slight increase in DCE in 2019, suggest that the leading edge of the dissolved CVOC plume may be continuing to migrate; however, vinyl chloride has not been detected in these wells, and the DCE concentrations remain well below the NR 140 PAL.

Tables, figures, and graphs supporting these conclusions were provided in the 2019 Annual Report. The 2020 Annual Report is currently in preparation.

EFFECT OF CHANGES TO OPERABLE UNIT 1 ON LONG-TERM PROTECTIVENESS

The LGRL waste relocation project improved the long-term protectiveness of the OU1 remedy due to several factors, including:

- Removal of 1.3 million cubic yards of municipal and industrial waste from an unlined disposal area.

- Removal of approximately 130,000 cubic yards of contaminated soil below the LGRL waste.

- Removal of an estimated 84,000 pounds of VOCs in waste and soil.

- Construction of a composite liner (60-mil HDPE geomembrane and 4 feet of compacted clay) over remaining VOC-contaminated soil, eliminating recharge

- Installation of an underdrain system below the GRL liner, providing for collection, treatment, and discharge of shallow groundwater impacted with VOCs from LGRL

With the LGRL waste entirely removed, OU1 no longer exists at the site. Remaining activities are focused on groundwater monitoring under OU2.

In recognition of the completion of source control activities under OU1 through source removal, the appropriate next step is finalization of an ESD documenting completion of the OU1 remedy of source control and indicating that only the OU2 remedy (groundwater) remains to be completed before the site can be deleted from the National Priorities List (NPL.)

REFERENCES

Cornerstone Environmental Group, 2015a, Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, Horicon, Dodge County, Wisconsin, February 13, 2015.

Cornerstone Environmental Group, 2015b, Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase B Waste Relocation, Horicon, Dodge County, Wisconsin, October 29, 2015.

Cornerstone Environmental Group, 2016, Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase C Waste Relocation, Horicon, Dodge County, Wisconsin, December 23, 2016.

SCS Engineers, 2020, 2019 Annual Report, Land & Gas Reclamation Landfill/Hechimovich Sanitary Landfill Site, Dodge County, Wisconsin, BRRTS #02-14-000906, May 29, 2020.

Wisconsin Department of Natural Resources, 1995, Record of Decision, Final Remedy, Land and Gas Reclamation Landfill, September 6, 1995.

Wisconsin Department of Natural Resources, 2019, Fifth Five-Year Review Report for Hechimovich Sanitary Landfill Superfund Site, Dodge County, Wisconsin, June 10, 2019.

Attachments

Table 1	Analytical Results for Remaining Soil Below LGRL - Detected VOCs and Metals
Figure 1	Monitoring Well and Private Well Locations
Attachment A	Plan of Operation Waste Removal Phasing Drawings
Attachment B	LGRL Phase A Waste Relocation Documentation (Report Text and Selected Tables and Drawings)
Attachment C	LGRL Phase B Waste Relocation Documentation (Report Text and Selected Tables and Drawings)
Attachment D	LGRL Phase C Waste Relocation (Report Text, Selected Tables and Drawings, and Lab Report for Samples SS-28 to SS-36)
Attachment E	VOC Mass Removal Calculations

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Table 1

Analytical Results for Remaining Soil Below LGRL – Detected VOCs and Metals

Table 1. Analytical Results for Remaining Soil Below LGRL - Detected VOCs and Metals
Land and Gas Reclamation Landfill / SCS Engineers Project #25221008.02

Phase/Sample ID	Metals (mg/kg)		Detected VOCs (ug/kg)																	
	Cadmium	Lead	cis-1,2-Dichloroethene	Methylene Chloride	Trichloroethene	Vinyl Chloride	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene (Cumene)	Naphthalene	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m&p-Xylene	o-Xylene	Total VOCs
Phase A - 2014																				
TVOC 7	0.2	3.7	--	--	--	--	15,900	--	--	--	--	--	--	--	623	--	--	--	--	16,523
TVOC 9	0.19	3.8	--	--	--	--	--	--	--	31.3	--	--	--	--	--	--	--	89.3	37.2	158
TVOC 11	0.18	3.7	--	--	--	--	--	--	--	33.4	--	--	--	--	--	29.2	--	100	--	163
TVOC 13	0.14	3.4	--	--	--	--	13,500	--	--	83.6	--	--	--	--	225	--	--	198	--	14,007
TVOC 15	0.17	2.7	--	--	--	--	--	--	--	127	--	--	--	--	--	--	--	355	94.6	577
TVOC 17	0.13	1.9	--	--	--	--	--	--	--	--	--	--	--	--	102	--	--	56.5	--	159
TVOC 24B	0.27	32.6	--	--	--	--	--	--	--	190	--	--	--	--	105	84.7	29.2	368	71.0	848
TVOC 25A	0.15	2.1	--	--	--	--	--	--	--	32.4	--	--	--	--	--	--	--	237	--	269
TVOC 26B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 31	0.21	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 32	0.31	7.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 33	0.41	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 35	0.2	3	--	--	--	--	--	--	--	--	--	--	--	--	104	--	--	--	--	104
TVOC 37	0.09	2.3	--	--	--	--	--	--	--	80.6	--	--	--	--	--	30.7	--	326	83.6	521
TVOC 39/39A	0.12	2.8	--	35.6	--	--	--	--	--	52.4	--	--	--	--	--	34.0	--	222	--	344
TVOC 41	--	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0
TVOC 43	0.1	1.9	--	--	--	--	--	--	--	261	--	--	32.7	--	40.1	128	45.1	812	190	1,509
TVOC 45	--	1.8	--	--	--	--	458	--	--	--	--	--	--	--	--	--	--	--	--	458
TVOC 46	--	4.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 47	0.08	3.8	--	--	--	--	1,350	--	--	--	--	--	--	--	--	--	--	--	--	1,350
TVOC 48	0.11	4.8	--	--	--	--	--	--	--	30.9	--	--	--	--	--	--	--	108	--	139
TVOC 49	0.25	8.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 51	0.11	6.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 52	0.28	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	61.8	--	62
TVOC 53	0.08	10.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TVOC 54	0.71	88.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	68.6	--	69
50A	0.28	9.1	703	--	--	243	--	--	--	--	--	--	--	--	--	--	--	--	--	946
50B	0.11	9.3	--	--	--	--	--	--	--	207	--	--	--	--	--	--	--	--	--	207
50C	0.082	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
50D	0.13	8.1	539	--	--	537	--	--	--	410	--	--	--	--	643	42	--	742	126	3,039
CON-1	NA	NA	289	--	438	29.8	--	--	--	114	--	--	--	--	563	44	--	406	94	1,977
CON-2	NA	NA	67900	--	14,700	1,960	--	932	--	49,300	1,970	--	5,970	--	183,000	**22,800**	**6,970**	151,000	39,300	545,802
CON-3	NA	NA	56	--	--	--	--	--	--	1,250	--	--	34	--	678	114	33	6,590	1,000	9,755
CON-4	NA	NA	567	--	--	--	--	933	398	12,800	1,110	286	4,110	206	14,300	**13,900**	**4,330**	39,900	10,500	103,340
Phase B - 2015																				
SS-1-14	--	2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-2-16	0.077	3.1	--	--	--	--	--	--	--	235	--	--	--	--	--	--	--	267	234	736
SS-3-14.7	0.072	2.7	--	--	--	--	--	--	--	820	--	--	--	--	51.3	73.3	--	2,470	800	4,215
SS-4-5.5	--	2.6	1,300	--	--	--	29,500	--	--	152	--	--	--	--	2,810	--	--	396	172	34,330
SS-5-11	--	2.2	--	--	--	--	5,350	--	--	59.9	--	--	--	--	104	40.5	--	192	60	5,806
SS-6-8	--	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-7-11	--	3.2	1,560	--	--	136	1,670	--	--	448	--	--	--	--	895	34.5	--	1,070	252	6,066
SS-8-5	--	2.6	--	--	--	--	300	--	--	--	--	--	--	--	--	--	--	--	--	300

Table 1. Analytical Results for Remaining Soil Below LGRL - Detected VOCs and Metals
Land and Gas Reclamation Landfill / SCS Engineers Project #25221008.02

	Metals (mg/kg)		Detected VOCs (ug/kg)																
Phase/Sample ID	Cadmium	Lead	cis-1,2-Dichloroethene	Methylene Chloride	Trichloroethene	Vinyl Chloride	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene (Cumene)	Naphthalene	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m&p-Xylene	o-Xylene	Total VOCs
SS-9-14	--	3.8	--	--	--	--	410	--	--	--	--	--	--	--	--	--	--	--	--	410
SS-10-14	--	3.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-11-1	--	2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-12-1	--	6.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-13-1	--	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-14-12.4	--	2.4	--	--	166	--	--	--	--	--	--	--	--	--	--	--	--	--	--	166
SS-15-11.4	--	2.5	143	--	52.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	196
SS-17-7	NA	NA	--	--	--	--	--	--	--	425	--	--	--	--	114	101	30.5	1,320	528	2,519
SS-20	NA	NA	33.5	--	--	28.2	438	--	--	--	--	--	--	--	79.3	--	--	--	--	579
SS-21	NA	NA	113	--	--	--	1,220	--	--	--	--	--	--	--	72.1	--	--	60.5	--	1,466
SS-22	NA	NA	229	--	--	--	--	--	--	74.6	--	--	--	--	82.9	26.8	--	195	49.6	658
SS-23	NA	NA	278	--	--	--	--	--	--	148	--	--	--	--	50.9	--	--	284	71.6	833
Phase C - 2016																				
SS-1-19'	--	2.4	--	--	--	--	--	--	--	--	--	--	--	--	51.7	--	--	--	--	52
SS-2-20'	--	2.7	11,100	--	436	596	1,140	73.0	28.1	618	38.9	69.3	94.4	33.5	825	632	260	2,150	476	18,570
SS-3-16'	--	2.8	--	--	--	--	--	--	--	172	--	--	--	--	--	93.0	40.0	552	128	985
SS-4-10'	--	2.3	--	--	--	--	10,300	--	--	73.8	--	--	--	--	196	--	--	206	46.5	10,822
SS-5-16'	--	3.8	--	--	--	--	60,300	--	--	--	--	--	--	--	459	--	--	--	--	60,759
SS-6-15'	--	5	--	--	--	--	--	--	--	48.3	--	--	--	--	--	--	--	128	40.7	217
SS-7-17'	--	1.9	--	--	--	--	392	--	--	35.2	--	--	--	--	402	--	--	79.5	--	909
SS-8-19'	--	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-9-16'	--	3.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-10-17'	--	2.3	651	--	--	101	783	--	--	30.2	--	--	--	--	29.8	--	--	94.2	--	1,689
SS-11-18'	--	2.3	--	--	--	--	209	--	--	32.7	--	--	--	--	107	--	--	75.3	--	424
SS-12-4.6'	--	9.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-13-5'	--	8.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-14-3.5'	--	9.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-15-3.5'	--	9.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-16-14'	--	2.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-17-9'	0.61	9.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-18-19'	--	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-19-20'	--	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-20-21'	--	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-21-13'	--	3.4	--	--	--	--	358	--	--	--	--	--	--	--	--	--	--	--	--	358
SS-22-12.5'	--	3.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-23-14.5'	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-24-11'	--	2.4	5,090	--	--	190	8,190	246	91.1	8,350	186	330	418	80.7	4,620	**2,090**	**704**	21,000	5,250	56,836
SS-25-18'	0.12	1.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-26-18.6'	0.072	1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-27-16'	0.11	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS-28	--	2	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
SS-29	--	2.1	--	--	--	67.3	--	--	--	125	--	--	--	--	243	--	--	331	65.9	832
SS-30	--	2.3	92.4	--	--	711	3,620	--	--	27.1	--	--	--	--	29.1	--	--	82.1	--	4,562
SS-31	0.18	2.6	267	--	58.8	551	5,520	--	--	86.9	54.9	--	--	--	101	93.3	39.2	293	70.9	7,136

Table 1. Analytical Results for Remaining Soil Below LGRL - Detected VOCs and Metals
Land and Gas Reclamation Landfill / SCS Engineers Project #25221008.02

Phase/Sample ID	Metals (mg/kg)		Detected VOCs (ug/kg)																	
	Cadmium	Lead	cis-1,2-Dichloroethene	Methylene Chloride	Trichloroethene	Vinyl Chloride	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene (Cumene)	Naphthalene	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m&p-Xylene	o-Xylene	Total VOCs
SS-32	--	2.7	119	--	41.0	35.9	2,960	27.5	--	93.7	55.7	--	--	--	80	145.0	55.7	352	68.3	4,034
SS-33	0.18	2.4	62.6	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	63
SS-34	--	2.4	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
SS-35	--	1.7	84.4	--	52.9	--	--	--	--	80.1	54.2	--	--	--	56.4	102	47.4	278	64.6	820
SS-36	--	1.9	453	--	--	3,030	12,300	--	--	--	--	--	--	--		28	--	--	--	15,811
NR 720 Groundwater Pathway RCLs with a Wisconsin-Default Dilution Factor of 2	0.752	27	41.2	2.6	3.6	0.1	1,666.1	NE	NE	1,570.0	NE	658.2	NE	NE	1,107.2	1,378.7 Total		NE	NE	
NR 720 Non-Industrial Direct Contact RCLs	71.1	400	156,000	61,800	1,300	67	28,400,000	108,000	145,000	8,020	268,000	5,520	264,000	268,000	818,000	219,000	182,000	388,000	434,000	
NR 720 Industrial Direct Contact RCLs	985	800	2,340,000	1,150,000	8,410	2,080	28,400,000	108,000	145,000	35,400	268,000	24,100	264,000	268,000	818,000	219,000	182,000	388,000	434,000	
Background Threshold Value	1	52	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	

Abbreviations:
µg/kg = micrograms per kilogram or parts per billion (ppb)
mg/kg = milligrams per kilogram or parts per million (ppm)
VOC = Volatile organic compound
NA = Not Analyzed
-- = Not Detected
NE = Not Established

Bold values exceed December 2018 NR 720 RCL for Groundwater Pathway
Bold+underlined values exceed December 2018 NR 720 RCL for Industrial Direct Contact Pathway

Notes:
1. Analytical results for Phase A are from Construction Documentation Report, Glacier Ridge Landfill, LGRL Phase A Waste Relocation, February 2015, prepared by Cornerstone Environmental. Results taken from Appendix E and Appendix F, including the deepest samples collected at each sampling location (approximate subbase elevation or bottom of targeted supplemental excavation in the TVOC 50 area).

2. Analytical results for Phase B are from Construction Documentation Report, Glacier Ridge Landfill, LGRL Phase B Waste Relocation, October 2015, prepared by Cornerstone Environmental. Results taken from Appendix F and Appendix G, including the deepest samples collected at each sampling location (approximate subbase elevation) plus 4 additional samples from targeted supplemental excavation (SS20-SS23).

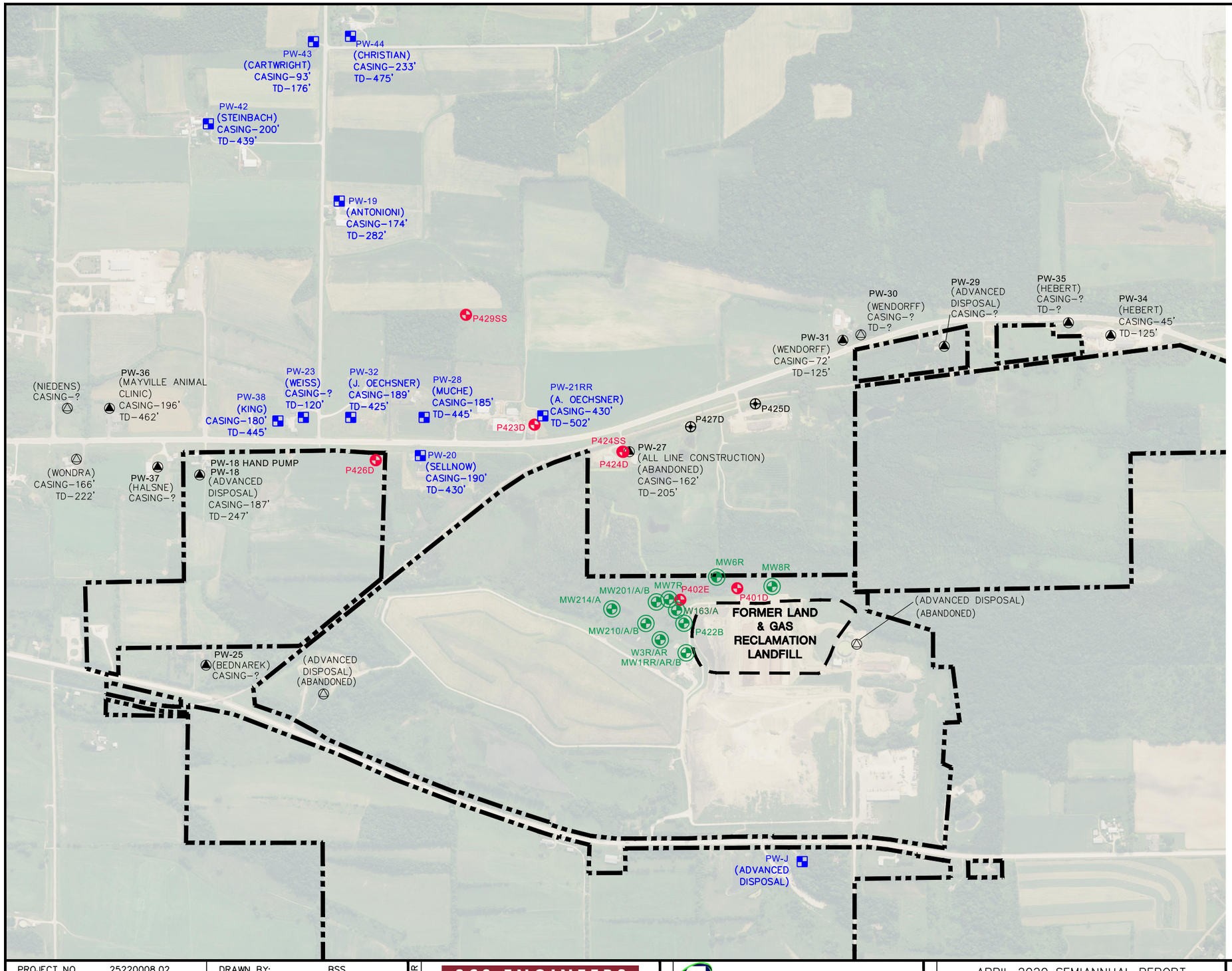
3. Analytical results for Phase C samples SS-1 to SS-27 are from Construction Documentation Report, Glacier Ridge Landfill, LGRL Phase C Waste Relocation, December 2016, prepared by Cornerstone Environmental. Results taken from Appendix E, including the deepest samples collected at each sampling location (approximate subbase elevation). Results for Phase C samples SS-28 to SS-36 (bottom of targeted supplemental investigation) are from laboratory report included in Attachment D.

Prepared by: SCC, 4/2/2021
Checked by: EO; 4/9/2021

\\Mad-fs01\data\Projects\25221008.02\Deliverables\Changed Conditions Memo\[Table1_Remaining Soil Analytical.xlsx]Table 1 - Remaining Soil

Figure 1

Monitoring Well and Private Well Locations



N

1,000 0 1,000

SCALE: 1" = 1,000'

LEGEND

- GLACIER RIDGE LANDFILL (GRL) PROPERTY LINE
- FORMER LGRL LIMITS OF WASTE
- APPROXIMATE PRIVATE WELL LOCATION, IN CURRENT MONITORING PROGRAM
- APPROXIMATE PRIVATE WELL LOCATION, HAS BEEN SAMPLED PREVIOUSLY
- APPROXIMATE PRIVATE WELL LOCATION, NOT SAMPLED
- PW-30 — WELL NAME ASSIGNED FOR SAMPLING PROGRAM
- (PERSHA) — WELL OWNER
- BEDROCK MONITORING WELL (LGRL INVESTIGATION)
- SHALLOW AQUIFER MONITORING WELL/NEST (LGRL MONITORING/INVESTIGATION)
- INVESTIGATION PHASE 2 BOREHOLE (ABANDONED)

NOTES:

1. AERIAL PHOTOGRAPH FROM THE NATIONAL AGRICULTURE IMAGERY PROGRAM AND PUBLISHED BY THE USDA FSA AERIAL PHOTOGRAPHY FIELD OFFICE. DATE OF IMAGE IS OCTOBER 30, 2015.
2. PROPERTY BOUNDARIES ARE APPROXIMATE. PROPERTY INFORMATION OBTAINED FROM DODGE COUNTY LAND INFORMATION OFFICE ON JUNE 18, 2020.
3. PRIVATE WELL LOCATIONS AND DEPTHS ARE APPROXIMATE BASED ON PLAT MAPS AND WELL LOGS.
4. WELL PW-27 AND BOREHOLES P425D AND P427D WERE ABANDONED IN APRIL 2016.
5. PW-J IS MONITORED FOR GRL. OTHER GRL PRIVATE WELL SAMPLE LOCATIONS NOT SHOWN.

PROJECT NO.	25220008.02	DRAWN BY:	BSS
DRAWN:	06/19/2020	CHECKED BY:	SCC/EO
REVISED:	07/09/2020	APPROVED BY:	SCC 07/28/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: Advanced Disposal
ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC.

SITE: APRIL 2020 SEMIANNUAL REPORT
LAND AND GAS RECLAMATION LANDFILL
DODGE COUNTY, WISCONSIN

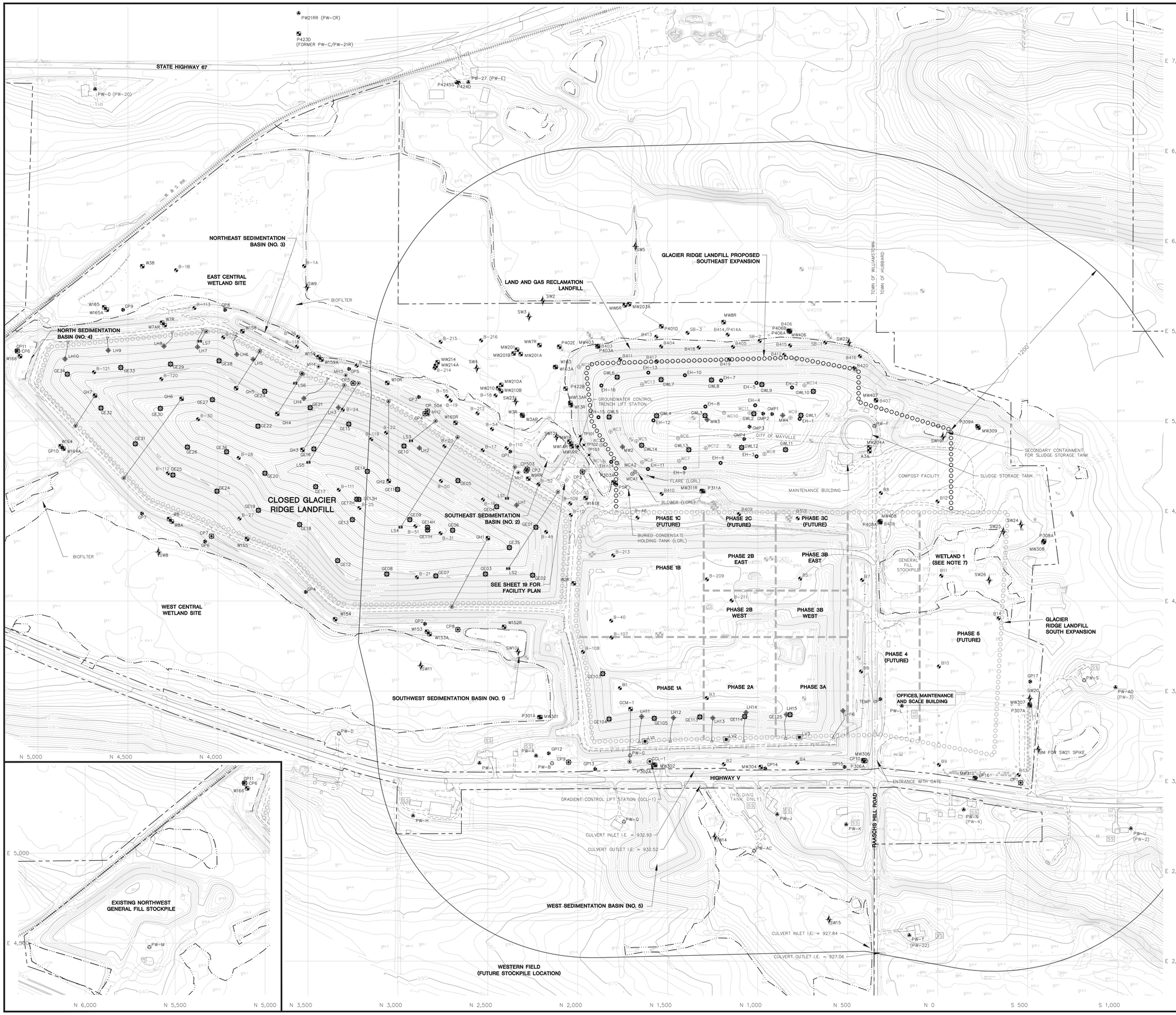
MONITORING WELL AND PRIVATE WELL LOCATIONS

FIGURE 1

I:\25220008.02\Drawings\2020 April Semiannual Report\Well Locations.dwg, 7/28/2020 11:01:41 AM

Attachment A

Plan of Operation Waste Removal Phasing Drawings



LEGEND

- APPROXIMATE PROPERTY LINE
- APPROXIMATE MUNICIPAL BOUNDARY
- GROUND SURFACE (10' CONTOUR)
- GROUND SURFACE (2' CONTOUR)
- SPOT ELEVATION
- PAVED ROAD
- UNPAVED ROAD
- RAILROAD
- DRAINAGE SWALE
- WATER/WETLAND
- VEGETATION
- BUILDING
- FENCE
- APPROVED LIMITS OF WASTE
- PROPOSED EXPANSION LIMITS OF WASTE
- LGRL LIMITS OF WASTE
- 1,200-FOOT PRIVATE WELL SETBACK
- APPROVED PHASE LIMITS
- LIMITS OF CONSTRUCTED CLAY LINER
- GROUNDWATER CONTROL TRENCH AND COLLECTION PIPE
- GROUNDWATER CONTROL TRENCH DISCHARGE PIPE
- OVERHEAD ELECTRIC
- ABANDONED MONITORING WELL
- ABANDONED WATER SUPPLY WELL
- APPROXIMATE LOCATION OF SEPTIC SYSTEM
- APPROXIMATE LOCATION OF ABANDONED SEPTIC SYSTEM
- MONITORING WELL
- WATER SUPPLY WELL (SEE NOTE 5)
- SOIL/WASTE BORING
- CONTROL MONUMENT
- GAS PROBE
- LEACHATE HEADWELL
- LYSIMETER
- STAFF GAUGE
- GROUNDWATER LIFT STATION
- HORIZONTAL GROUNDWATER HEAD MONITORING WELL
- LEACHATE COLLECTION VAULT
- TEST PIT
- GAS EXTRACTION WELL
- ELEVATION HUB
- LGRL GAS SYSTEM MONITORING AND CONTROL ASSEMBLIES

NOTES:

1. TOPOGRAPHIC BASE MAP WAS COMPILED FROM THE FOLLOWING SOURCES: KBM, INC., GRAND FORKS, NORTH DAKOTA; DATES OF AERIAL PHOTOGRAPHY ARE 2012, 2011, 2003 AND OCTOBER 3, 2000; CQM TOE OF SLOPE SURVEY DATED JULY 6, 2012; WEST SEDIMENTATION BASIN FROM JUNE 2006 AS-BUILT. TOPOGRAPHIC CONTOUR INTERVAL IS TWO FEET.
2. THE GRID SYSTEM IS BASED ON W 1/4 CORNER: 30+00.00N, 30+00.00E; AND SW CORNER: 034-46.59N, 30+23.97E. BOTH IN SECTION 35, T12N, R16E, TOWN OF WILLIAMSTOWN, DODGE COUNTY, WISCONSIN (COORDINATES PROVIDED BY WELSH, HANSON & ASSOCIATES, INC., OCONOMOWOC, WISCONSIN, AND ARE BASED ON LOCAL GRID).
3. ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
4. WETLAND LIMITS FROM SOUTH EXPANSION PLAN OF OPERATION EXISTING CONDITIONS MAP PREPARED BY RMT, APRIL 2005. DELINEATION BY AYRES & ASSOC. IN 2001 AND 2002. STANTEC (FORMERLY NATURAL RESOURCES CONSULTING, INC.) UPDATED THE WETLAND DELINEATION ALONG THE EAST SIDE OF GLACIER RIDGE LANDFILL AND LAND AND GAS RECLAMATION LANDFILL BETWEEN N 2850 AND S 650 IN OCTOBER 2009 AND NORTH OF N 2850 IN JULY 2010. ADDITIONAL WETLAND INFORMATION IS PROVIDED IN WETLAND PERMIT APPLICATION IN APPENDIX E OF THE SOUTHEAST EXPANSION PLAN OF OPERATION REPORT.
5. FOR WATER SUPPLY WELLS, LETTER DESIGNATIONS WERE ASSIGNED PREVIOUSLY AND USED IN REFERENCE TO WELL SETBACK EXEMPTIONS. NUMBER DESIGNATIONS WERE ASSIGNED PREVIOUSLY FOR THE PRIVATE WELL SAMPLING PROGRAM.
6. OVERHEAD AND UNDERGROUND ELECTRIC POWERLINE LOCATIONS ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
7. FILLING OF WETLAND 1 WAS APPROVED AS PART OF THE SITE HOLISTIC PLAN AND THE SOUTH EXPANSION PERMITTING PROCESS.

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	-461.37	2990.53	958.88	DISK SET IN CONCRETE
CP2	1974.16	4717.15	948.41	P.K. 2.3' FROM BUILDING
CP3	2286.82	4723.40	965.61	DISK SET IN CONCRETE
CP4	2848.39	5040.10	966.89	DISK SET IN CONCRETE
CP5	3248.34	5210.36	965.57	DISK SET IN CONCRETE
CP6	5114.67	5389.34	946.56	DISK SET IN CONCRETE
CP7	4035.42	4360.68	960.67	DISK SET IN CONCRETE
CP8	2666.49	3841.46	946.67	DISK SET IN CONCRETE
CP9	2051.18	3105.17	956.05	DISK SET IN CONCRETE
CP10	404.26	3112.90	949.30	DISK SET IN CONCRETE
CP 503	2280.78	4733.45	963.31	DISK SET IN CONCRETE
CP 504	2836.12	5055.26	962.38	DISK SET IN CONCRETE

CONTROL POINTS PROVIDED BY CQM, INC, MARCH 2013.

200 0 200
SCALE: 1" = 200'

SHEET 2 OF 33

EXISTING CONDITIONS

SOUTHEAST EXPANSION PLAN OF OPERATION REPORT
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

SITE

ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC

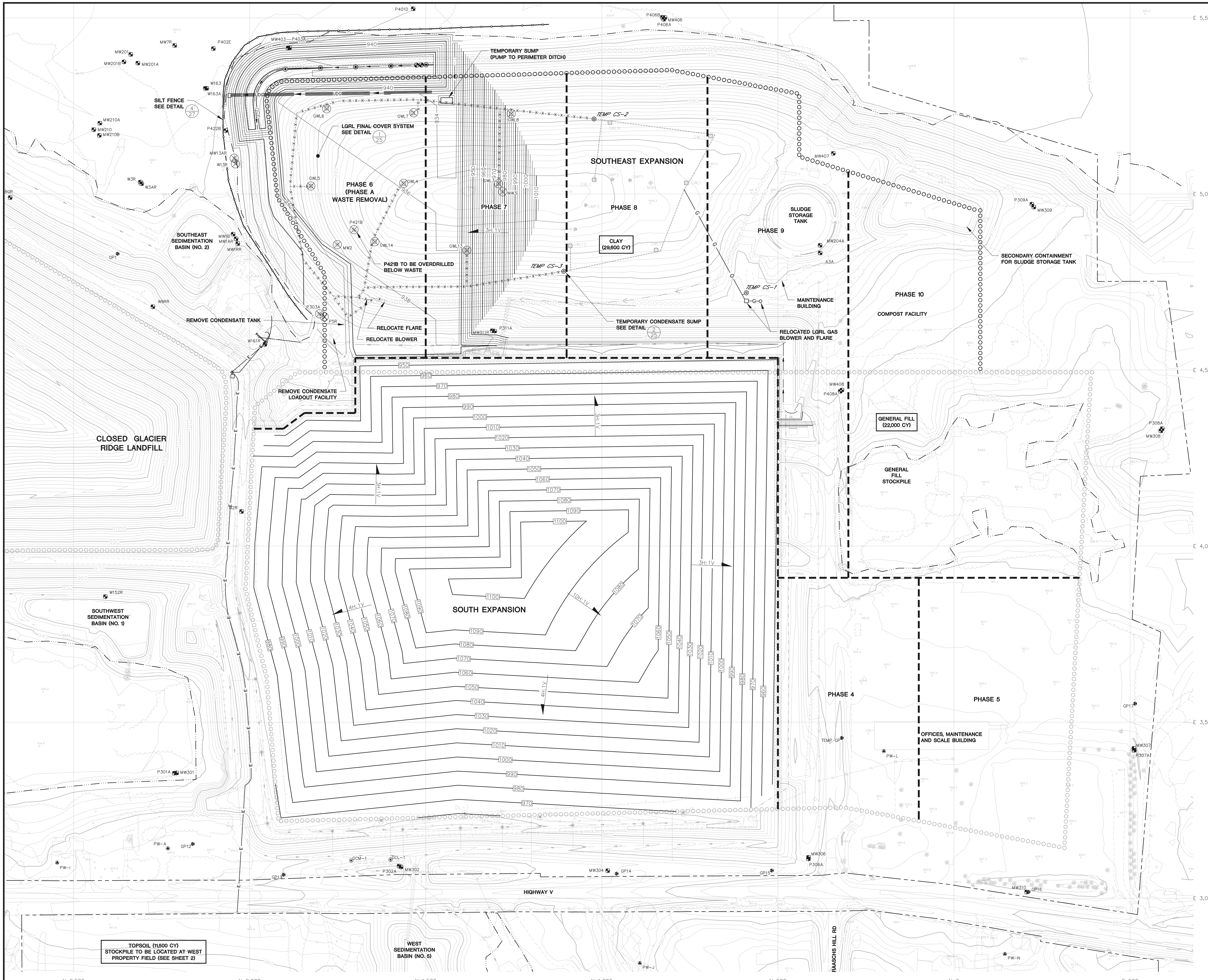
CLIENT

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

DRAWN BY:	KP	SCS JOB #:	25211370.11
CHECKED BY:	MH	PROJECT NO.:	25211370.11
APPROVED BY:		DRAWN:	12/06/12
		REVISED:	04/22/13

I:\2013\Drawings\Drawings\Plan of Operation\Existing.dwg, SITE PLAN, 4/23/2013 3:57:23 AM



LEGEND

- APPROXIMATE PROPERTY LINE
- EXISTING GROUND SURFACE (10' CONTOUR)
- EXISTING GROUND SURFACE (2' CONTOUR)
- APPROVED LIMITS OF WASTE
- EXISTING LGRL LIMITS OF WASTE
- PROPOSED EXPANSION LIMITS OF WASTE
- LIMITS OF EXISTING 4' COMPACTED CLAY LINER
- PROPOSED PHASE LIMITS
- EXISTING PHASE DELINEATION BERM
- 942 — PROPOSED GRADE (2' CONTOUR)
- 940 — PROPOSED GRADE (10' CONTOUR)
- 1080 — PROPOSED WASTE GRADE (SEE NOTE 4)
- PROPOSED PERIMETER DITCH
- PROPOSED SILT FENCE
- 3H:1V — SLOPE AND DIRECTION
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED VANE SHEAR TEST BORING
- TEMP CS-1 — PROPOSED TEMPORARY CONDENSATE SUMP
- G — PROPOSED GAS HEADER
- x-x-x-x — FEATURE TO BE ABANDONED

NOTES:

1. SEE SHEET 2 FOR ADDITIONAL BASE MAP LEGEND ITEMS AND NOTES.
2. PROPOSED CONTOURS WITHIN PHASE 6 LINER CONSTRUCTION REPRESENT TOP OF INTERIM GRADES AFTER WASTE REMOVAL TO PROMOTE DRAINAGE. WASTE AND ORGANIC SOIL EXCAVATION IN THIS AREA WILL EXTEND BELOW THE INTERIM GRADES SHOWN.
3. PROPOSED CONTOURS ON 3H:1V LGRL WASTE SLOPE REPRESENT TOP OF LGRL INTERMEDIATE COVER.
4. WASTE GRADE CONTOURS AT 4H:1V AND 10H:1V SLOPES REPRESENT APPROVED/PROPOSED FINAL COVER GRADES MINUS FINAL COVER THICKNESS (5 FEET). WASTE GRADES AT 3H:1V SLOPE ARE WORKING SLOPES.
5. INTERIM GRADES SHOWN IN THE WASTE REMOVAL AREAS ARE CONCEPTUAL AND ARE INTENDED TO SHOW GENERAL DRAINAGE PATTERNS AND APPROXIMATE LENGTH OF BERM TO BE CONSTRUCTED IN ADVANCE OF THE NEXT PHASE OF LINER CONSTRUCTION. ACTUAL INTERIM GRADES MAY VARY FROM THOSE SHOWN. DEPENDING ON CONSTRUCTION SEQUENCING, INTERIM GRADES MAY NOT BE ACHIEVED THROUGHOUT THE PHASE AREA AT ONE TIME.
6. REFER TO APPENDIX M FOR ADDITIONAL MATERIAL QUANTITY INFORMATION.
7. WETLAND PROTECTION, IMPACTS, AND RESTORATION TO BE IN ACCORDANCE WITH WETLAND PERMIT ISSUED FOR CONSTRUCTION OF SOUTHEAST EXPANSION.

PHASE A WASTE REMOVAL CONSTRUCTION ACTIVITIES

1. INSTALL VIBRATING WIRE PIEZOMETERS IN EAST BERM AREA.
2. ABANDON MONITORING WELLS P5R, P303A, W13R, AND MW13AR, AND LEACHATE HEADWELLS MW2 AND MW3.
3. INSTALL TEMPORARY EROSION CONTROLS AND WETLAND PROTECTION FEATURES.
4. RELOCATE LGRL LANDFILL GAS BLOWER AND FLARE AND INSTALL PROPOSED GAS HEADER AND TEMPORARY CONDENSATE SUMP.
5. REMOVE LGRL CONDENSATE HOLDING TANK AND LOADOUT PAD.
6. DISCONNECT AND CAP LANDFILL GAS HEADER PIPING NORTH OF GAS WELLS GWL2 AND GWL12, AND INSTALL TEMPORARY CONDENSATE SUMPS.
7. REMOVE GAS WELLHEADS GWL3, GWL4, GWL5, GWL6, GWL7, GWL8, GWL13, AND GWL14.
8. STRIP VEGETATION AND TOPSOIL OVER WASTE REMOVAL AREA IN STEPS, STARTING AT TOP OF WASTE SLOPE.
9. STOCKPILE TOPSOIL.
10. REMOVE AND STOCKPILE COVER SOILS.
11. EXCAVATE WASTE IN ACCORDANCE WITH LGRL WASTE REMOVAL PLAN.
12. REMOVE DISCONNECTED GAS WELLS AND GAS PIPING AS EXPOSED AND DISPOSE IN SOUTH EXPANSION.
13. AFTER WASTE REMOVAL, LOCATE REMAINING PORTION OF MONITORING WELL P421B (ABANDONED IN PLACE) AND OVERDRILL TO REMOVE CASING.
14. AFTER WASTE REMOVAL IS COMPLETE, CONSTRUCT TEMPORARY STORM WATER MANAGEMENT FEATURES.
15. COVER EXPOSED WASTE WITH INTERMEDIATE COVER MATERIAL.
16. REMOVE ORGANIC SOILS IN EAST PERIMETER BERM AREA, INSTALL INITIAL BACKFILL, AND PERFORM VANE SHEAR TESTS IN BORINGS.
17. ESTABLISH PHASE 6 INTERIM GRADES.
18. INSTALL UNDERDRAIN TRANSFER PIPES BELOW PHASE 6 EAST BERM.
19. CONSTRUCT PORTION OF PHASE 6 EAST BERM AND DITCH.
20. PLACE TOPSOIL OVER DISTURBED AREAS.
21. SEED, FERTILIZE, AND MULCH TOPSOIL AREAS.
22. PLACE EROSION MAT IN DITCHES.

EARTHWORK QUANTITIES	VOLUME
LGRL CAP REMOVAL	
SELECT CLAY FILL	29,600 CY
GENERAL FILL	78,800 CY
TOPSOIL	9,900 CY
LGRL WASTE REMOVAL	628,000 CY
NET CUT/FILL TO ESTABLISH INTERIM GRADES	25,900 CY (FILL)
ORGANIC SOIL CUT	422 CY
COARSE AGGREGATE BEDDING	400 CY
NET CUT/FILL TOPSOIL	8,900 (CUT)

PIPE LENGTHS	QUANTITY
6-INCH DIAMETER HDPE NON-PERF. UNDERDRAIN TRANSFER PIPE	2,735 FT

SHEET 6 OF 33

PHASE A WASTE REMOVAL AND PHASE 6 INTERIM GRADES

SOUTHEAST EXPANSION PLAN OF OPERATION
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

SITE

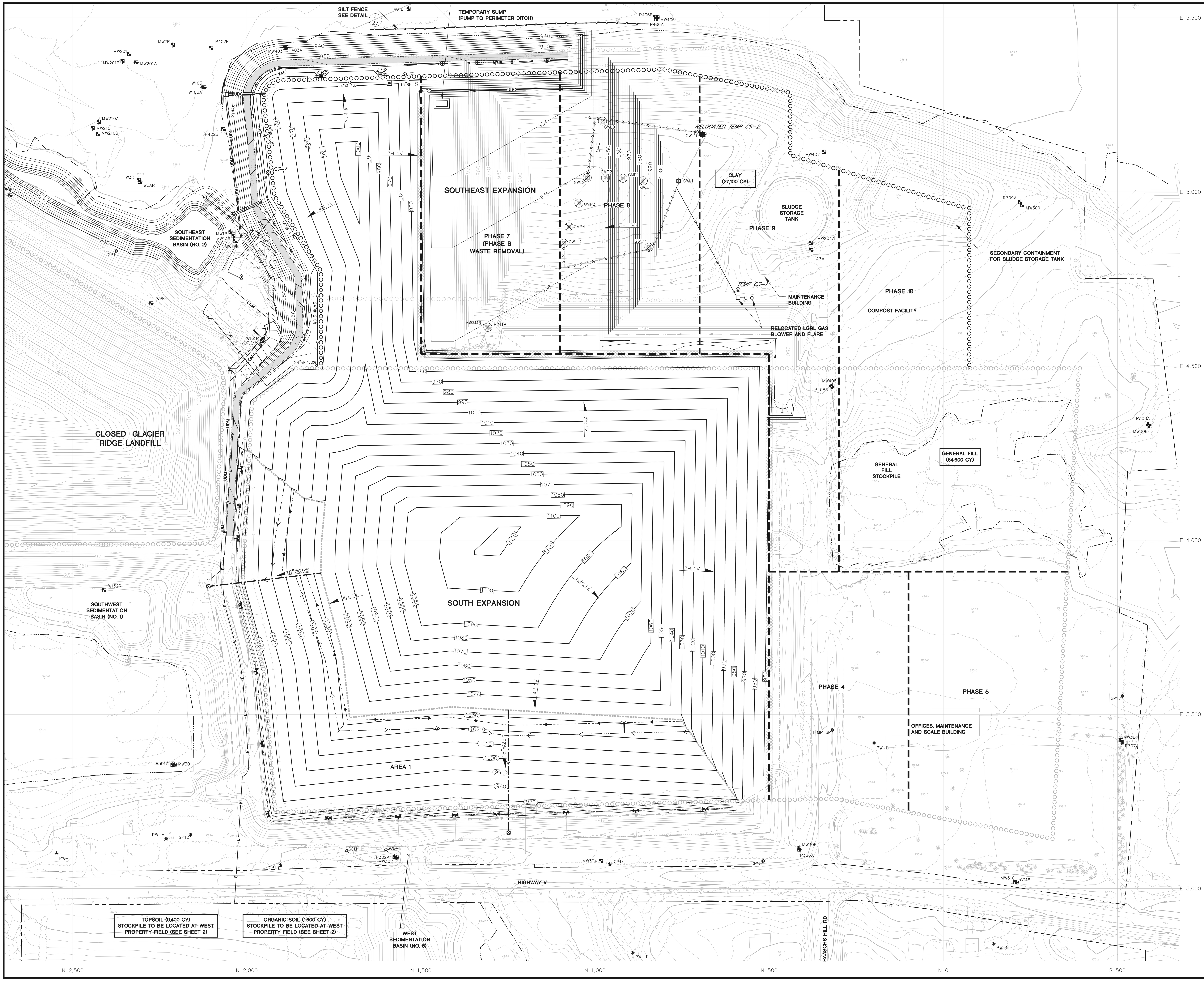
ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC

CLIENT

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

PROJECT NO.	25211370.11	DRAWN BY:	KP
DRAWN:	12/06/12	CHECKED BY:	MH
REVISED:	04/22/12	APPROVED BY:	SC 04/22/13



LEGEND

- APPROXIMATE PROPERTY LINE
- EXISTING GROUND SURFACE (10' CONTOUR)
- EXISTING GROUND SURFACE (2' CONTOUR)
- APPROVED LIMITS OF WASTE
- EXISTING LGRL LIMITS OF WASTE
- PROPOSED EXPANSION LIMITS OF WASTE
- PROPOSED PHASE LIMITS
- LIMITS OF EXISTING 4' COMPACTED CLAY LINER
- 942 PROPOSED GRADE (2' CONTOUR)
- 940 PROPOSED GRADE (10' CONTOUR)
- 1010 PROPOSED FINAL GRADE
- 1060 PROPOSED WASTE GRADE (SEE NOTE 4)
- PROPOSED PERIMETER DITCH
- PROPOSED CULVERT
- GP20 PROPOSED GAS PROBE
- 3H:1V PROPOSED SLOPE AND DIRECTION
- PROPOSED SILT FENCE
- PROPOSED GAS HEADER
- PROPOSED DRIPLEG
- PROPOSED INTERMEDIATE DRAIN
- PROPOSED DIVERSION BERM
- HIGH POINT OF DIVERSION BERM
- PROPOSED DOWNSLOPE FLUME
- PROPOSED ENERGY DISSIPATOR
- PROPOSED TOE DRAIN AND DISCHARGE PIPE
- PROPOSED INTERMEDIATE DRAIN DISCHARGE PIPE
- EXISTING DROP INLET STRUCTURE AND DISCHARGE PIPE
- CONCEPTUAL FINAL COVER SEQUENCE LIMITS
- AREA 4 CONCEPTUAL FINAL COVER AREA
- EXISTING PHASE DELINEATION BERM
- LM PROPOSED LEACHATE FORCEMAIN
- PROPOSED LEACHATE HEADWELL
- PROPOSED LEACHATE CLEANOUT RISER
- PROPOSED LEACHATE VAULT
- UDG PROPOSED UNDERDRAIN GRAVITY TRANSFER PIPE
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED VANE SHEAR TEST BORING
- TEMP CS-1 PROPOSED CONDENSATE SUMP
- X·X·X·X FEATURE TO BE ABANDONED

NOTES:

1. SEE SHEET 2 FOR ADDITIONAL BASE MAP LEGEND ITEMS AND NOTES.
2. PROPOSED CONTOURS WITHIN PHASE 7 LINER CONSTRUCTION AREA REPRESENT TOP OF INTERIM GRADES AFTER WASTE REMOVAL TO PROMOTE DRAINAGE. WASTE AND ORGANIC SOIL EXCAVATION IS THIS AREA WILL EXTEND BELOW THE INTERIM GRADES SHOWN.
3. PROPOSED CONTOURS ON 3H:1V LGRL WASTE SLOPE IN PHASE 8 REPRESENT TOP OF LGRL INTERMEDIATE COVER.
4. WASTE GRADE CONTOURS AT 4H:1V AND 10H:1V SLOPES REPRESENT APPROVED/PROPOSED FINAL COVER GRADES MINUS FINAL COVER THICKNESS (5 FEET). WASTE GRADES AT 3H:1V SLOPE ARE WORKING SLOPES.
5. INTERIM GRADES SHOWN IN THE WASTE REMOVAL AREAS ARE CONCEPTUAL AND ARE INTENDED TO SHOW GENERAL DRAINAGE PATTERNS AND APPROXIMATE LENGTH OF BERM TO BE CONSTRUCTED IN ADVANCE OF THE NEXT PHASE OF LINER CONSTRUCTION. ACTUAL INTERIM GRADES MAY VARY FROM THOSE SHOWN. DEPENDING ON CONSTRUCTION SEQUENCING, INTERIM GRADES MAY NOT BE ACHIEVED THROUGHOUT THE PHASE AREA AT ONE TIME.
6. REFER TO APPENDIX M FOR ADDITIONAL MATERIAL QUANTITY INFORMATION.
7. WETLAND PROTECTION, IMPACTS, AND RESTORATION TO BE IN ACCORDANCE WITH WETLAND PERMIT ISSUED FOR CONSTRUCTION OF SOUTHEAST EXPANSION.

PHASE B WASTE REMOVAL CONSTRUCTION ACTIVITIES

1. INSTALL VIBRATING WIRE PIEZOMETER IN EAST BERM AREA.
2. ABANDON MONITORING WELLS MW311R AND P311A, LEACHATE HEADWELL MW4, AND GAS PROBES GMP2, GMP3, AND GMP4.
3. INSTALL TEMPORARY EROSION CONTROLS AND WETLAND PROTECTION FEATURES.
4. DISCONNECT AND CAP LANDFILL GAS HEADER PIPING NORTH OF GAS WELLS GWL1 AND GWL10 AND RELOCATE TEMPORARY CONDENSATE SUMP ON EAST HEADER.
5. REMOVE GAS WELL HEADS GWL2, GWL9, GWL11, GWL12, AND TEMPORARY CONDENSATE SUMP ON WEST HEADER.
6. STRIP VEGETATION AND TOPSOIL OVER WASTE REMOVAL AREA IN STEPS, STARTING AT TOP OF WASTE SLOPE.
7. STOCKPILE TOPSOIL.
8. REMOVE AND STOCKPILE COVER SOILS.
9. EXCAVATE WASTE IN ACCORDANCE WITH LGRL WASTE REMOVAL PLAN.
10. REMOVE DISCONNECTED GAS WELLS AND GAS PIPING AS EXPOSED AND DISPOSE IN SOUTH/SOUTHEAST EXPANSION.
11. AFTER WASTE REMOVAL IS COMPLETE, CONSTRUCT TEMPORARY STORM WATER MANAGEMENT FEATURES.
12. COVER EXPOSED WASTE WITH INTERMEDIATE COVER MATERIAL.
13. REMOVE ORGANIC SOILS IN EAST PERIMETER BERM AREA, INSTALL INITIAL BACKFILL, AND PERFORM VANE SHEAR TESTS IN BORINGS.
14. ESTABLISH PHASE 7 INTERIM GRADES.
18. INSTALL UNDERDRAIN TRANSFER PIPES BELOW PHASE 7 EAST BERM.
19. CONSTRUCT PHASE 7 EAST BERM AND DITCH.
20. PLACE TOPSOIL OVER DISTURBED AREAS.
21. SEED, FERTILIZE, AND MULCH TOPSOIL AREAS.
22. PLACE EROSION MAT IN DITCHES.

EARTHWORK QUANTITIES	VOLUME
LGRL CAP REMOVAL	
SELECT CLAY FILL	27,100 CY
GENERAL FILL	72,300 CY
TOPSOIL	9,000 CY
LGRL WASTE REMOVAL	435,000 CY
NET CUT/FILL TO ESTABLISH INTERIM GRADES	107,300 CY (CUT)
ORGANIC SOIL CUT	1,200 CY
COARSE AGGREGATE BEDDING	220 CY
NET CUT/FILL TOPSOIL	8,600 CY (CUT)

PIPE LENGTHS	QUANTITY
6-INCH DIAMETER HDPE NON-PERF. UNDERDRAIN TRANSFER PIPE	1,460 CY

N

100 0 100

SCALE: 1" = 100'

SHEET 8 of 33

PHASE B WASTE REMOVAL AND PHASE 7 INTERIM GRADES

SOUTHEAST EXPANSION PLAN OF OPERATION
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

SITE

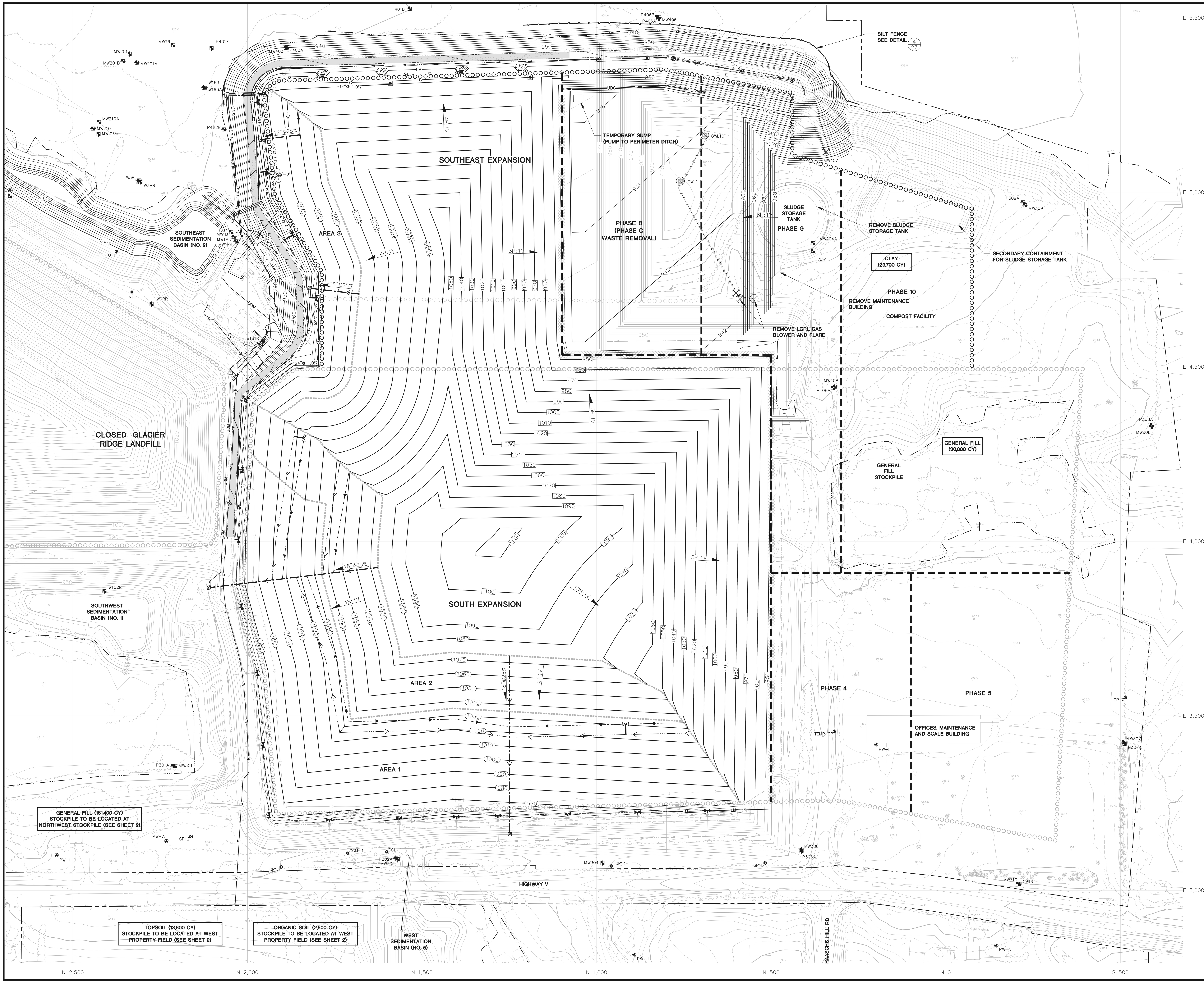
ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC

CLIENT

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

PROJECT NO.	25211370.11
DRAWN:	12/06/12
REVISED:	04/22/13
DRAWN BY:	KP
CHECKED BY:	MH
APPROVED BY:	SC 04/22/13



LEGEND

- APPROXIMATE PROPERTY LINE
- EXISTING GROUND SURFACE (10' CONTOUR)
- EXISTING GROUND SURFACE (2' CONTOUR)
- APPROVED LIMITS OF WASTE
- EXISTING LGRL LIMITS OF WASTE
- PROPOSED EXPANSION LIMITS OF WASTE
- PROPOSED PHASE LIMITS
- LIMITS OF EXISTING 4' COMPACTED CLAY LINER
- 942 PROPOSED GRADE (2' CONTOUR)
- 940 PROPOSED GRADE (10' CONTOUR)
- 1010 PROPOSED FINAL GRADE
- 1060 PROPOSED WASTE GRADE (SEE NOTE 4)
- PROPOSED PERIMETER DITCH
- PROPOSED CULVERT
- GP20 PROPOSED GAS PROBE
- 3H:1V PROPOSED SLOPE AND DIRECTION
- PROPOSED SILT FENCE
- G PROPOSED GAS HEADER
- DL-2 PROPOSED DRIPLEG
- PROPOSED INTERMEDIATE DRAIN
- PROPOSED DIVERSION BERM
- HIGH POINT OF DIVERSION BERM
- PROPOSED DOWNSLOPE FLUME
- PROPOSED ENERGY DISSIPATOR
- PROPOSED TOE DRAIN AND DISCHARGE PIPE
- PROPOSED INTERMEDIATE DRAIN DISCHARGE PIPE
- EXISTING DROP INLET STRUCTURE AND DISCHARGE PIPE
- CONCEPTUAL FINAL COVER SEQUENCE LIMITS
- AREA 4 CONCEPTUAL FINAL COVER AREA
- EXISTING PHASE DELINEATION BERM
- LM PROPOSED LEACHATE FORCEMAIN
- PROPOSED LEACHATE HEADWELL
- PROPOSED LEACHATE CLEANOUT RISER
- LV10 PROPOSED LEACHATE VAULT
- UDG PROPOSED UNDERDRAIN GRAVITY TRANSFER PIPE
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED VANE SHEAR TEST BORING
- PROPOSED CONDENSATE SUMP
- X X X X FEATURE TO BE ABANDONED

NOTES:

1. SEE SHEET 2 FOR ADDITIONAL BASE MAP LEGEND ITEMS AND NOTES.
2. PROPOSED CONTOURS WITHIN PHASE 8 LINER CONSTRUCTION REPRESENT TOP OF INTERIM GRADES AFTER WASTE REMOVAL TO PROMOTE DRAINAGE. WASTE AND ORGANIC SOIL EXCAVATION IN THE EAST BERM AREA WILL EXTEND BELOW THE INTERIM GRADES SHOWN.
3. PROPOSED CONTOURS ON 3H:1V SLOPE IN PHASE 9 REPRESENT INTERIM SOIL GRADES.
4. WASTE GRADE CONTOURS AT 4H:1V AND 10H:1V SLOPES REPRESENT APPROVED/PROPOSED FINAL COVER GRADES MINUS FINAL COVER THICKNESS (5 FEET). WASTE GRADES AT 3H:1V SLOPE ARE WORKING SLOPES.
5. INTERIM GRADES SHOWN IN THE WASTE REMOVAL AREAS ARE CONCEPTUAL AND ARE INTENDED TO SHOW GENERAL DRAINAGE PATTERNS AND APPROXIMATE LENGTH OF BERM TO BE CONSTRUCTED IN ADVANCE OF THE NEXT PHASE OF LINER CONSTRUCTION. ACTUAL INTERIM GRADES MAY VARY FROM THOSE SHOWN. DEPENDING ON CONSTRUCTION SEQUENCING, INTERIM GRADES MAY NOT BE ACHIEVED THROUGHOUT THE PHASE AREA AT ONE TIME.
6. WASTE REMOVAL IS EXPECTED TO BE COMPLETE AFTER PHASE C.
7. REFER TO APPENDIX M FOR ADDITIONAL MATERIAL QUANTITY INFORMATION.
8. WETLAND PROTECTION AND IMPACTS TO BE IN ACCORDANCE WITH WETLAND PERMIT ISSUED FOR CONSTRUCTION OF SOUTHEAST EXPANSION.

PHASE C WASTE REMOVAL CONSTRUCTION ACTIVITIES

1. INSTALL VIBRATING WIRE PIEZOMETER IN EAST BERM AREA.
2. ABANDON MONITORING WELL MW407.
3. INSTALL TEMPORARY EROSION CONTROLS AND WETLAND PROTECTION FEATURES.
4. REMOVE SLUDGE STORAGE TANK AND MAINTENANCE BUILDING
5. REMOVE GAS WELLHEADS GWL1 AND GWL10.
6. REMOVE TEMPORARY CONDENSATE SUMPS, LGRL GAS BLOWER AND FLARE.
7. STRIP VEGETATION AND TOPSOIL OVER WASTE REMOVAL AREA IN STEPS, STARTING AT TOP OF WASTE SLOPE.
8. STOCKPILE TOPSOIL.
9. REMOVE AND STOCKPILE COVER SOILS.
10. EXCAVATE WASTE IN ACCORDANCE WITH LGRL WASTE REMOVAL PLAN.
11. REMOVE DISCONNECTED GAS WELLS AND GAS PIPING AS EXPOSED AND DISPOSE IN SOUTH/SOUTHEAST EXPANSION.
12. AFTER WASTE REMOVAL IS COMPLETE, CONSTRUCT TEMPORARY STORM WATER MANAGEMENT FEATURES.
13. REMOVE ORGANIC SOILS IN EAST PERIMETER BERM AREA, INSTALL INITIAL BACKFILL, AND PERFORM VANE SHEAR TESTS IN BORINGS.
14. ESTABLISH PHASE 8 INTERIM GRADES.
15. INSTALL UNDERDRAIN TRANSFER PIPES BELOW PHASE 8 EAST BERM.
16. CONSTRUCT PHASE 8 EAST BERM AND DITCH.
17. PLACE TOPSOIL OVER DISTURBED AREAS.
18. SEED, FERTILIZE, AND MULCH TOPSOIL AREAS.
19. PLACE EROSION MAT IN DITCHES.

EARTHWORK QUANTITIES	VOLUME
LGRL CAP REMOVAL	
SELECT CLAY FILL	29,700 CY
GENERAL FILL	79,100 CY
TOPSOIL	9,900 CY
LGRL WASTE REMOVAL	291,000 CY
NET CUT/FILL TO ESTABLISH INTERIM GRADES	133,600 CY (CUT)
ORGANIC SOIL CUT	2,500 CY
COARSE AGGREGATE BEDDING	170 CY
NET CUT/FILL TOPSOIL	9,000 CY (CUT)

PIPE LENGTHS	QUANTITY
6-INCH DIAMETER HDPE NON-PERF. UNDERDRAIN TRANSFER PIPE	1,115 FT

N

SCALE: 1" = 100'

SHEET 10 of 33

PHASE C WASTE REMOVAL AND PHASE 8 INTERIM GRADES

SOUTHEAST EXPANSION PLAN OF OPERATION
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

SITE

ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC

CLIENT

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

DRAWN BY: KP
CHECKED BY: MH
APPROVED BY: SC 04/22/13
PROJECT NO. 25211370.11
DRAWN: 12/06/12
REVISED: 04/22/13

Attachment B

Construction Documentation Report, Glacier Ridge Landfill –
LGRL Phase A Waste Relocation
(Text and Selected Tables and Drawings only)

cornerstone environmental

Building lifetime relationships with our clients and employees.

Construction Documentation Report

Glacier Ridge Landfill – LGRL Phase A Waste Relocation

February 2015

Prepared for:

Advanced Disposal

Glacier Ridge Landfill, LLC
N7296 County Hwy V
Horicon, WI 53032

435 East Mill Street, Suite 3
Plymouth, WI 53073
(845) 695-0200

REPORT CERTIFICATION

Construction Documentation Report
Glacier Ridge Landfill – LGRL Phase A Waste Relocation
Horicon, Dodge County, Wisconsin

I, Joseph J. Falle IV, P.E., hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wisconsin Administrative Code (Wis. Adm. Code); that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of knowledge, all information contained in this document is correct, and the document was prepared in compliance with all applicable requirements of chs. NR 500 to NR 538, Wis. Adm. Code.

Joseph J. Falle IV, P.E.
Wisconsin P.E. No. 41106

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1 INTRODUCTION

1.1 General Information

This Construction Documentation Report documents the Land and Gas Reclamation Landfill (LGRL) Phase A Waste Relocation Project. LGRL is a Superfund site, Wisconsin Department of Natural Resources (WDNR) License No. 1118, Environmental Protection Agency (EPA) ID No. WID0529060888 that is located within the approved Advanced Disposal Services (Advanced) Glacier Ridge Landfill (GRL) Southeast Expansion footprint. LGRL is located in the SW ¼ of Section 35 T12N, R16E, Town of Williamstown, Dodge County, Wisconsin.

LGRL is part of the larger Advanced GRL facility which is comprised of LGRL, the Closed North Landfill, the South Expansion and the Southeast Expansion. With the exception of LGRL all of the other landfill areas accept or accepted only municipal solid waste in accordance with Chapter NR 500 Wisconsin Administrative Code. The facility is owned and operated by Advanced Disposal Services Glacier Ridge Landfill, LLC.

1.2 Site History

LGRL is a Superfund site that began accepting waste in the 1950s and was closed in the mid-1980s. A combination of municipal solid waste, construction debris, and solvent waste were accepted at LGRL over its life. LGRL is located in the footprint of the proposed GRL Southeast Expansion. As part of the Plan of Operation for the GRL Southeast Expansion, prepared by SCS Engineers, Madison, WI (date of WDNR approval October 2013), LGRL would be removed in three phases to remediate the site and to allow for the construction of the Southeast Expansion. Phase A of the waste relocation was completed in 2014.

A plan for relocating the LGRL waste (LGRL Waste Removal Plan, Dec. 2013) was prepared as part of the Plan of Operation for the Southeast Expansion. The LGRL Waste Removal Plan was used as the basis for the relocation of the LGRL waste.

1.3 Purpose and Scope

Cornerstone was retained by Advanced to provide construction quality assurance (CQA) and oversight during Phase A of the LGRL Waste Relocation Project to ensure completion of the project in accordance with the GRL Southeast Expansion Plan of Operation, the LGRL Waste Removal Plan, and the GRL Southeast Expansion Plan of Operation WDNR Conditions of Approval.

The services provided by Cornerstone on behalf of Advanced included observation of the LGRL cover soils excavation, LGRL waste excavation, and LGRL contaminated soil excavation. The east berm construction was also observed as part of the project, the documentation for the east berm construction was submitted to the WDNR with the Phase 6 Liner Construction Documentation Report. Throughout the course of the project Cornerstone monitored the waste excavation for signs of suspect wastes as defined in the LGRL Waste Removal Plan, conducted air monitoring, collected waste, soil and water samples, and recorded daily activities during waste excavation.

This report has been prepared in accordance with Chapter NR 500 Wis. Adm. Code, Condition No. 6 of the Plan of Operation Approval Dated October 13, 2014, and includes the information required as part of the LGRL Waste Removal Plan.

2 CONSTRUCTION DOCUMENTS AND PARTIES

2.1 Reference Documents

The following reference documents were utilized during the execution of the LGRL Phase A Waste Relocation:

- Chapter NR 500 Wisconsin Administrative Code
- Chapter NR 600 Wisconsin Administrative Code
- Chapter NR 140 Wisconsin Administrative Code
- USEPA SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"
- Southeast Expansion Conditional Plan of Operation Approval and Hazardous Waste Remediation Variance dated October 13, 2014
- Document Titled: "Land & Gas Reclamation Landfill Waste Removal Plan for Glacier Ridge Landfill Southeast Expansion" (Revision 1) prepared by SCS Engineers, Madison, WI dated December 2013.
- Document Titled: "Plan of Operation – Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated April 23, 2013.
- Document Titled: "Plan of Operation Addendum No. 1 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated June 28, 2013.
- Document Titled: "Plan of Operation Addendum No. 2 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated October 3, 2013.

2.2 Parties

The following parties were involved in the LGRL Phase A Waste Relocation:

<u>Wisconsin Department of Natural Resources (WDNR)</u>

Ann Bekta, P.E. – Waste Management Engineer

Adam Hogan, P.G. – Hydrogeologist

Will (Woody) Myers – Hydrogeologist

Advanced Disposal Glacier Ridge Landfill, LLC

Jay Warzinski – Corporate Director of Landfill Operations

Doug Coenen – Regional Landfill Operations Manager

Lonn Walter – General Manager

Jake Margelofsky – Operations Manager

Cornerstone Environmental Group, LLC (Project Management /CQA)

Joe Falle, P.E. – Certifying Engineer / Project Manager

Jason Whitman - Project Technician

SCS Engineers, Inc. (Design Engineer)

Sherren Clark, P.E., P.G. – Design Engineer Project Manager

Hoffman Construction Company (General Contractor)

Chad Sell –Project Manager

Jay Kahl – Project Superintendent

CQM, Incorporated (Survey, Physical Soil Analysis)

Nick Sturzl, P.E. – Project Manager

Aaron Shroeder, R.L.S. – Surveyor

Rick Wiemann – Project Technician

PACE Analytical (Soil/Waste/Liquid Analytical Laboratory)

Dan Milewsky – Project Manager

Air Technology Laboratories, Inc. (Air Sample Analytical Laboratory)

Joann De La Ossa – Project Manager

3 EROSION CONTROL AND WETLAND PROTECTION

Prior to construction startup, erosion control measures were installed to protect the wetland areas to the north and east of the LGRL Phase A Excavation Area. The wetland protection included the protection provisions specified in the Wetland Protection and Erosion Control Plan. The Wetland Protection and Erosion Control Plan was included in Appendix E of the Southeast Expansion Plan of Operation. At the beginning of the project steel backed silt fence with a warning ribbon was installed prior to any construction commencing. The silt fence was installed along the approved line as specified in the Plan of Operation and as shown on Drawing No. 3 of the attached plan set. On a weekly basis, the project technician inspected the silt fence and recorded the results on wetland inspection forms. The wetland inspection forms are included in Appendix A.

No work occurred in the wetland outside of the predetermined boundaries specified in the Wetland Protection and Erosion Control Plan. In addition, during construction all non-contact surface water runoff was directed to Sedimentation Basin No.2 located to the north of the LGRL Phase A Excavation Area.

4 COVER SOIL EXCAVATION

Prior to performing waste excavation activities, the cover soils on top of the waste removed. The cap consisted of the following layers from top to bottom:

- Vegetative layer
- 6-inch topsoil layer
- Rooting zone layer (variable depth, 24 inches min.)
- 24-inch clay layer
- Grading Layer (variable depth, min. 6 inches)

During excavation efforts were made to segregate the different cover soils, however due to the abnormally cold winter and excessive frost depth it was difficult to separate the topsoil and rooting zone. As such, topsoil and rooting zone were excavated simultaneously and stockpiled for use as daily / intermediate cover on the active landfill. Clay was able to be segregated and stockpiled for future use in construction of the Phase 6 Liner North Perimeter Berm. Soils that were within 6 inches of the waste were not segregated and were treated as waste in accordance with the LGRL Waste Removal Plan.

5 LANDFILL GAS SYSTEM ABANDONMENT/FLARE RELOCATION

5.1 LFG Well and Piping Abandonment

LGRL contains an active gas extraction system. Prior to construction, a total of 14 vertical landfill gas (LFG) extraction wells were in place and operational. Each of the wells was connected to a blower flare station located at the northwest corner of LGRL. As part of the Phase A waste relocation a total of eight existing vertical wells were abandoned along with associated lateral and header piping. The eight wells were GWL3, GWL4, GWL5, GWL6, GWL7, GWL8, GWL13, and GWL14 Wells and piping were removed as the waste was excavated. All well and lateral components were disposed of in the active GRL.

5.2 Blower / Flare Relocation

Six of 14 existing vertical LFG extraction wells and associated piping remained in place after the completion of the LGRL Phase A Waste Relocation. Due to the need to keep the system active, the blower/flare system was required to be operated until such time that the remaining gas wells would be removed. The blower/flare system was originally located at the northwest corner of LGRL which was in the excavation area. As part of the Phase A project, the blower/flare system was relocated to south end of LGRL as shown on Drawing No. 4. Due to the reduced gas flows at LGRL the blower/flare only runs intermittently when gas with a high enough Btu content is available to burn.

5.3 LFG Condensate Management

Prior to the LGRL Phase A Waste Relocation project, all condensate drained in the gas header pipes by gravity to the northwest corner of the site where it was stored in a 5,000 gallon underground storage tank. The storage tank was periodically pumped out and the condensate was commingled with leachate for offsite disposal. The existing storage tank was removed and disposed of in the GRL. The existing header and lateral pipes are sloped such that they drain from the south to the north. To accommodate condensate that would be generated after the Phase A project was completed, three temporary condensate sumps were installed. Two of the condensate sumps were placed at the termination points of the header pipe as shown on Drawing No. 4. The sumps are designed to provide a vacuum break and drain the condensate back into the LGRL waste (see Detail 5 on Drawing No. 6) The third condensate sump was installed upstream of the blower/flare system to protect the blower from condensate. This sump is periodically pumped out using a tanker truck and the condensate is combined with the GRL leachate in the leachate storage tanks.

6 MONITORING WELL ABANDONMENT

6.1 Non-Groundwater Well Abandonments

As part of the Phase A Waste Relocation project, two vertical leachate head wells MW-2 and MW-3, which were located within the LGRL Waste Limits, were abandoned. Abandonment included removal of the casing pipe with the excavation of waste. No borehole abandonment was required because the head wells did not extend past the bottom of waste. The casing pipes were disposed of in the active GRL.

6.2 Groundwater Well Abandonments

Several groundwater monitoring wells required abandonment as part of the Phase A Waste Relocation project to allow for the construction of the Phase 6 Composite Liner. A total of five groundwater monitoring wells were abandoned, one that was in the waste and four that were outside of the waste. The wells abandoned were:

- MW13AR
- MW13R
- P303A
- P5R
- P421B (inside waste limits)

All of the wells were over drilled, the casings and screens were removed, and the boreholes backfilled in accordance with Chapter NR 141 Wis. Adm. Code. Well Abandonment Forms are included in Appendix C.

7 WASTE EXCAVATION

7.1 Introduction

Excavation of LGRL Waste began on March 10, 2014 and was completed by July 18, 2014. This section details the site health and safety, environmental monitoring and protection, waste handling, screening and characterization methods, quantities and types of waste removed, details of waste handling and screening procedures, and details of suspicious waste removal and handling.

7.2 Environmental Monitoring / Protection

The LGRL Waste Removal Plan specified environmental monitoring and protection methods that were required in association with waste excavation and relocation activities. The required environmental monitoring / environmental protection items included:

- Ambient Air Monitoring
- Dust and Odor Control
- Surface Water Management
- Waste Contact Water Management

Each of the above items is discussed in the sections below.

7.2.1 Ambient Air Monitoring

Section 4.5.1 of the LGRL Waste Removal Plan required that ambient air-monitoring be conducted both on and off site at upwind and downwind locations. Ambient air monitoring was to be conducted weekly for the first six weeks and if no contaminants were discovered, biweekly thereafter. The main constituents of concern were volatile organic compounds (VOCs). During the project a total of 44 ambient air samples were collected. Samples were collected using Silco Cans that were put under a vacuum in the lab. Each can was fitted with a regulator that allowed for continuous sample collection over an approximately 8-hour period. A total of four samples were required for each sampling event per the LGRL Waste Removal Plan: one upwind, one in the public drop off area, and two downwind. An additional sample was added at the working face of the LGRL landfill to assess the VOC concentrations within the waste itself. This was done as a safety precaution for workers that were consistently present in or near the waste.

During sampling, weather conditions such as temperature, precipitation, barometric pressure, pressure trend, wind speed, and wind direction were recorded with each

sampling event. Samples were not collected when sustained winds over 15 miles per hour (mph) were present.

Following collection samples were shipped to Air Technologies Laboratories (ATL) in the City of Industry, California. ATL analyzed each of the samples for VOCs in accordance with EPA Method TO 14/15.

Appendix D of the report includes sample locations, summarizes sample detections, and includes the lab reports from the laboratory. Sample detections were compared to OSHA permissible exposure limits (PELs) as is shown in Appendix D. All of the constituents that were detected were well below the OSHA PELs. Due to the low concentrations of VOCs that were detected, it is difficult to state whether the VOCs that were detected were from the waste, vehicle exhaust, or to other activities on or off the site.

Samples were to be collected weekly for the first 6 weeks of the project, however week number 2 was missed. The reason week number 2 was missed was related to a shipping issue with the sampling equipment. If clean results were obtained, sampling could be reduced to biweekly per the LGRL Waste Removal Plan. Sampled dates are summarized below:

Week 1: 3/4/2014
Week 2: Missed
Week 3: 3/18/14
Week 4: 3/21/14
Week 5: 3/28/14
Week 6: 4/9/14, 4/10/14, 4/11/14
Week 8: 4/25/14
Week 10: 5/16/14
Week 12: 6/5/14

After June 5, 2014, some waste remained in place, however, large amounts of rain were received at the site that delayed the removal of the last remaining waste volumes for several weeks. No additional air samples were completed after June 5, 2014 due to the small amount of waste that remained and the fact that previous sample results had VOC concentrations well below the OHSA permitted levels.

Based on the results obtained from the air monitoring sample analyses, no apparent threat to the environment or human health due airborne VOCs was noted during the project.

7.2.2 Dust and Odor Control Measures

Throughout the excavation process dust was controlled by watering haul roads, and if necessary, the waste excavation area. Watering of roads was completed on an as needed

basis to control dust. During days when dust control was required, roads were watered several times per day to mitigate dust on site haul roads.

At the beginning of the excavation process, it was unknown how strong odors would be. As a preventative measure, Advanced employed the use of odor control devices that utilize odor neutralizing agents mixed with water. The first system installed was a temporary system that utilized sprayers that were mounted on fence posts. The fence posts were installed at roughly 15 foot intervals and interconnected with hydraulic hose. A small pump transferred water and odor neutralizing agent through the hose to the nozzles. This system was utilized until a portable trailer mounted system could be delivered to the site. The portable trailer mounted system consisted of a trailer mounted 1,000 gallon water tank, spray bars, and pump. Water and odor neutralizing agent were pumped from the tank to the spray bars where a fine mist was produced. The portable system was used for the second half of the project. The trailer mounted system could more easily be moved to areas that had higher odor concentrations. Photos of the odor control systems in use are presented in Appendix B.

Fortunately odors were not excessive during the project and rarely migrated off site. The odor systems were run continuously after installation to prevent odors from migrating offsite.

7.2.3 Surface Water Management

During waste excavation the clean runoff water was prevented from entering the excavation area. The main method used to prevent clean runoff from entering the excavation was grading around the excavation to divert surface water away from the working face. Surface water that did contact waste was managed as leachate as is detailed in Section 7.2.4.

7.2.4 Contact Water / Leachate Management

Water that contacted waste or contaminated soils was treated as leachate. To prevent the migration of contact water off site, the excavation was graded to a low point where contact water could drain. The low point consisted of a collection sump and pump station that was used to transfer the contact water to leachate trucks. All contact water was treated as leachate and taken off site for disposal at a wastewater treatment plants (WWTP). Prior to transporting water to the treatment plant, leachate samples were taken and analyzed at a laboratory. The results of the lab samples were shared with the WWTP's that accepted leachate to verify their permit limits would not be exceeded. The WWTP's had no issues accepting leachate during the project. During the project the total volume of leachate taken off site from the excavation was approximately 900,000 gallons.

7.2.5 Groundwater Dewatering

During the excavation of the waste and the construction of the east perimeter berm, groundwater dewatering did not occur. Small amounts of water were encountered during soft soil excavation, but this water did not warrant pumping or dewatering. As such, no groundwater was treated or sampled during the LGRL Phase A Waste Relocation project.

7.3 Waste Handling, Screening and Characterization

Waste handling, screening and characterization procedures are specified in Section 4 of the LGRL Waste Removal Plan. The LGRL Waste Removal Plan identified four major waste categories as listed below:

- Typical waste (municipal and industrial)
- Salvageable waste
- Suspicious waste
- Hazardous waste

During the excavation process, the Cornerstone Field Technician screened and characterized the waste removed through visual observations, odor observations and performed periodic readings with a Photo Ionization Detector (PID) to identify suspicious and potentially hazardous wastes. The waste screening process and subsequent handling process is described in the sections below.

7.3.1 Typical Waste

Waste was classified as typical waste if it exhibited the following characteristics:

- The waste resembled MSW or waste typically disposed of in GRL
- The waste did not exhibit solvent odor
- The waste did not exhibit positive PID readings

The majority of the waste exhumed from LGRL was classified as typical waste.

Hoffman Construction Company (Hoffman) used two CAT 385 Excavators to load between eight and ten articulated 40 ton haul trucks daily. The excavators loaded the LGRL waste into the haul trucks, and the haul trucks transported the waste to the active GRL. Typical waste was dumped in the active area and was spread utilizing CAT D8 dozers and the landfill's compactors. LGRL was either commingled with incoming waste or was mono-filled. At times it was difficult to commingle excavated LGRL waste with incoming MSW due to safety and traffic pattern concerns. Waste within GRL was covered on a daily basis with alternate daily cover (ADC) or soil materials. Waste that was placed on outboard

slopes was covered with one foot of intermediate cover soil after placement. The minimum separation distance between the leachate drainage layer and the LGRL waste was 15 feet.

7.3.2 Salvageable Waste

Salvageable waste was not identified during the waste screening and characterization. As such no waste was salvaged as part of the Phase A Waste Removal.

7.3.3 Suspicious Waste

Suspicious wastes were identified through visual and odor observations, and by screening the waste with a photoionization detector (PID). All workers and equipment operators that were continually in the waste excavation area wore personal gas detection meters that had PID capability. The meters were utilized for worker health and safety primarily, but were also utilized to detect potentially VOC contaminated waste. The LGRL Waste Removal Plan did not specify a VOC concentration determined in the field that would in turn characterize the waste as suspicious. Discussions were conducted with the WDNR regarding the lack of a VOC concentration specifications for treating waste in the field. Through the discussions with the WDNR, if a VOC reading of the 10 ppm was detected with the PID, the waste would be characterized as suspicious and further testing would be required. The basis for the 10 ppm limit is from the LGRL Waste Removal Plan Soil Management Section. Section 6.2.2 of the LGRL Waste Removal Plan specified a VOC concentration of 10 ppm for soil found within the waste to determine the use for the soil. Since this was used for the soil within the waste, it was determined that this standard could also apply to suspicious waste. Equipment operators and the Cornerstone Field Technician also visually observed the excavation for the presence of intact drums, transformers, and other containers that may have housed suspicious waste. No intact drums, containers, or transformers were found during the excavation.

Suspicious waste was identified on three different occasions, March 8, 2014, May 9, 2014 and July 16, 2015 . The suspicious waste was identified based on the field PID screenings conducted by the Cornerstone field technician. All suspicious waste identified met the criteria of bulk suspicious waste which was waste that did not meet the criteria for intact drums or transformers. When the bulk suspicious waste was identified, excavation in the area ceased and the Cornerstone field technician identified the area that was classified as suspicious. In each case, the suspicious waste was excavated from the area until passing PID (<10 ppm) results were obtained. The waste removed on July 16, 2015 was near the bottom of the excavation and was removed until soil was visible. The suspicious waste that was found on July 16, 2015 was directly above soil sample 50. Sample 50 is described in Section 8.3.4. The suspicious waste was transported to the GRL lined area and stockpiled away from other waste placement activities. Samples of the waste were collected and sent to PACE Analytical where it was tested for total VOCs. While awaiting the results of the VOC analysis, the bulk suspicious waste was covered with soil or ADC materials. The total

VOC analysis results were compared to the Toxicity Characteristic Leaching Procedure (TCLP) limits utilizing the 20 times rule. If the total VOC concentrations for bulk suspicious wastes were less than 20 times the TCLP limit the TCLP limit was considered met and the waste was disposed of with the other incoming LGRL waste. None of the suspicious wastes encountered exceeded the TCLP limits and were not determined to be hazardous. As such, all suspicious wastes were incorporated into the GRL waste. Results of the special waste tests are presented in Appendix E. The total volume of suspicious waste removed from the Phase A area was 4 loads, or approximately 120 cubic yards.

7.3.4 Hazardous Waste

No hazardous waste was identified through the screening procedures described in the LGRL waste removal plan.

7.4 Waste Types and Quantities

As noted above the majority of waste that was excavated in the Phase A area was disposed of in the GRL as typical waste. Some bulk suspicious waste was identified as during the waste screening and characterization. All bulk suspicious wastes were tested in the laboratory for total VOCs and met the minimum disposal requirements for disposal in GRL. No hazardous wastes were identified. The total volume of waste removed is as follows:

- Typical Waste = 584,394 cubic yards (CY)
- Bulk Suspicious Waste = 120 cubic yards (CY)

8 SOIL EXCAVATION

8.1 Introduction

Soil excavation followed the Soil Management Plan included as in Section 6 of the LGRL Waste Removal Plan. Soils that were excavated generally consisted of cover soils, soils within the waste, berms, and native soil underlying the waste. Soil was classified in accordance with the LGRL Waste Removal Plan and used for beneficial reuse, disposed of or treated. The following sections detail the soil excavation from the site.

8.2 Soil Types

The LGRL Waste Removal Plan identified four different types of soils. Soils removed from LGRL were classified into one of the four types described below based on contamination levels. The LGRL Waste Removal Plan identified how each type of soil was to be managed. The soil types identified in the LGRL Waste Removal Plan are as follows (see the LGRL Waste Removal Plan for more detailed descriptions):

- Type 1 – Soil that is not impacted above soil standards. Type 1 soil could be used anywhere on the site. To confirm soil could be classified as Type 1, it was tested in the lab for Lead, Cadmium, and VOCs. PCB Testing was not completed as the soils did not contain potentially PCB laden equipment or materials. If soil was not impacted above the soil residual contaminant level established under NR 720, the soil could be utilized on site without restrictions.
- Type 2 – Soil that was impacted and may contain contaminants above the NR 720 RCLs but below the TCLP limits. Type 2 soil could be used within the lined area of the landfill as daily cover. Type 2 soils did not require laboratory testing to be used in the footprint or disposed of as waste unless they were identified as suspicious wastes.
- Type 3 – Soil that is impacted and may contain contaminants above the NR 720 RCLs for direct contact but are below the groundwater standards. Type 3 soils were not identified during the project.
- Type 4 – Soil that exceeds the TCLP limits and must be treated prior to disposal. Type 4 soils were not identified during the project.

8.3 Soil Sampling, Analysis and Classification

Several different soils were encountered during the excavation of the LGRL waste and included cover soils, soil within the waste, soil between the bottom of waste and Phase 6 Subbase, and additional soils excavated for remediation. Each of the soils excavated are described in detail in the following sections:

8.3.1 LGRL Final Cover Soils

As was discussed in Section 6.2.1 of the LGRL Waste Removal Plan, final cover soils could be classified as Type 1 soils unless they were observed to be in direct contact with waste or exhibited other characteristics such as staining or odor. Soils that were within 6 inches of the waste were treated as waste and disposed of. Detailed cover soil excavation and stockpiling is discussed in Section 4 of this report.

8.3.2 Soil Within the LGRL Waste

Soil within the LGRL waste mass was treated entirely as waste. Based on the observations during the excavation it was not practical to separate soil from waste and as such the soil was not tested for reuse. Soil within the waste was only tested if it was part of a suspicious waste observation as detailed in Section 7 of this report.

8.3.3 Soil Between the Bottom of LGRL Waste and Above Phase 6 Liner Subbase Grades

The bottom of the LGRL waste was above the proposed subbase grades for the Phase 6 composite liner. Soil in this region required excavation to achieve the subbase grades and was required to be tested if used outside of the GRL footprint. Soil depths in this region ranged from 0 to 7 feet with an average depth of approximately 5 feet. During waste excavation, soil that was visually stained by the waste was treated as waste and disposed of in the GRL active area. The depth of soil that was removed and disposed of was generally between 1 and 2 feet below the bottom of the waste.

The soil that remained was tested to determine where the soil could be utilized. Testing consisted of dividing the site into approximately 0.5 acre subareas where test pits were dug to test the underlying soils. Samples were collected at each of the test pit locations and analyzed for VOCs, Cadmium and Lead. Figure 1 in Appendix F shows the location of the test pits.

The soil test results were compared to NR 720 RCLs for groundwater and direct contact, TCLP limts, and NR 668 Universal Treatment Standards (UTS). A summary of the data is presented in Appendix F. There were several exceedances for various contaminants as shown in the summary of the data. Soil that did not meet the limits for use outside of the GRL footprint was disposed of or used as daily cover within the limits of waste. A total of 8,497 cubic yards of contaminated soil was disposed of in the active GRL.

8.3.4 Additional Soil Excavation for Remediation

As part of the LGRL Waste Relocation plan, a soil remediation plan was put into place that required removal of soils from below the Southeast Expansion subbase grades. A total of 3,000 cubic yards of soil could be removed for remediation across the entire LGRL area.

After all of the LGRL waste had been removed from the Phase A area, the subbase was inspected for areas that had high levels of VOC contamination. There was one area that was found within the LGRL waste that contained VOC levels that warranted additional investigation. The area was centered around TVOC Test Number 50 as indicated in Figure 2 in Appendix G. Test 50 was located in the City of Mayville Dump Area. Preliminary test pits were dug to determine the level of contamination. A PID was used to estimate VOC concentrations, PID readings indicated VOC contamination levels above 400 ppm.

The WDNR was informed of the area of VOC contamination. Advanced Disposal and the WDNR collaborated to determine a course of action for removing the soil. The bullet points below describe the methods used to bound the area and remove the contaminated soil.

- First, additional test pits were dug surrounding the center of the VOC contamination. Figure 2 shows a simple diagram as to how the test pit locations were determined. A total of 8 additional test pits were dug and soil samples were obtained to determine the level of contamination at each test pits. The test pits were located between the center of the VOC contamination and previous test points that had VOC contamination below acceptable limits.
- After performing the tests at the additional locations, Advanced Disposal and Cornerstone consulted with the WDNR to determine a plan for removal of the impacted soil. The location of the additional soil tests were used to bound the approximate area of contamination. Results of the additional soil sample laboratory tests are summarized in Appendix G. During excavation of the contaminated soil, a PID was used to assess the level of contamination in the soil that was removed along with determining the stopping points of the excavation.
- Figure 2 shows the area of soil that was removed below the subbase grades. The total volume of soil removed was approximately 570 cubic yards. Additional tests of the relocated soil were taken after it was moved to the GRL where it was segregated. The additional tests indicated levels of contamination within the soil was above the limits for disposal in GRL.
- The impacted soil was relocated to the GRL Biopile. The Biopile utilizes a blower to infuse air into the soil and volatilize the VOCs. At the time of this report the soil continues in remediation. The soil will continue in remediation in accordance with the GRL approved Biopile Plan. Upon completion of the remediation, reports will be sent to the WDNR in accordance with approved Biopile Plan.

9 EAST BERM CONSTRUCTION / UNDERDRAIN TRANSFER CONSTRUCTION

The East Berm and Underdrain Transfer system construction was presented in the Phase 6 Liner Construction Documentation Report Addendum No. 1 dated January 23, 2015.

10 CONCLUSION

The LGRL Phase A Waste Relocation project has been completed in accordance with the approved Plan of Operation, the construction plans and specifications, Chapters NR 500, 600 and 700 Wis. Adm. Code. On behalf of Advanced Disposal, Cornerstone respectfully requests the review and approval of this Construction Documentation Report.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

Suspicious Waste Sample
March 8, 2014
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary TCLP	Comments
WASTE SAMPLE 1-A	1,1,1-Trichloroethane	407	µg/kg	NA	GRL-LGRLA-TVOC-1 3/6/14
	1,2,4-Trimethylbenzene	1560	µg/kg	NA	
	1,3,5-Trimethylbenzene	438	µg/kg	NA	
	1,4-Dichlorobenzene	192	µg/kg	NA	
	Benzene	88.1	µg/kg	PASS	
	Ethylbenzene	3200	µg/kg	NA	
	Isopropylbenzene (Cumene)	222	µg/kg	NA	
	Naphthalene	302	µg/kg	NA	
	Styrene	359	µg/kg	NA	
	Toluene	4690	µg/kg	NA	
	m&p-Xylene	6360	µg/kg	NA	
	n-Butylbenzene	124	µg/kg	NA	
	n-Propylbenzene	130	µg/kg	NA	
	o-Xylene	1850	µg/kg	NA	
	p-Isopropyltoluene	4440	µg/kg	NA	
WASTE SAMPLE 1-B	1,2,4-Trimethylbenzene	134	µg/kg	NA	GRL-LGRLA-TVOC-2 3/6/14
	1,4-Dichlorobenzene	89.5	µg/kg	PASS	
	Ethylbenzene	303	µg/kg	NA	
	Isopropylbenzene (Cumene)	52.5	µg/kg	NA	
	Naphthalene	61.5	µg/kg	NA	
	Styrene	159	µg/kg	NA	
	Toluene	3920	µg/kg	NA	
	m&p-Xylene	281	µg/kg	NA	
	o-Xylene	92.2	µg/kg	NA	
	p-Isopropyltoluene	262	µg/kg	NA	
WASTE SAMPLE 1-C	1,2,4-Trimethylbenzene	70.7	µg/kg	NA	GRL-LGRLA-TVOC-3 3/6/14
	1,4-Dichlorobenzene	36.7	µg/kg	PASS	
	Ethylbenzene	174	µg/kg	NA	
	Isopropylbenzene (Cumene)	35.7	µg/kg	NA	
	Naphthalene	44.7	µg/kg	NA	
	Toluene	503	µg/kg	NA	
	Trichlorofluoromethane	73.2	µg/kg	NA	
	m&p-Xylene	221	µg/kg	NA	
	o-Xylene	65.4	µg/kg	NA	
	p-Isopropyltoluene	250	µg/kg	NA	

Suspicious Waste Sample
May 9, 2014
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon, WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary	Comments
				TCLP	
WASTE SAMPLE 2-A	1,2,4-Trimethylbenzene	609	µg/kg	NA	GRL-LGRLA-TCLP/TVOC-21 5/9/14
	1,3,5-Trimethylbenzene	196	µg/kg	NA	
	1,4-Dichlorobenzene	327	µg/kg	PASS	
	2-Butanone (MEK)	866	µg/kg	PASS	
	Ethylbenzene	326	µg/kg	NA	
	Naphthalene	1270	µg/kg	NA	
	Styrene	183	µg/kg	NA	
	Toluene	387	µg/kg	NA	
	m&p-Xylene	949	µg/kg	NA	
	n-Butylbenzene	118 J	µg/kg	NA	
	n-Propylbenzene	82.9 J	µg/kg	NA	
	o-Xylene	297	µg/kg	NA	
WASTE SAMPLE 2-B	1,2,4-Trimethylbenzene	437	µg/kg	NA	GRL-LGRLA-TCLP/TVOC-22 5/9/14
	1,3,5-Trimethylbenzene	135	µg/kg	NA	
	1,4-Dichlorobenzene	155	µg/kg	PASS	
	2-Butanone (MEK)	388	µg/kg	PASS	
	Ethylbenzene	235	µg/kg	NA	
	Naphthalene	922	µg/kg	NA	
	Styrene	353	µg/kg	NA	
	Toluene	403	µg/kg	NA	
	m&p-Xylene	675	µg/kg	NA	
	n-Butylbenzene	80.3	µg/kg	NA	
	n-Propylbenzene	55.4	µg/kg	NA	
	o-Xylene	202	µg/kg	NA	
WASTE SAMPLE 2-C	1,2,4-Trimethylbenzene	720	µg/kg	NA	GRL-LGRLA-TCLP/TVOC-23 5/9/14
	1,3,5-Trimethylbenzene	204	µg/kg	NA	
	1,4-Dichlorobenzene	479	µg/kg	PASS	
	2-Butanone (MEK)	512	µg/kg	PASS	
	Ethylbenzene	1530	µg/kg	NA	
	Isopropylbenzene (Cumene)	67.2	µg/kg	NA	
	Naphthalene	579	µg/kg	NA	
	Styrene	558	µg/kg	NA	
	Tetrachloroethene	64.1	µg/kg	PASS	
	Toluene	2810	µg/kg	NA	
	m&p-Xylene	3520	µg/kg	NA	
	n-Butylbenzene	114	µg/kg	NA	
	n-Propylbenzene	175	µg/kg	NA	
	o-Xylene	750	µg/kg	NA	

Suspicious Waste Sample
July 16, 2014
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary TCLP	Comments
WASTE SAMPLE 3-A	1,2,4-Trimethylbenzene	347	µg/kg	NA	LGRL-WA-VOC-01 7/16/14
	1,3,5-Trimethylbenzene	137	µg/kg	NA	
	1,4-Dichlorobenzene	29.4	µg/kg	PASS	
	Ethylbenzene	364	µg/kg	NA	
	Toluene	289	µg/kg	NA	
	m&p-Xylene	1890	µg/kg	NA	
	n-Propylbenzene	45.4	µg/kg	NA	
	o-Xylene	552	µg/kg	NA	
	p-Isopropyltoluene	48.8	µg/kg	NA	
WASTE SAMPLE 3-B	1,2,4-Trimethylbenzene	2350	µg/kg	NA	LGRL-WA-VOC-02 7/16/14
	1,3,5-Trimethylbenzene	667	µg/kg	NA	
	Ethylbenzene	2690	µg/kg	NA	
	Isopropylbenzene (Cumene)	139	µg/kg	NA	
	Naphthalene	191	µg/kg	NA	
	Toluene	1490	µg/kg	NA	
	cis-1,2-Dichloroethene	69.6	µg/kg	NA	
	m&p-Xylene	16300	µg/kg	NA	
	n-Propylbenzene	322	µg/kg	NA	
	o-Xylene	4530	µg/kg	NA	
	p-Isopropyltoluene	110	µg/kg	NA	
	sec-Butylbenzene	107	µg/kg	NA	
WASTE SAMPLE 3-C	1,2,4-Trimethylbenzene	3320	µg/kg	NA	LGRL-WA-VOC-03 7/16/14
	1,3,5-Trimethylbenzene	895	µg/kg	NA	
	Ethylbenzene	4350	µg/kg	NA	
	Isopropylbenzene (Cumene)	171	µg/kg	NA	
	Naphthalene	110	µg/kg	NA	
	Toluene	4780	µg/kg	NA	
	cis-1,2-Dichloroethene	69.4	µg/kg	NA	
	m&p-Xylene	22300	µg/kg	NA	
	n-Propylbenzene	443	µg/kg	NA	
	o-Xylene	6170	µg/kg	NA	
	p-Isopropyltoluene	120	µg/kg	NA	
	sec-Butylbenzene	119	µg/kg	NA	

E 4500
N 2000
E 5000
E 5500

LEGEND

- PHASE 6 WASTE BOUNDARY
- PHASE BOUNDARY
- LGRL LIMITS
- PHASE 6 SUBBASE 2' CONTOUR
- PHASE 6 SUBBASE 10' CONTOUR
- ▷ TVOC 1 SOIL SAMPLE

TVOC 48
TVOC 54
TVOC 53
TVOC 46
TVOC 47
TVOC 50A
TVOC 50B
TVOC 11
TVOC 10
TVOC 33
960
958
956
954
952
950
948
946
944
942
940
938
TVOC 52
TVOC 50G
TVOC 50H
TVOC 50
TVOC 50D
TVOC 50C
TVOC 24A
TVOC 24B
TVOC 50F
WDNR SOIL EXCAVATION AREA
TVOC 13
TVOC 12
TVOC 50E
TVOC 51
TVOC 49
936
TVOC 25A
TVOC 15
TVOC 14
TVOC 9
TVOC 8
TVOC 32
934
PHASE 1C
932
TVOC 39
TVOC 38
TVOC 45
TVOC 44
TVOC 27A
TVOC 26B
TVOC 17
TVOC 16
938
940
942
944
946
948
950
952
N 1500
TVOC 7
TVOC 6
TVOC 31
TVOC 43
TVOC 42
TVOC 41
TVOC 40
TVOC 37
TVOC 36
TVOC 35
TVOC 34
936
938
934
+???
FUTURE PHASE B WASTE RELOCATION AREA
PHASE 2C

NOTE

1. THE GRADES SHOWN REPRESENT THE PHASE 6 SUBBASE GRADES.

N

0 40 80
SCALE IN FEET

1" 1/2" 1" 0"

File: C:\Users\JoeFalle\Desktop\GLACIER RIDGE\LGRL Phase A Documentation Report\00--Drawings\CAD\02-MISCRL-S-SP.dwg Layout: 1 User: JoeFalle Feb 15, 2015 - 8:30pm

Advanced Disposal

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
	DATE OF ISSUE 01/28/2015	DRAWN BY SRC DESIGNED BY JJF	CHECKED BY -- APPROVED BY --			

cornerstone environmental

PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

PHASE A WASTE RELOCATION CONSTRUCTION DRAWINGS
SOIL SAMPLE LOCATION MAP

FIGURE NO. **1**

PROJECT NO. 140225

Below Waste Soil Analytical Summary
Primary Soil Samples
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

GRL-LGRLA-TVOC-06 through -17 4/3/14

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
TVOC 6	Cadmium	0.28	mg/kg	PASS	PASS	PASS	PASS	
	Lead	4.29	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	1540	µg/kg	PASS	PASS	PASS	PASS	
	p-Isopropyltoluene	43.2	µg/kg	N/A	PASS	N/A	N/A	
	Toluene	59.5	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	81.5	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	34.0	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 7
TVOC 7	Cadmium	0.20	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.7	mg/kg	PASS	PASS	PASS	PASS	Exceedance was for use of soil outside waste limits. Soil was disposed of in the Glacier Ridge Landfill.
	2-Butanone (MEK)	15900	µg/kg	PASS	PASS	EXCEEDANCE	N/A	
	Toluene	623	µg/kg	PASS	PASS	PASS	N/A	
TVOC 8	Cadmium	0.21	mg/kg	PASS	PASS	PASS	PASS	
	Lead	4.5	mg/kg	PASS	PASS	PASS	PASS	Exceedance was for use of soil outside waste limits. Soil was disposed of in the Glacier Ridge Landfill.
	2-Butanone (MEK)	2310	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	29.0	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	64.8	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	98.1	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 9
	o-Xylene	38.8	µg/kg	PASS	PASS	PASS	N/A	
TVOC 9	Cadmium	0.19	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.8	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	31.3	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	89.3	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	37.2	µg/kg	PASS	PASS	PASS	N/A	
TVOC 10	Cadmium	0.14	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.70	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	31.3	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	89.3	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	37.2	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 11
TVOC 11	Cadmium	0.18	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.7	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	33.4	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	29.2	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	100	µg/kg	PASS	PASS	PASS	N/A	
TVOC 12	Cadmium	0.18	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.8	mg/kg	PASS	PASS	PASS	PASS	Exceedance was for use of soil outside waste limits. Soil was disposed of in the Glacier Ridge Landfill.
	2-Butanone (MEK)	5940	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	58.1	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	133.0	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	148.0	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 13
	o-Xylene	39.4	µg/kg	PASS	PASS	PASS	N/A	

Below Waste Soil Analytical Summary
Primary Soil Samples
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
TVOC 13	Cadmium	0.14	mg/kg	PASS	PASS	PASS	PASS	Exceedance was for use of soil outside waste limits. Soil was disposed of in the Glacier Ridge Landfill.
	Lead	3.4	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	13500	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	83.6	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	225.0	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	198.0	µg/kg	PASS	PASS	PASS	PASS	
TVOC 14	Cadmium	0.25	mg/kg	PASS	PASS	PASS	PASS	
	Lead	4.7	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	516	µg/kg	PASS	PASS	PASS	PASS	
	1,4-Dichlorobenzene	34.8	µg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	144	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	170	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	49.9	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	453	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	126	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 15
TVOC 15	Cadmium	0.17	mg/kg	PASS	PASS	PASS	PASS	
	Lead	2.7	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	127	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	355	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	94.6	µg/kg	PASS	PASS	PASS	N/A	
TVOC 16	Cadmium	0.18	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.9	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	513	µg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	122	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	263	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	45.5	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	347	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	104	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 17
TVOC 17	Cadmium	0.13	mg/kg	PASS	PASS	PASS	PASS	
	Lead	1.9	mg/kg	PASS	PASS	PASS	PASS	
	Toluene	102	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	56.5	µg/kg	PASS	PASS	PASS	PASS	
TVOC 24A	Cadmium	0.40	mg/kg	PASS	PASS	PASS	PASS	Resample due to lab receipt temperature above 6°C
	Lead	11.2	mg/kg	PASS	PASS	PASS	PASS	
TVOC 24B	Cadmium	0.27	mg/kg	PASS	PASS	PASS	PASS	
	Lead	32.6	mg/kg	EXCEEDANCE	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	190	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	105	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	84.7	µg/kg	N/A	PASS	PASS	N/A	
	1,3,5-Trimethylbenzene	29.2	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	368	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	71	µg/kg	PASS	PASS	PASS	N/A	

GRL-LGRLA-TVOC-24 through -27 5/27/14

Below Waste Soil Analytical Summary
Primary Soil Samples
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
TVOC 25A	Cadmium	0.15	mg/kg	PASS	PASS	PASS	PASS	Resample due to lab receipt temperature above 6°C
	Lead	2.1	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	32.4	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	237	µg/kg	PASS	PASS	PASS	N/A	
TVOC 26A/B	Cadmium	0.41	mg/kg	PASS	PASS	PASS	PASS	Resample due to lab receipt temperature above 6°C. Also 26A contained a contaminant (methylene chloride) between the LOD and RL. 26B tested clean.
	Lead	12.7	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	35.5	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	35.2	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	127	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	35.7	µg/kg	PASS	PASS	PASS	N/A	
TVOC 27A	Cadmium	0.15	mg/kg	PASS	PASS	PASS	PASS	Resample due to lab receipt temperature above 6°C
	Lead	1.7	mg/kg	PASS	PASS	PASS	PASS	
TVOC 31	Cadmium	0.21	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.8	mg/kg	PASS	PASS	PASS	PASS	
TVOC 32	Cadmium	0.31	mg/kg	PASS	PASS	PASS	PASS	
	Lead	7.1	mg/kg	PASS	PASS	PASS	PASS	
TVOC 33	Cadmium	0.41	mg/kg	PASS	PASS	PASS	PASS	
	Lead	11.0	mg/kg	PASS	PASS	PASS	PASS	
TVOC 34	Cadmium	0.18	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.3	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	207	µg/kg	PASS	PASS	PASS	PASS	
	Toluene	124	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 35
TVOC 35	Cadmium	0.20	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.0	mg/kg	PASS	PASS	PASS	PASS	
	Toluene	104	µg/kg	PASS	PASS	PASS	N/A	
TVOC 36	Lead	2.60	mg/kg	PASS	PASS	PASS	PASS	Taken Above TVOC 37
TVOC 37	Cadmium	0.09	mg/kg	PASS	PASS	PASS	PASS	
	Lead	2.30	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	80.60	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	30.70	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	326.00	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	83.60	µg/kg	PASS	PASS	PASS	N/A	
TVOC 38	Lead	3.50	mg/kg	PASS	PASS	PASS	PASS	Taken Above TVOC 39/39A
TVOC 39/39A	Cadmium	0.12	mg/kg	PASS	PASS	PASS	PASS	Methylene Chloride was detected between the LOD and RL. In accordnace with NR 720 an additional sample was pulled (sample 39A) which confirmed that no methylene chloride was present in the soil and was likely an anomoly due to lab contamination.
	Lead	2.80	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	52.40	µg/kg	PASS	PASS	PASS	N/A	
	Methylene Chloride	35.60	µg/kg	PASS	PASS	EXCEEDANCE	N/A	
	1,2,4-Trimethylbenzene	34.00	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	222.00	µg/kg	PASS	PASS	PASS	N/A	
TVOC 40	Cadmium	0.09	mg/kg	PASS	PASS	PASS	PASS	Taken Above TVOC 41
	Lead	1.90	mg/kg	PASS	PASS	PASS	PASS	
TVOC 41	Lead	1.80	mg/kg	PASS	PASS	PASS	PASS	

6/12/14 (B)

GRL-LGRLA-TVOC-31 through -35 6/12/14

GRL-LGRLA-TVOC-36 through -46 6/17/14

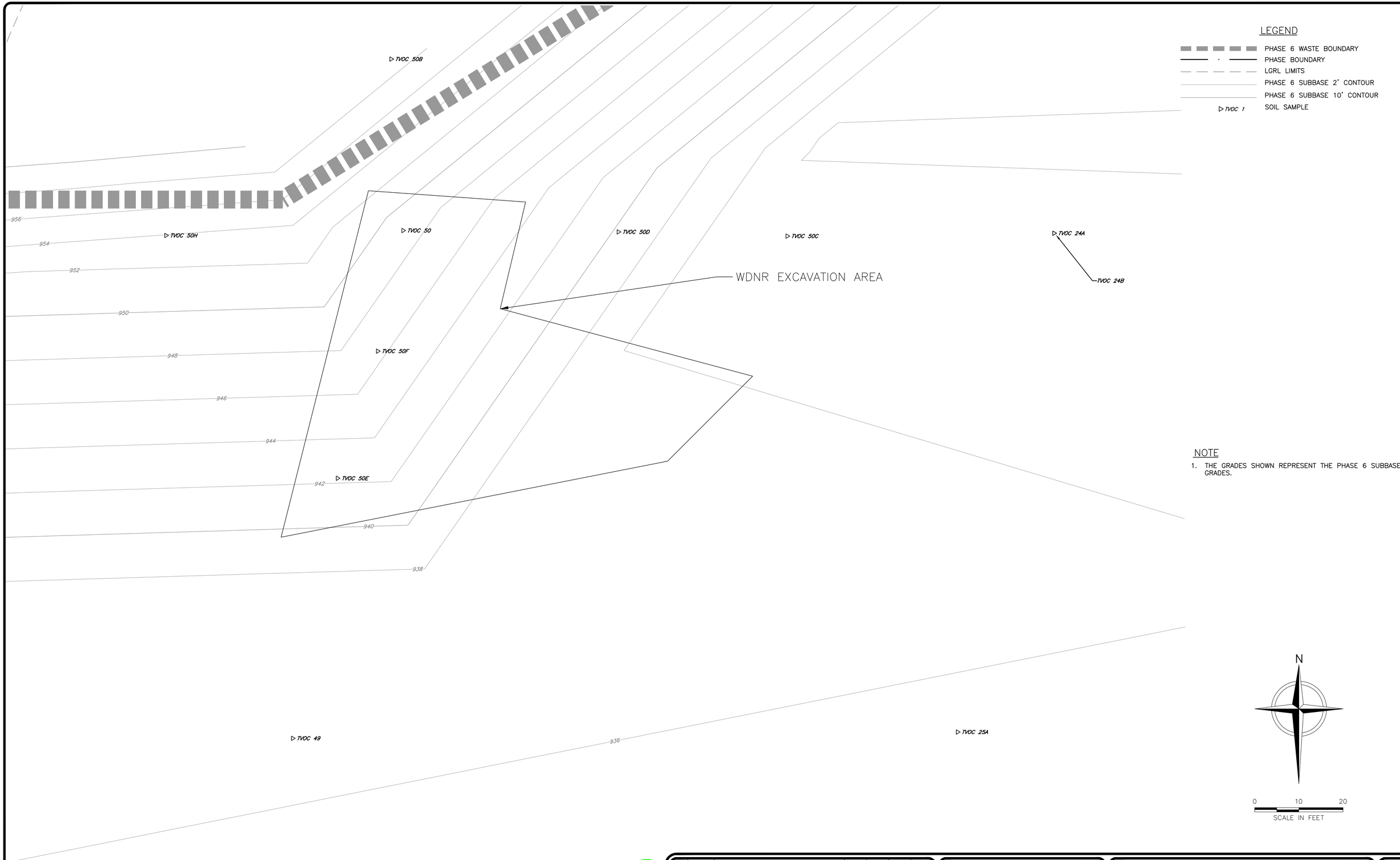
Below Waste Soil Analytical Summary
Primary Soil Samples
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
TVOC 42	Cadmium	0.09	mg/kg	PASS	PASS	PASS	PASS	
	Lead	4.40	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	98.40	µg/kg	PASS	PASS	PASS	N/A	
	Toluene	36.20	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	107.00	µg/kg	N/A	PASS	PASS	N/A	
	1,3,5-Trimethylbenzene	35.10	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	433.00	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	119.00	µg/kg	PASS	PASS	PASS	N/A	Taken Above TVOC 43
TVOC 43	Cadmium	0.10	mg/kg	PASS	PASS	PASS	PASS	
	Lead	1.90	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	261.00	µg/kg	PASS	PASS	PASS	N/A	
	n-Propylbenzene	32.70	µg/kg	N/A	PASS	N/A	N/A	
	Toluene	40.10	µg/kg	PASS	PASS	PASS	N/A	
	1,2,4-Trimethylbenzene	128.00	µg/kg	N/A	PASS	PASS	N/A	
	1,3,5-Trimethylbenzene	45.10	µg/kg	N/A	PASS	PASS	N/A	
	m&p-Xylene	812.00	µg/kg	PASS	PASS	PASS	N/A	
	o-Xylene	190.00	µg/kg	PASS	PASS	PASS	N/A	
TVOC 44	Cadmium	0.09	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.20	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	1270.00	µg/kg	PASS	PASS	PASS	PASS	
TVOC 45	Lead	1.80	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	458.00	µg/kg	PASS	PASS	PASS	PASS	
TVOC 46	Lead	4.70	mg/kg	PASS	PASS	PASS	PASS	
TVOC 47	Cadmium	0.08	mg/kg	PASS	PASS	PASS	PASS	
	Lead	3.80	mg/kg	PASS	PASS	PASS	PASS	
	2-Butanone (MEK)	1350.00	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
TVOC 48	Cadmium	0.11	mg/kg	PASS	PASS	PASS	PASS	
	Lead	4.80	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	30.90	µg/kg	PASS	PASS	PASS	N/A	
	m&p-Xylene	108.00	µg/kg	PASS	PASS	PASS	N/A	
TVOC 49	Cadmium	0.25	mg/kg	PASS	PASS	PASS	PASS	
	Lead	8.20	mg/kg	PASS	PASS	PASS	PASS	
TVOC 50	Cadmium	0.40	mg/kg	PASS	PASS	PASS	PASS	
	Lead	46.8	mg/kg	EXCEEDANCE	PASS	EXCEEDANCE	PASS	
	n-Butylbenzene	164.0	µg/kg	N/A	PASS	N/A	N/A	
	cis-1,2-Dichloroethene	333.0	µg/kg	N/A	N/A	N/A	N/A	
	Ethylbenzene	18200	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	N/A	
	Isopropylbenzene (Cumene)	520	µg/kg	N/A	N/A	N/A	N/A	
	Naphthalene	215	µg/kg	PASS	PASS	PASS	N/A	
	n-Propylbenzene	486	µg/kg	N/A	PASS	N/A	N/A	
	Toluene	29300	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	N/A	
	Trichloroethene	2560	µg/kg	N/A	N/A	N/A	N/A	
	1,2,4-Trimethylbenzene	1270.0	µg/kg	N/A	PASS	EXCEEDANCE	N/A	
	1,3,5-Trimethylbenzene	403.0	µg/kg	N/A	PASS	EXCEEDANCE	N/A	
	m&p-Xylene	64400	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	N/A	
	o-Xylene	16300	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	N/A	

GRL-LGRLA-TVOC-47 through -54 & 24B
7/17/14

Below Waste Soil Analytical Summary
Primary Soil Samples
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
TVOC 51	Cadmium	0.11	mg/kg	PASS	PASS	PASS	PASS	
	Lead	6.40	mg/kg	PASS	PASS	PASS	PASS	
TVOC 52	Cadmium	0.28	mg/kg	PASS	PASS	PASS	PASS	
	Lead	23.0	mg/kg	EXCEEDANCE	PASS	PASS	PASS	
	m&p-Xylene	61.8	µg/kg	PASS	PASS	PASS	N/A	
TVOC 53	Cadmium	0.08	mg/kg	PASS	PASS	PASS	PASS	
	Lead	10.70	mg/kg	PASS	PASS	PASS	PASS	
TVOC 54	Cadmium	0.71	mg/kg	PASS	PASS	PASS	PASS	
	Lead	88.9	mg/kg	EXCEEDANCE	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	68.6	µg/kg	PASS	PASS	PASS	N/A	



LEGEND

- PHASE 6 WASTE BOUNDARY
- PHASE BOUNDARY
- LGRL LIMITS
- PHASE 6 SUBBASE 2' CONTOUR
- PHASE 6 SUBBASE 10' CONTOUR
- TVOC 1 — SOIL SAMPLE

NOTE

1. THE GRADES SHOWN REPRESENT THE PHASE 6 SUBBASE GRADES.

N

0 10 20

SCALE IN FEET

1" 1/2" 0" 1"

Advanced Disposal

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 01/28/2015
DRAWN BY SRC
DESIGNED BY JJF
CHECKED BY --
APPROVED BY --

cornerstone environmental

PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

PHASE A WASTE RELOCATION CONSTRUCTION DRAWINGS

SOIL SAMPLE LOCATION MAP TVOC 50

FIGURE NO. **2**

PROJECT NO. 140225

Below Waste Additional Tests Around TVOC 50
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
50A	Cadmium	0.28	mg/kg	PASS	PASS	PASS	PASS	
	Lead	9.1	mg/kg	PASS	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	703	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Vinyl Chloride	243	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
50B	Cadmium	0.11	mg/kg	PASS	PASS	PASS	PASS	
	Lead	9.3	mg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	207	µg/kg	PASS	PASS	PASS	NA	
50C	Cadmium	0.082	mg/kg	PASS	PASS	PASS	PASS	
	Lead	10	mg/kg	PASS	PASS	PASS	PASS	
50D	Cadmium	0.13	mg/kg	PASS	PASS	PASS	PASS	
	Lead	8.1	mg/kg	PASS	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	539	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Ethylbenzene	410	µg/kg	PASS	PASS	PASS	NA	
	Toluene	643	µg/kg	PASS	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	42	µg/kg	NA	PASS	PASS	NA	
	Vinyl Chloride	537	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	742	µg/kg	PASS	PASS	PASS	NA	
	o-Xylene	126	µg/kg	PASS	PASS	PASS	NA	
50E	Cadmium	0.25	mg/kg	PASS	PASS	PASS	PASS	
	Lead	15.3	mg/kg	EXCEEDANCE	PASS	PASS	PASS	
	sec-Butylbenzene	69.6	µg/kg	NA	PASS	NA	NA	
	cis-1,2-Dicholoroethene	445	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Ethylbenzene	6560	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	301	µg/kg	NA	PASS	NA	NA	
	Naphthalene	200	µg/kg	PASS	PASS	PASS	NA	
	n-Propylbenzene	715	µg/kg	NA	PASS	NA	NA	
	Toluene	9330	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Trichloroethene	159	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	1,2,4-Trimethylbenzene	3580	µg/kg	NA	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	1150	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	24800	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	o-Xylene	6830	µg/kg	PASS	PASS	EXCEEDANCE	NA	

Below Waste Additional Tests Around TVOC 50
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

LCRL-TVOC 7/22/14

Sample ID	Constiuents Detected	Lab Results	Units	Compliance Summary				Comments
				NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
50F	Cadmium	0.084	mg/kg	PASS	PASS	PASS	PASS	
	Lead	5.2	mg/kg	PASS	PASS	PASS	PASS	
	sec-Butylbenzene	1070	µg/kg	NA	PASS	NA	NA	
	cis-1,2-Dicholoroethene	7040	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Ethylbenzene	52300	µg/kg	PASS	EXCEEDANCE	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	2650	µg/kg	NA	PASS	NA	NA	
	p-Isoropyltoluene	752	µg/kg	NA	PASS	NA	NA	
	n-Propylbenzene	8520	µg/kg	NA	PASS	NA	NA	
	Toluene	194000	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	Trichloroethene	123000	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	
	1,2,4-Trimethylbenzene	45900	µg/kg	NA	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	11700	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	209000	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	NA	
	o-Xylene	57300	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
50G	Cadmium	0.17	mg/kg	PASS	PASS	PASS	PASS	
	Lead	9.6	mg/kg	PASS	PASS	PASS	PASS	
50H	Cadmium	0.09	mg/kg	PASS	PASS	PASS	PASS	
	Lead	20.0	mg/kg	EXCEEDANCE	PASS	PASS	PASS	

Below Waste Soil Additional Tests WDNR Excavation
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

LCRL-TVOC-CON
14/08/01

Sample ID	Constiuents Detected	Lab Results	Results (mg/kg)	Units	Compliance Summary				Comments
					NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
CON-1	1,2,4-Trimethylbenzene	43.9	0.04	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	114	0.11	µg/kg	PASS	PASS	PASS	NA	
	Toluene	563	0.56	µg/kg	PASS	PASS	PASS	NA	
	Trichloroethene	438	0.44	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	Vinyl chloride	29.8	0.03	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	289	0.29	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	406	0.41	µg/kg	PASS	PASS	PASS	NA	
	o-Xylene	93.5	0.09	µg/kg	PASS	PASS	PASS	NA	
CON-2	1,2,4-Trimethylbenzene	22800	22.80	µg/kg	NA	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	6970	6.97	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	49300	49.30	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	1970	1.97	µg/kg	NA	PASS	NA	NA	
	Toluene	183000	183.00	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	Trichloroethene	14700	14.70	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	
	Vinyl chloride	1960	1.96	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	67900	67.90	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	151000	151.00	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	n-Butylbenzene	932	0.93	µg/kg	NA	PASS	NA	NA	
	n-Propylbenzene	5970	5.97	µg/kg	NA	PASS	NA	NA	
	o-Xylene	39300	39.30	µg/kg	EXCEEDANCE	PASS	PASS	NA	
CON-3	1,2,4-Trimethylbenzene	114	0.11	µg/kg	NA	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	32.7	0.03	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	1250	1.25	µg/kg	PASS	PASS	PASS	NA	
	Toluene	678	0.68	µg/kg	PASS	PASS	PASS	NA	
	cis-1,2-Dichloroethene	55.9	0.06	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	6590	6.59	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	33.9	0.03	µg/kg	NA	PASS	NA	NA	
	o-Xylene	1000	1.00	µg/kg	PASS	PASS	EXCEEDANCE	NA	
CON-4	1,2,4-Trimethylbenzene	13900	13.90	µg/kg	NA	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	4330	4.33	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	12800	12.80	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	1110	1.11	µg/kg	NA	PASS	NA	NA	
	Naphthalene	286	0.29	µg/kg	PASS	PASS	PASS	NA	
	Toluene	14300	14.30	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	cis-1,2-Dichloroethene	567	0.57	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	39900	39.90	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	n-Butylbenzene	933	0.93	µg/kg	NA	PASS	NA	NA	
	n-Propylbenzene	4110	4.11	µg/kg	NA	PASS	NA	NA	
	o-Xylene	10500	10.50	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	p-Isopropyltoluene	206	0.21	µg/kg	NA	PASS	NA	NA	
	sec-Butylbenzene	398	0.40	µg/kg	NA	PASS	NA	NA	

Below Waste Soil Tests WDNR Soil Excavation
Relocated Soil Summary
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Results (mg/kg)	Units	Compliance Summary				Comments
					NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
PILE-1	1,2,4-Trimethylbenzene	87.0	0.09	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	154	0.15	µg/kg	PASS	PASS	PASS	NA	
	Toluene	309	0.31	µg/kg	PASS	PASS	PASS	NA	
	Trichloroethene	345	0.35	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	313	0.31	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	522	0.52	µg/kg	PASS	PASS	PASS	NA	
	o-Xylene	178	0.18	µg/kg	PASS	PASS	PASS	NA	
PILE-2	1,2,4-Trimethylbenzene	3490	3.49	µg/kg	NA	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	940	0.94	µg/kg	NA	PASS	EXCEEDANCE	NA	
	2-Butanone (MEK)	293	0.29	µg/kg	PASS	PASS	PASS	PASS	
	Ethylbenzene	1710	1.71	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	159	0.16	µg/kg	NA	PASS	NA	NA	
	Naphthalene	193	0.19	µg/kg	PASS	PASS	PASS	NA	
	Styrene	87.3	0.09	µg/kg	NA	PASS	PASS	NA	
	Toluene	975	0.98	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Trichloroethene	96.0	0.10	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	44.9	0.04	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	7370	7.37	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	549	0.55	µg/kg	NA	PASS	NA	NA	
	o-Xylene	2820	2.82	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	p-Isopropyltoluene	43.6	0.04	µg/kg	NA	PASS	PASS	NA	
	sec-Butylbenzene	56.5	0.06	µg/kg	NA	PASS	NA	NA	
PILE-3	1,2,4-Trimethylbenzene	504	0.50	µg/kg	NA	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	111	0.11	µg/kg	NA	PASS	PASS	NA	
	Ethylbenzene	1530	1.53	µg/kg	PASS	PASS	PASS	NA	
	Isopropylbenzene (Cumene)	34.1	0.03	µg/kg	NA	PASS	NA	NA	
	Toluene	2070	2.07	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Trichloroethene	326	0.33	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	566	0.57	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	5550	5.55	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	75.9	0.08	µg/kg	NA	PASS	NA	NA	
	o-Xylene	955	0.96	µg/kg	PASS	PASS	EXCEEDANCE	NA	

LGRL-PILE
8/13/14

Below Waste Soil Tests WDNR Soil Excavation
Relocated Soil Summary
LGRL Phase A Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Results (mg/kg)	Units	Compliance Summary				Comments
					NR 668 UTS	RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
PILE-4	1,2,4-Trimethylbenzene	59400	59.40	µg/kg	NA	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	19300	19.30	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Ethylbenzene	192000	192.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	NA	
	Toluene	501000	501.00	µg/kg	EXCEEDANCE	PASS	EXCEEDANCE	NA	
	Trichloroethene	1090000	1090.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	
	cis-1,2-Dichloroethene	95200	95.20	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	615000	615.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	NA	
	n-Propylbenzene	13200	13.20	µg/kg	NA	PASS	NA	NA	
	o-Xylene	158000	158.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	NA	
PILE-5	1,2,4-Trimethylbenzene	1500	1.50	µg/kg	NA	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	455	0.46	µg/kg	NA	PASS	EXCEEDANCE	NA	
	Ethylbenzene	2180	2.18	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	94.2	0.09	µg/kg	NA	PASS	NA	NA	
	Methylene Chloride	62.8	0.06	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Naphthalene	64.8	0.06	µg/kg	PASS	PASS	PASS	NA	
	Styrene	97.2	0.10	µg/kg	NA	PASS	PASS	NA	
	Toluene	2920	2.92	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	Trichloroethene	360	0.36	µg/kg	PASS	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	767	0.77	µg/kg	NA	PASS	EXCEEDANCE	NA	
	m&p-Xylene	7030	7.03	µg/kg	PASS	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	287	0.29	µg/kg	NA	PASS	NA	NA	
	o-Xylene	1890	1.89	µg/kg	PASS	PASS	EXCEEDANCE	NA	

Attachment C

Construction Documentation Report, Glacier Ridge Landfill –
LGRL Phase B Waste Relocation
(Text and Selected Tables and Drawings only)

cornerstone environmental

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Construction Documentation Report

Glacier Ridge Landfill – LGRL Phase B Waste Relocation

October 2015

Prepared for:

Advanced Disposal

Glacier Ridge Landfill, LLC
N7296 County Hwy V
Horicon, WI 53032

8413 Excelsior Drive
Madison, WI 53717
(845) 695-0200

REPORT CERTIFICATION

Construction Documentation Report
Glacier Ridge Landfill – LGRL Phase B Waste Relocation
Horicon, Dodge County, Wisconsin

I, Mark J. Torresani, P.E., hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wisconsin Administrative Code (Wis. Adm. Code); that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of knowledge, all information contained in this document is correct, and the document was prepared in compliance with all applicable requirements of chs. NR 500 to NR 538, Wis. Adm. Code.

Mark J. Torresani, P.E.
Wisconsin P.E. No. 29355

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1 INTRODUCTION

1.1 General Information

This Construction Documentation Report documents the Land and Gas Reclamation Landfill (LGRL) Phase B Waste Relocation Project. LGRL is a Superfund site, Wisconsin Department of Natural Resources (WDNR) License No. 1118, Environmental Protection Agency (EPA) ID No. WID0529060888 that is located within the approved Advanced Disposal Services (Advanced) Glacier Ridge Landfill (GRL) Southeast Expansion footprint. LGRL is located in the SW ¼ of Section 35 T12N, R16E, Town of Williamstown, Dodge County, Wisconsin.

LGRL is part of the larger Advanced GRL facility which is comprised of LGRL, the Closed North Landfill, the South Expansion and the Southeast Expansion. With the exception of LGRL all of the other landfill areas accept or accepted only municipal solid waste in accordance with Chapter NR 500 Wisconsin Administrative Code. The facility is owned and operated by Advanced Disposal Services Glacier Ridge Landfill, LLC.

1.2 Site History

LGRL is a Superfund site that began accepting waste in the 1950s and was closed in the mid-1980s. A combination of municipal solid waste, construction debris, and solvent waste were accepted at LGRL over its life. LGRL is located in the footprint of the proposed GRL Southeast Expansion. As part of the Plan of Operation for the GRL Southeast Expansion, prepared by SCS Engineers, Madison, WI (date of WDNR approval October 2013), LGRL would be removed in three phases to remediate the site and to allow for the construction of the Southeast Expansion. Phase A of the waste relocation was completed in 2014, while Phase B was completed in May 2015.

A plan for relocating the LGRL waste (LGRL Waste Removal Plan, Dec. 2013) was prepared as part of the Plan of Operation for the Southeast Expansion. The LGRL Waste Removal Plan was used as the basis for the relocation of the LGRL waste.

1.3 Purpose and Scope

CQM, Inc. was retained by Advanced to provide construction quality assurance (CQA) and oversight during Phase B of the LGRL Waste Relocation Project to ensure completion of the project in accordance with the GRL Southeast Expansion Plan of Operation, the LGRL Waste Removal Plan, and the GRL Southeast Expansion Plan of Operation WDNR Conditions of Approval. Cornerstone provided construction management and overall project oversight during the project.

The services provided by Cornerstone and CQM, Inc. on behalf of Advanced included observation of the LGRL cover soils excavation, LGRL waste excavation, and LGRL contaminated soil excavation. Portions of the east berm construction were also observed as part of the project, the documentation for the east berm construction has been submitted to the WDNR with the Phase 7 Liner Construction Documentation Report. Throughout the course of the project CQM monitored the waste excavation for signs of suspect wastes as defined in the LGRL Waste Removal Plan, conducted air monitoring, collected waste, soil and water samples, and recorded daily activities during waste excavation.

This report has been prepared in accordance with Chapter NR 500 Wis. Adm. Code, Condition No. 6 of the Plan of Operation Approval Dated October 13, 2014, and includes the information required as part of the LGRL Waste Removal Plan.

2 CONSTRUCTION DOCUMENTS AND PARTIES

2.1 Reference Documents

The following reference documents were utilized during the execution of the LGRL Phase B Waste Relocation:

- Chapter NR 500 Wisconsin Administrative Code
- Chapter NR 600 Wisconsin Administrative Code
- Chapter NR 140 Wisconsin Administrative Code
- USEPA SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"
- Southeast Expansion Conditional Plan of Operation Approval and Hazardous Waste Remediation Variance dated October 13, 2014
- Document Titled: "Land & Gas Reclamation Landfill Waste Removal Plan for Glacier Ridge Landfill Southeast Expansion" (Revision 1) prepared by SCS Engineers, Madison, WI dated December 2013.
- Document Titled: "Plan of Operation – Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated April 23, 2013.
- Document Titled: "Plan of Operation Addendum No. 1 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated June 28, 2013.
- Document Titled: "Plan of Operation Addendum No. 2 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated October 3, 2013.

2.2 Parties

The following parties were involved in the LGRL Phase B Waste Relocation:

Wisconsin Department of Natural Resources (WDNR)

Ann Bekta, P.E. – Waste Management Engineer

Adam Hogan, P.G. – Hydrogeologist

Will (Woody) Myers – Hydrogeologist

Advanced Disposal Glacier Ridge Landfill, LLC

Jay Warzinski – Corporate Director of Landfill Operations

Doug Coenen – Regional Landfill Operations Manager

Lonn Walter – General Manager

Jake Margelofsky – Operations Manager

Cornerstone Environmental Group, LLC (Project Management)

Joe Falle, P.E. – Project Manager

Mark Torresani, P.E. – Certifying Engineer

CQM, Incorporated (Survey, Physical Soil Analysis)

Nick Sturzl, P.E. – Project Manager

Rick Wiemann – Project Technician

Austin Field – Project Technician

Tom Bishop – Project Technician

SCS Engineers, Inc. (Design Engineer)

Sherren Clark, P.E., P.G. – Design Engineer Project Manager

Mashuda Contractors, Inc (General Contractor)

Stacey Krueger – Project Manager

George Reynolds – Project Superintendent

Mike Burt – Project Superintendent

PACE Analytical (Soil/Waste/Liquid Analytical Laboratory)

Dan Milewsky – Project Manager

Air Technology Laboratories, Inc. (Air Sample Analytical Laboratory)

Joann De La Ossa – Project Manager

Malter Associates, Inc. (Industrial Hygienist)

Dave Malter – President

Veolia Environmental Services – Industrial Services (Field Testing of Air and Soil Samples)

Jon Borkenhagen – Response Manager

3 EROSION CONTROL AND WETLAND PROTECTION

Prior to construction startup, erosion control measures were installed to protect the wetland areas to the east of the LGRL Phase B Excavation Area. The wetland protection included the protection provisions specified in the Wetland Protection and Erosion Control Plan. The Wetland Protection and Erosion Control Plan was included in Appendix E of the Southeast Expansion Plan of Operation. At the beginning of the project wire backed silt fence with a warning ribbon was installed prior to any construction commencing. The silt fence was installed along the approved line as specified in the Plan of Operation, directed by the WDNR and as shown on Drawing No. 5 of the attached plan set. On a weekly basis, the project technician inspected the silt fence and recorded the results on wetland inspection forms. The wetland inspection forms are included in Appendix A.

No work occurred in the wetland outside of the predetermined boundaries specified in the Wetland Protection and Erosion Control Plan. During construction all non-contact surface water runoff was directed to Sedimentation Basin No.2 located to the north of the LGRL Phase B Excavation Area. All precipitation and stormwater runoff that came into contact with waste or contaminated soils was contained in the area of the excavation, collected and routed or hauled to the leachate collection system for subsequent treatment. No contact water was allowed to enter the wetlands.

4 COVER SOIL EXCAVATION

Prior to performing waste excavation activities, the cover soils on top of the waste were removed. The cap consisted of the following layers from top to bottom:

- Vegetative layer
- 6-inch topsoil layer
- Rooting zone layer (variable depth, 24 inches min.)
- 24-inch clay layer
- Grading Layer (variable depth, min. 6 inches)

A large portion of the topsoil and rooting zone layers were excavated during 2014. These soils were utilized to construct portions of the perimeter berm for the Phase 6 Liner Project. Clay soils were kept intact until just prior to the excavation of the Phase B Waste.

Efforts were made to segregate soils during the remainder of the excavation. Topsoil was stockpiled for future projects, rooting zone was stockpiled or used for daily cover and clay was segregated and stockpiled for future use to the north of the LGRL facility. Soils that were within 6 inches of the waste or that were too frozen to separate from the underlying waste were not segregated and were treated as waste in accordance with the LGRL Waste Removal Plan.

5 LANDFILL GAS SYSTEM ABANDONMENT

5.1 LFG Well and Piping Abandonment

LGRL contains an active gas extraction system. During the Phase A Waste Excavation project, eight wells were abandoned and the blower/flare station was relocated (see Drawing No. 5). Prior to the Phase B construction, a total of six (6) vertical landfill gas (LFG) extraction wells were still in place and operational. Each of the wells was connected to the blower flare station located at the south end of LGRL. As part of the Phase B waste relocation a total of four (4) existing vertical wells were abandoned along with associated lateral and header piping. The four (4) wells were GWL, GWL9, GWL11, and GWL12. Wells and piping were removed as the waste was excavated. All well and lateral components were disposed of in the active GRL.

5.2 Blower / Flare System

Two vertical LFG extraction wells and associated piping remained in place after the completion of the LGRL Phase B Waste Relocation. Due to the need to keep the system active, the blower/flare system was required to be operated until such time that the remaining gas wells would be removed or the WDNR approved decommissioning of the blower/flare system. Due to the reduced gas flows at LGRL the blower/flare only runs intermittently when gas with a high enough Btu content is available to burn. Advanced has received approval to abandon the remaining LGRL gas extraction and blower/flare system once Phase C waste relocation activities begin.

5.3 LFG Condensate Management

Two temporary condensate management sumps CS-2 and CS-3 were abandoned as part of the Phase B Waste Excavation. The only remaining condensate management structure on site is the CS-1 sump which is located in line with the blower flare station. This condensate sump will remain until such time that the wells are abandoned or the system is decommissioned as part of the Phase C LGRL waste relocation.

6 MONITORING WELL ABANDONMENT

6.1 Non-Groundwater Well Abandonments

As part of the Phase B Waste Relocation project, one vertical leachate headwell MW-4, which was located within the LGRL Waste Limits, was abandoned. In addition to the leachate headwell, four gas probes (GMP-1 through GMP-4) were abandoned. Each of the probes were located within the LGRL waste limits. Abandonment included removal of the casing pipes with the excavation of waste. No borehole abandonment was required because neither the headwell nor the gas probes extend past the bottom of waste. The casing pipes were disposed of in the active GRL. Drawing No. 5 shows the location of the abandoned monitoring devices.

6.2 Groundwater Well Abandonments

Two groundwater monitoring wells required abandonment as part of the Phase B Waste Relocation project to allow for the construction of the Phase 7 Composite Liner. The wells abandoned were:

- MW311R
- P311A

All of the wells were over drilled, the casings and screens were removed, and the boreholes backfilled in accordance with Chapter NR 141 Wis. Adm. Code. Well Abandonment Forms are included in Appendix C.

7 WASTE EXCAVATION

7.1 Introduction

Excavation of LGRL Waste began on February 3, 2015 and was completed by May 5, 2015. This section details the site health and safety, environmental monitoring and protection, waste handling, screening and characterization methods, quantities and types of waste removed, details of waste handling and screening procedures, and details of suspicious waste removal and handling.

7.2 Site Health and Safety

There were two instances in which site health and safety issues were encountered during the waste excavation.

7.2.1 Health and Safety Issue February 2015

The first health and safety issue occurred on February 12, 2015. Several of the workers complained of symptoms that included but were not necessarily limited to; bloody noses, tiredness, sore throat, coughing, eye irritation, and chest pain/congestion. When Advanced and Cornerstone were informed of this, work was immediately stopped on site until further investigation could be conducted. As a starting point, interviews were conducted with the personnel that experienced symptoms. In addition, data from the workers' personal gas meters was collected and analyzed. Finally, as an added protection Veolia Special Services (Veolia) was contacted to complete additional VOC, chlorine and ammonia monitoring. The results of the Veolia monitoring did not indicate anything outside of what was to be expected or concern for workers health and safety.

Results of the interviews and personal detection meters were sent to an outside industry hygiene company, Malter Associates, Inc. (Dallas, TX). Malter Associates reviewed the data collected by Advanced and Cornerstone and interviewed some of the workers as well. The opinion of Malter Associates was that a chemical reaction occurred and released a short burst of ammonia or something similar that caused the workers' symptoms.

In addition to rendering an opinion, Malter developed additional safety procedures and recommended that the workers wear sampling badges that could detect VOCs, ammonia, chlorine and sulfur compounds. The workers wore the sampling badges over the entire work day to get a representative sample. Results of the sample analysis indicated that none of the compounds detected were above OSHA limits.

During the remainder of the waste relocation portion of the project, no other instances occurred that required additional sampling or additional PPE.

7.2.2 Health and Safety Issue May 2015

On May 6, 2015 another health and safety issue occurred. This occurrence was related to the excavation of the contaminated soil after all waste had been removed. Workers were complaining of strong solvent odor and handheld PID readings were between 10 and 100 ppm. In some areas the PID read in excess of 100 ppm. Malter Associates was contacted for an outside opinion on the situation. Malter recommended respirator use until personal badge testing indicated there was no issue and that all VOC levels were below OSHA limits.

Workers were fitted with badges during their work day and the badges were sent to the lab for analysis. While the badges were worn and until results were received, workers and CQA staff wore respirators fitted with organic vapor/ammonia/particulate cartridges. Analysis of the badge testing indicated that no OSHA limits were exceeded. As a precaution, when VOC levels in the cabs increased above 10 ppm workers wore respirators. In addition, all ground personnel wore respirators at all times during contaminated soil excavation.

7.3 Environmental Monitoring / Protection

The LGRL Waste Removal Plan specified environmental monitoring and protection methods that were required in association with waste excavation and relocation activities. The required environmental monitoring / environmental protection items included:

- Ambient Air Monitoring
- Dust and Odor Control
- Surface Water Management
- Waste Contact Water Management

Each of the above items is discussed in the sections below.

7.3.1 Ambient Air Monitoring

Section 4.5.1 of the LGRL Waste Removal Plan required that ambient air-monitoring be conducted both on and off site at upwind and downwind locations. Ambient air monitoring was to be conducted weekly for the first six weeks and if no contaminants were discovered, biweekly thereafter. The main constituents of concern were volatile organic compounds (VOCs). During the project a total of 50 ambient air samples were collected. Samples were collected using SilcoCans that were put under a vacuum in the lab. Each can was fitted with a regulator that allowed for continuous sample collection over an approximately 8-hour period. A total of four samples were required for each sampling event per the LGRL Waste Removal Plan: one upwind, one in the public drop off area, and

two downwind. An additional sample was added at the working face of the LGRL landfill to assess the VOC concentrations within the waste itself. This was done as a safety precaution for workers that were consistently present in or near the waste. There were instances where sampling containers were placed in the waste excavation equipment. Sample numbers GRL-PHBAIR-6, 8, 10, 11, 12, 13, 14, 15, were installed in excavation equipment. This was done to further check the contaminant levels in the equipment when PID readings indicated elevated VOC levels.

During sampling, weather conditions such as temperature, precipitation, barometric pressure, pressure trend, wind speed, and wind direction were recorded with each sampling event. Samples were not collected when sustained winds over 15 miles per hour (mph) were present.

Following collection, samples were shipped to Air Technologies Laboratories (ATL) in the City of Industry, California. ATL analyzed each of the samples for VOCs in accordance with EPA Method TO 15.

Appendix D of the report includes sample locations, summarizes sample detections, and includes the lab reports from the laboratory. Sample detections were compared to OSHA permissible exposure limits (PELs) as is shown in Appendix D. All of the constituents that were detected were well below the OSHA PELs. Due to the low concentrations of VOCs that were detected, it is difficult to state whether the VOCs that were detected were from the waste, vehicle exhaust, or to other activities on or off the site.

Samples were to be collected weekly for the first 6 weeks of the project. If clean results were obtained, sampling could be reduced to biweekly per the LGRL Waste Removal Plan. Sampled dates are summarized below:

Week 1: 2/6/15
Week 2: Missed
Week 3: 2/17/15, 2/19/15
Week 4: 2/26/15
Week 5: 3/5/15
Week 6: 3/11/15
Week 8: 3/26/15
Week11: 4/14/15
Week 13: 4/29/15
Week 15: 5/14/15

Based on the results obtained from the air monitoring sample analyses, no apparent threat to the environment or human health due airborne VOCs was noted during the project.

7.3.2 Dust and Odor Control Measures

Throughout the excavation process dust was controlled by watering haul roads and, when necessary, the waste excavation area. Watering of roads was completed on an as needed basis to control dust. During days when dust control was required, roads were watered several times per day to mitigate dust on site haul roads.

At the beginning of the excavation process, it was unknown how strong odors would be. As a preventative measure, Advanced employed the use of odor control devices that utilize odor neutralizing agents mixed with water. A portable trailer mounted system consisting of a trailer mounted 1,000 gallon water tank, spray bars, and pump was utilized. Water and odor neutralizing agent were pumped from the tank to the spray bars where a fine mist was produced. The trailer mounted system could easily be moved to areas that had higher odor concentrations.

Odors were not considered excessive during the project and rarely migrated off site. The odor system was run continuously during non-freezing weather while waste was being relocated.

7.3.3 Surface Water Management

During waste excavation the clean runoff water was prevented from entering the excavation area. The main method used to prevent clean runoff from entering the excavation was grading around the excavation to divert surface water away from the working face. Surface water that did contact waste was managed as leachate as is detailed in Section 7.3.4.

7.3.4 Contact Water / Leachate Management

Water that contacted waste or contaminated soils was treated as leachate. To prevent the migration of contact water off site, the excavation was graded to a low point where contact water could drain. The low point consisted of a collection sump and pump station that was used to transfer the contact water to leachate trucks. All contact water was treated as leachate and taken off site for disposal at a wastewater treatment plants (WWTP). During the project the total volume of leachate taken off site from the excavation was approximately 78,000 gallons.

7.3.5 Groundwater Dewatering

During the excavation of the waste and the construction of the east perimeter berm, groundwater dewatering was required. Groundwater that did not contact waste was pumped to the underdrain system and treated with the air stripper. Sampling of the

groundwater was conducted in accordance with the site's WPDES permit. ESC, Inc. reported the results on a monthly basis as required by the WPDES permit.

7.4 Waste Handling, Screening and Characterization

Waste handling, screening and characterization procedures are specified in Section 4 of the LGRL Waste Removal Plan. The LGRL Waste Removal Plan identified four major waste categories as listed below:

- Typical waste (municipal and industrial)
- Salvageable waste
- Suspicious waste
- Hazardous waste

During the excavation process, the CQM Field Technician screened and characterized the waste removed through visual observations, odor observations and performed periodic readings with a Photo Ionization Detector (PID) to identify suspicious and potentially hazardous wastes. The waste screening process and subsequent handling process is described in the sections below.

7.4.1 Typical Waste

Waste was classified as typical waste if it exhibited the following characteristics:

- The waste resembled MSW or waste typically disposed of in GRL
- The waste did not exhibit solvent odor
- The waste did not exhibit positive PID readings

The majority of the waste exhumed from LGRL was classified as typical waste.

Mashuda Contractors, Inc. used two CAT 374 Excavators to load between eight and ten articulated 40 ton haul trucks daily. The excavators loaded the LGRL waste into the haul trucks, and the haul trucks transported the waste to the active GRL. Typical waste was dumped in the active area and was spread utilizing CAT D8 dozers and the landfill's compactors. LGRL waste was either commingled with incoming waste or was mono-filled. At times it was difficult to commingle excavated LGRL waste with incoming MSW due to safety and traffic pattern concerns. Waste within GRL was covered on a daily basis with alternate daily cover (ADC) or soil materials. Waste that was placed on outboard slopes was covered with one foot of intermediate cover soil after placement. The minimum separation distance between the leachate drainage layer and the LGRL waste was 15 feet.

7.4.2 Salvageable Waste

Salvageable waste was not identified during the waste screening and characterization. As such no waste was salvaged as part of the Phase B Waste Removal.

7.4.3 Suspicious Waste

Suspicious wastes were identified through visual and odor observations, and by screening the waste with a photoionization detector (PID). All workers and equipment operators that were continually in the waste excavation area wore personal gas detection meters that had PID capability. The meters were utilized for worker health and safety primarily, but were also utilized to detect potentially VOC contaminated waste. The LGRL Waste Removal Plan did not specify a VOC concentration determined in the field that would in turn characterize the waste as suspicious. Discussions were conducted with the WDNR during the Phase A project regarding the lack of a VOC concentration specifications for treating waste in the field. Through the discussions with the WDNR, if a VOC reading of the 10 ppm was detected with the PID, the waste would be characterized as suspicious and further testing would be required. The basis for the 10 ppm limit is from the LGRL Waste Removal Plan Soil Management Section. Section 6.2.2 of the LGRL Waste Removal Plan specified a VOC concentration of 10 ppm for soil found within the waste to determine the use for the soil. Since this was used for the soil within the waste, it was determined that this standard could also apply to suspicious waste. Equipment operators and the CQM Field Technician also visually observed the excavation for the presence of intact drums, transformers, and other containers that may have housed suspicious waste. No intact drums, containers, or transformers were found during the excavation.

Suspicious waste was identified on a relatively routine basis. CQM monitored the waste on a 30 minute basis to aid in identifying bulk suspicious waste. In general levels read by the PID were below 50 ppm. Prior to initiating lab testing, the waste was transported and placed in the active GRL site. The waste was allowed to "air out" over the course of the work day and PID readings were taken at the end of the day. If the PID readings fell below 10 ppm, the waste was considered typical and incorporated into the active GRL. All bulk suspicious loads of waste dropped below 10 ppm after relocation and as such no laboratory testing was conducted. The total volume of suspicious waste removed from the Phase B was approximately 20,472 cubic yards.

7.4.4 Hazardous Waste

No hazardous waste was identified through the screening procedures described in the LGRL waste removal plan.

7.5 Waste Types and Quantities

As noted above the majority of waste that was excavated in the Phase B area was disposed of in the GRL as typical waste. Some bulk suspicious waste was identified during the waste screening and characterization. All bulk suspicious wastes were tested in the field for total VOCs and met the minimum disposal requirements for disposal in GRL after relocation. No hazardous wastes were identified. The total volume of waste removed is as follows:

- Typical Waste = 413,758 cubic yards (CY)
- Bulk Suspicious Waste = 20,472 cubic yards (CY)

8 SOIL EXCAVATION

8.1 Introduction

Soil excavation followed the Soil Management Plan included in Section 6 of the LGRL Waste Removal Plan. Soils that were excavated generally consisted of cover soils, soils within the waste, berms, and native soil underlying the waste. Soil was classified in accordance with the LGRL Waste Removal Plan and used for beneficial reuse, disposed of or treated. The following sections detail the soil excavation from the site.

8.2 Soil Types

The LGRL Waste Removal Plan identified four different types of soils. Soils removed from LGRL were classified into one of the four types described below based on contamination levels. The LGRL Waste Removal Plan identified how each type of soil was to be managed. The soil types identified in the LGRL Waste Removal Plan are as follows (see the LGRL Waste Removal Plan for more detailed descriptions):

- Type 1 – Soil that is not impacted above soil standards. Type 1 soil could be used anywhere on the site. To confirm soil could be classified as Type 1, it was tested in the lab for Lead, Cadmium, and VOCs. PCB Testing was not completed as the soils did not contain potentially PCB laden equipment or materials. If soil was not impacted above the soil residual contaminant level established under NR 720, the soil could be utilized on site without restrictions.
- Type 2 – Soil that was impacted and may contain contaminants above the NR 720 RCLs but below the TCLP limits. Type 2 soil could be used within the lined area of the landfill as daily cover. Type 2 soils did not require laboratory testing to be used in the footprint or disposed of as waste unless they were identified as suspicious wastes.
- Type 3 – Soil that is impacted and may contain contaminants above the NR 720 RCLs for direct contact but are below the groundwater standards. Type 3 soils were not identified during the project.
- Type 4 – Soil that exceeds the TCLP limits and must be treated prior to disposal. Type 4 soils were not identified during the project.

8.3 Soil Sampling, Analysis and Classification

Several different soils were encountered during the excavation of the LGRL waste and included cover soils, soil within the waste, soil between the bottom of waste and Phase 7 Subbase, and additional soils excavated for remediation. Each of the soils excavated are described in detail in the following sections:

8.3.1 LGRL Final Cover Soils

As was discussed in Section 6.2.1 of the LGRL Waste Removal Plan, final cover soils could be classified as Type 1 soils unless they were observed to be in direct contact with waste or exhibited other characteristics such as staining or odor. Soils that were within 6 inches of the waste were treated as waste and disposed of. Detailed cover soil excavation and stockpiling is discussed in Section 4 of this report.

8.3.2 Soil Within the LGRL Waste

Soil within the LGRL waste mass was treated entirely as waste. Based on the observations during the excavation it was not practical to separate soil from waste and as such the soil was not tested for reuse. Soil within the waste was only tested if it was part of a suspicious waste observation as detailed in Section 7 of this report.

8.3.3 Soil Between the Bottom of LGRL Waste and Above Phase 7 Liner Subbase Grades

The bottom of the LGRL waste was above the subbase grades for the Phase 7 composite liner. Soil in this region zone excavation to achieve the subbase grades and was required to be tested if used outside of the GRL footprint. During waste excavation, soil that was visually stained by the waste was treated as waste and disposed of in the GRL active area. The depth of soil that was removed and disposed of was generally between 1 and 2 feet below the bottom of the waste.

The soil that remained was tested to determine where the soil could be utilized. Testing consisted of dividing the site into approximately 0.5 acre subareas where test pits were dug to test the underlying soils. Samples were collected at each of the test pit locations on minimum 5 foot intervals and analyzed for VOCs, Cadmium and Lead. Figure 1 in Appendix E shows the location of the test pits.

The soil test results were compared to NR 720 RCLs for groundwater and direct contact, TCLP limits. A summary of the data is presented in Appendix E. There were several exceedances for various contaminants as shown in the summary of the data. Soil that did not meet the limits for use outside of the GRL footprint was disposed of or used as daily cover within the limits of waste. A total of 89,014 cubic yards of contaminated soil was disposed of in the active GRL. Figures 1-10 in Appendix F show the location within the active GRL where contaminated soil was disposed.

8.3.4 Additional Soil Excavation for Remediation

As part of the LGRL Waste Relocation plan, a soil remediation plan was put into place that required removal of soils from below the Southeast Expansion subbase grades. A total of 3,000 cubic yards of soil could be removed for remediation across the entire LGRL area.

After all of the LGRL waste had been removed from the Phase B area, the subbase was inspected for areas that had high levels of VOC contamination. There were three areas that were found within the LGRL waste that contained VOC levels that warranted additional investigation. The areas were centered around Soil Sample locations SS-2, SS-5, and SS-7 as indicated in Figure 2 in Appendix G. Preliminary test pits were dug to determine the level of contamination. A PID was used to estimate VOC concentrations, PID readings indicated VOC contamination levels above 100 ppm.

The WDNR was informed of the areas of VOC contamination. Advanced Disposal and the WDNR collaborated to determine a course of action for removing the soil. The bullet points below describe the methods used to bound the area and remove the contaminated soil.

- First, additional test pits were dug surrounding the center of the VOC contamination under the direction of the WDNR. Figure 2 shows a simple diagram as to how the test pit locations were determined. Several additional test pits were dug and soils were analyzed with the PID. The center of the VOC contamination areas were used as the starting point and test pits were dug moving out from the center. The boundary of the VOC contaminated soil was determined based on field PID readings. When field PID readings dipped below 10 ppm, the bounds of the contaminated soil were assumed to be detected.
- Figure 2 shows the area of soil that was removed below the subbase grades. The total volume of soil removed was approximately 800 cubic yards. Additional soil samples were taken after soil was removed to assess the level of contamination remaining. The combined additional soil excavation for remediation between Phase A and B is 1370 cubic yards.
- The impacted soil was relocated to the active GRL. Lab results indicated that none of the soil removed was above the maximum disposal limits.

9 CONCLUSION

The LGRL Phase B Waste Relocation project has been completed in accordance with the approved Plan of Operation, the construction plans and specifications, Chapters NR 500, 660 and 700 Wis. Adm. Code. On behalf of Advanced Disposal, Cornerstone respectfully requests the review and approval of this Construction Documentation Report.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

Below Waste Soil Test Results
LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-1-1	Lead	1.5	mg/kg	PASS	PASS	PASS	SS-1 through SS-6 4/8/15
	cis-1,2-Dicholoroethene	34.6	µg/kg	PASS	PASS	NA	
	Ethylbenzene	109	µg/kg	PASS	PASS	NA	
	Toluene	173	µg/kg	PASS	PASS	NA	
	m&p-Xylene	298	µg/kg	PASS	PASS	NA	
	o-Xylene	102	µg/kg	PASS	PASS	NA	
SS-1-5	Lead	1.9	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	1370	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	76.0	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	161	µg/kg	PASS	PASS	NA	
	Toluene	361	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	34.3	µg/kg	PASS	PASS	NA	
	m&p-Xylene	428	µg/kg	PASS	PASS	NA	
	o-Xylene	157	µg/kg	PASS	PASS	NA	
SS-1-10	Cadmium	0.065	mg/kg	PASS	PASS	PASS	
	Lead	2.4	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	94.2	µg/kg	PASS	PASS	NA	
	Toluene	157	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	27.0	µg/kg	PASS	PASS	NA	
	m&p-Xylene	273	µg/kg	PASS	PASS	NA	
	o-Xylene	95.0	µg/kg	PASS	PASS	NA	
SS-1-14	Lead	2.5	mg/kg	PASS	PASS	PASS	
SS-2-1	Lead	2.3	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	200	µg/kg	PASS	PASS	NA	
	m&p-Xylene	376	µg/kg	PASS	PASS	NA	
	o-Xylene	196	µg/kg	PASS	PASS	NA	
SS-2-5	Cadmium	0.11	mg/kg	PASS	PASS	PASS	
	Lead	2.7	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	263	µg/kg	PASS	PASS	NA	
	cis-1,2-Dicholoroethene	422	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	1010	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	38.8	µg/kg	PASS	NA	NA	
	n-Propylbenzene	56.3	µg/kg	PASS	NA	NA	
	Tetrachloroethylene	30.3	µg/kg	PASS	EXCEEDANCE	PASS	
	Toluene	545	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	210	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	62.0	µg/kg	PASS	PASS	NA	
	m&p-Xylene	2850	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1260	µg/kg	PASS	EXCEEDANCE	NA	
SS-2-10	Lead	1.8	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	31.6	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	151	µg/kg	PASS	PASS	NA	
	Toluene	110	µg/kg	PASS	PASS	NA	
	m&p-Xylene	309	µg/kg	PASS	PASS	NA	
	o-Xylene	103	µg/kg	PASS	PASS	NA	
SS-2-15	Lead	2.8	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	71.8	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	921	µg/kg	PASS	EXCEEDANCE	NA	
	p-Isoropyltoluene	46.0	µg/kg	PASS	NA	NA	
	n-Propylbenzene	39.3	µg/kg	PASS	NA	NA	
	Toluene	625	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	211	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	60.3	µg/kg	PASS	PASS	NA	
	m&p-Xylene	2700	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1010	µg/kg	PASS	EXCEEDANCE	NA	
SS-2-16	Cadmium	0.077	mg/kg	PASS	PASS	PASS	
	Lead	3.1	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	235	µg/kg	PASS	PASS	NA	
	p-Isoropyltoluene	31.9	µg/kg	PASS	NA	NA	
	m&p-Xylene	267	µg/kg	PASS	PASS	NA	
	o-Xylene	234	µg/kg	PASS	PASS	NA	

Below Waste Soil Test Results
LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-3-1	Lead	4.0	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	3390	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	481	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	243	µg/kg	PASS	PASS	NA	
	Toluene	1190	µg/kg	PASS	EXCEEDANCE	NA	
	m&p-Xylene	545	µg/kg	PASS	PASS	NA	
	o-Xylene	105	µg/kg	PASS	PASS	NA	
SS-3-5	Lead	3.7	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	676	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	205	µg/kg	PASS	PASS	NA	
	Toluene	320	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	35.1	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	286	µg/kg	PASS	PASS	NA	
	o-Xylene	43.9	µg/kg	PASS	PASS	NA	
SS-3-10	Lead	3.3	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	13500	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	8220	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	286	µg/kg	PASS	NA	NA	
	Napthalene	124	µg/kg	PASS	PASS	NA	
	n-Propylbenzene	566	µg/kg	PASS	NA	NA	
	Toluene	19700	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	2720	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	755	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	229	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	28100	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	10200	µg/kg	PASS	EXCEEDANCE	NA	
SS-3-14.7	Cadmium	0.072	mg/kg	PASS	PASS	PASS	
	Lead	2.7	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	820	µg/kg	PASS	EXCEEDANCE	NA	
	Toluene	51.3	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	73.3	µg/kg	PASS	PASS	NA	
	m&p-Xylene	2470	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	800	µg/kg	PASS	EXCEEDANCE	NA	
SS-4-1	Lead	4.0	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	11800	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	382	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	829	µg/kg	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	115	µg/kg	PASS	NA	NA	
	Tetrachloroethylene	56.5	µg/kg	PASS	EXCEEDANCE	PASS	
	Toluene	1460	µg/kg	PASS	EXCEEDANCE	NA	
	Trichloroethene	508	µg/kg	PASS	EXCEEDANCE	PASS	
	1,2,4-Trimethylbenzene	679	µg/kg	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	194	µg/kg	PASS	EXCEEDANCE	NA	
	m&p-Xylene	2990	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1100	µg/kg	PASS	EXCEEDANCE	NA	
SS-4-5.5	Lead	2.6	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	29500	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	1300	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	152	µg/kg	PASS	PASS	NA	
	Toluene	2810	µg/kg	PASS	EXCEEDANCE	NA	
	m&p-Xylene	396	µg/kg	PASS	PASS	NA	
	o-Xylene	172	µg/kg	PASS	PASS	NA	
SS-5-1	Lead	2.3	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	17600	µg/kg	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	368	µg/kg	PASS	PASS	NA	
	Toluene	651	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	296	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	91.5	µg/kg	PASS	PASS	NA	
	m&p-Xylene	1210	µg/kg	PASS	PASS	NA	
	o-Xylene	400	µg/kg	PASS	PASS	NA	
SS-5-5	Lead	2.0	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	34100	µg/kg	PASS	EXCEEDANCE	PASS	
	Toluene	398	µg/kg	PASS	PASS	NA	
	m&p-Xylene	711	µg/kg	PASS	PASS	NA	
	o-Xylene	226	µg/kg	PASS	PASS	NA	

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LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-5-11	Lead	2.2	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	5350	µg/kg	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	59.9	µg/kg	PASS	PASS	NA	
	Toluene	104	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	40.5	µg/kg	PASS	PASS	NA	
	m&p-Xylene	192	µg/kg	PASS	PASS	NA	
	o-Xylene	60.0	µg/kg	PASS	PASS	NA	
SS-6-1	Cadmium	0.11	mg/kg	PASS	PASS	PASS	
	Lead	2.3	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	2880	µg/kg	PASS	EXCEEDANCE	PASS	
	Ethylbenzene	140	µg/kg	PASS	PASS	NA	
	p-Isoropyltoluene	32.3	µg/kg	PASS	NA	NA	
	Toluene	205	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	82.5	µg/kg	PASS	PASS	NA	
	m&p-Xylene	523	µg/kg	PASS	PASS	NA	
	o-Xylene	208	µg/kg	PASS	PASS	NA	
SS-6-5	Lead	2.1	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	135	µg/kg	PASS	PASS	NA	
	Toluene	109	µg/kg	PASS	PASS	NA	
	m&p-Xylene	435	µg/kg	PASS	PASS	NA	
	o-Xylene	170	µg/kg	PASS	PASS	NA	
SS-6-8	Lead	3.4	mg/kg	PASS	PASS	PASS	
SS-7-1	Lead	2.8	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	102	mg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	33.4	µg/kg	PASS	PASS	NA	ss-7 and SS-8 4/20/15
	m&p-Xylene	331	µg/kg	PASS	PASS	NA	
	o-Xylene	91.7	µg/kg	PASS	PASS	NA	
SS-7-5	Lead	2.1	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	1160	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	2680	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	203	µg/kg	PASS	PASS	NA	
	Toluene	355	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	52.6	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	96.5	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	575	µg/kg	PASS	PASS	NA	
	o-Xylene	174	µg/kg	PASS	PASS	NA	
SS-7-11	Lead	3.2	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	1670	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	1560	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	448	µg/kg	PASS	PASS	NA	
	Toluene	895	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	34.5	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	136	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	1070	µg/kg	PASS	PASS	NA	
	o-Xylene	252	µg/kg	PASS	PASS	NA	
SS-8-1	Lead	2.4	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	344	µg/kg	PASS	PASS	PASS	
SS-8-5	Lead	2.6	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	300	µg/kg	PASS	PASS	PASS	
SS-9-1	Lead	1.7	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	169	µg/kg	PASS	PASS	NA	
	p-Isoropyltoluene	84.3	µg/kg	PASS	NA	NA	
	n-Propylbenzene	30.3	µg/kg	PASS	NA	NA	SS-9 through SS-10 4/28/15
	Toluene	70.5	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	228.0	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	68.7	µg/kg	PASS	PASS	NA	
	m&p-Xylene	470	µg/kg	PASS	PASS	NA	
	o-Xylene	200	µg/kg	PASS	PASS	NA	

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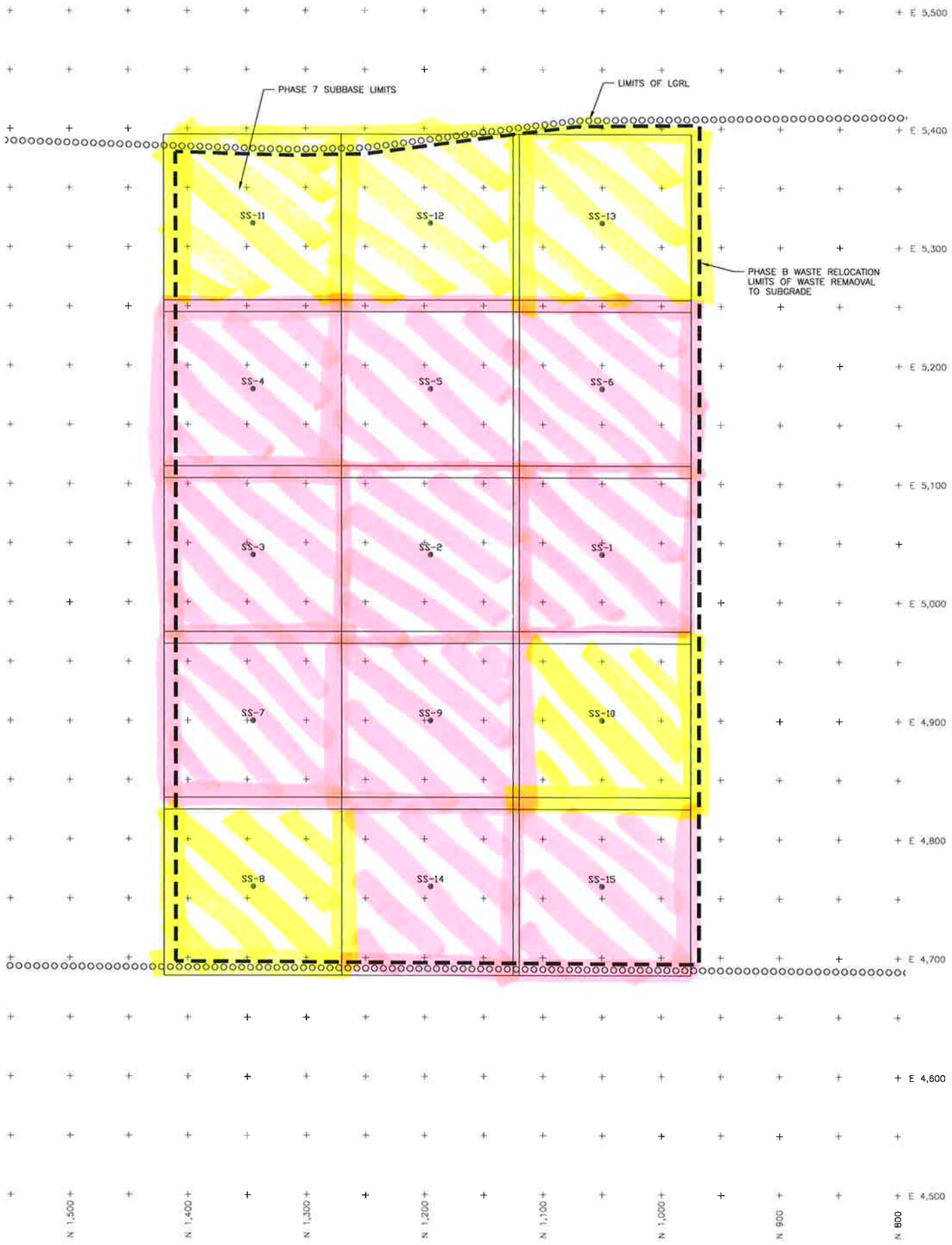
LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-9-5	Cadmium	0.069	mg/kg	PASS	PASS	PASS	
	Lead	3.7	µg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	869	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dicholoroethene	262	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	101	µg/kg	PASS	PASS	NA	
	Toluene	334.0	µg/kg	PASS	PASS	NA	
	Trichloroethene	41.1	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	233	µg/kg	PASS	PASS	NA	
	o-Xylene	84.7	µg/kg	PASS	PASS	NA	
SS-9-10	Cadmium	0.08	mg/kg	PASS	PASS	PASS	
	Lead	3.2	µg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	982	µg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	63.8	µg/kg	PASS	EXCEEDANCE	NA	
SS-9-14	Lead	3.8	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	410	µg/kg	PASS	PASS	PASS	
SS-10-1	Lead	3.5	mg/kg	PASS	PASS	PASS	
	Ethylbenzene	55.1	µg/kg	PASS	PASS	NA	
	Toluene	69.4	µg/kg	PASS	PASS	NA	
	m&p-Xylene	113	µg/kg	PASS	PASS	NA	
	o-Xylene	61.1	µg/kg	PASS	PASS	NA	
SS-10-5	Cadmium	0.072	mg/kg	PASS	PASS	PASS	
	Lead	2.7	µg/kg	PASS	PASS	PASS	
SS-10-10	Lead	3.1	mg/kg	PASS	PASS	PASS	
SS-10-14	Lead	3.9	mg/kg	PASS	PASS	PASS	
SS-11-1	Lead	2.2	mg/kg	PASS	PASS	PASS	
SS-12-1	Lead	6.2	mg/kg	PASS	PASS	PASS	
SS-13-1	Lead	3.5	mg/kg	PASS	PASS	PASS	
	Napthalene	361	µg/kg	PASS	PASS	NA	
SS-14-1	Lead	3.0	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	444	µg/kg	PASS	PASS	PASS	
SS-14-5	Lead	2.6	mg/kg	PASS	PASS	PASS	
SS-14-10	Lead	2.8	mg/kg	PASS	PASS	PASS	
	Trichloroethene	105	µg/kg	PASS	EXCEEDANCE	PASS	
SS-14-12.4	Lead	2.4	mg/kg	PASS	PASS	PASS	
	Trichloroethene	166	µg/kg	PASS	EXCEEDANCE	PASS	
SS-15-1	Lead	2.6	mg/kg	PASS	PASS	PASS	
	2-Butanone (MEK)	1550	µg/kg	PASS	PASS	PASS	
SS-15-5	Lead	3.0	mg/kg	PASS	PASS	PASS	
SS-15-10	Lead	2.4	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	73.7	µg/kg	PASS	EXCEEDANCE	PASS	
	Trichloroethene	60.8	µg/kg	PASS	EXCEEDANCE	PASS	
SS-15-11.4	Lead	2.5	mg/kg	PASS	PASS	PASS	
	cis-1,2-Dicholoroethene	143	µg/kg	PASS	EXCEEDANCE	PASS	
	Trichloroethene	52.9	µg/kg	PASS	EXCEEDANCE	PASS	

SS-11 through SS15 4/23/15



LEGEND

- LAND AND GAS RECLAMATION LANDFILL LIMITS
- PHASE 7 SUBBASE LIMITS
- PHASE B WASTE RELOCATION LIMITS OF WASTE REMAOVAL TO SUBGRADE
- 782 — DESIGN SUBBASE CONTOURS
- SS-25 ● SAMPLE POINT NUMBER AND LOCATION

NOTES:

FREQUENCY OF SOIL SAMPLE LOCATIONS = MINIMUM 1 PER 0.5 ACRES.

Soil Sample Locations

Sample No.	Coordinates North	Coordinates East	Proposed Subbase Elevation (ft)	As-Built Bottom of Waste Elevation (ft)	Depth of Soil to Remove (ft)
SS-1	1345.00	5320.00	945.01		
SS-2	1195.00	5320.00	944.32		
SS-3	1050.00	5320.00	943.66		
SS-4	1345.00	5180.00	934.18		
SS-5	1195.00	5180.00	932.97		
SS-6	1050.00	5180.00	935.67		
SS-7	1345.00	5040.00	935.02		
SS-8	1195.00	5040.00	933.81		
SS-9	1050.00	5040.00	936.51		
SS-10	1345.00	4900.00	935.86		
SS-11	1195.00	4900.00	934.65		
SS-12	1050.00	4900.00	937.35		
SS-13	1345.00	4760.00	936.70		
SS-14	1195.00	4760.00	935.49		
SS-15	1050.00	4760.00	938.19		

ADDITIONAL NOTES:

= FAILING TEST LOCATION

= PASSING TEST LOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		

NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

Advanced Disposal

CQM, INC.
Construction Quality Management
2679 Continental Drive
Green Bay, WI 54311

Soil Sample Locations Phase B Waste Relocation

Soil Sample Locations
Phase B Waste Relocation
Advanced Disposal Services
Glacier Ridge Landfill, LLC.
Horicon, Wisconsin

DRAWN BY: WBE

DATE: Mar. 2015

SCALE: 1"=50'

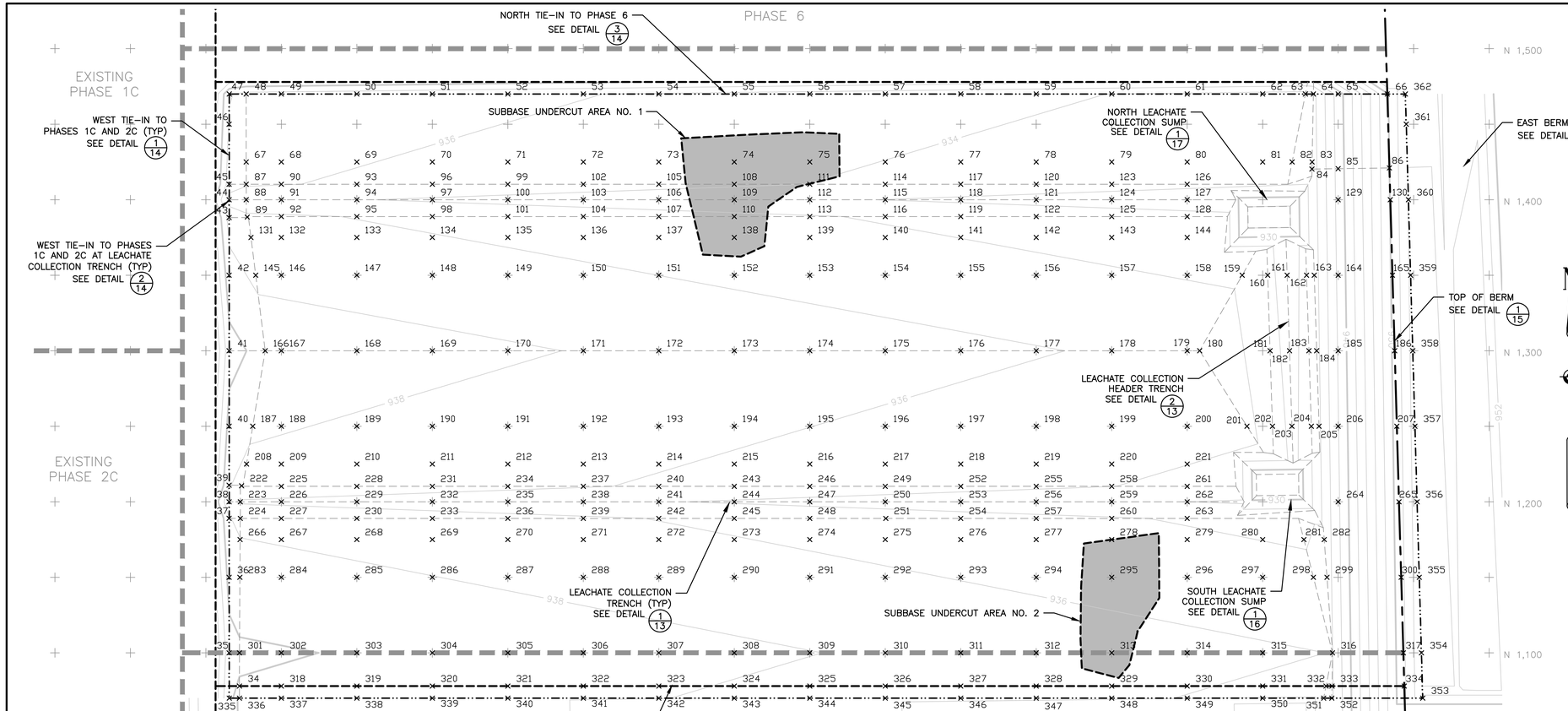
DRAWING NO. 1

Below Waste Soil Test Results
LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-16-1	2-Butanone (MEK)	2100.0	µg/kg	PASS	EXCEEDANCE	PASS	SS-16 5/8/15
	cis-1,2-Dichloroethene	5080.0	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	1610.0	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	44.7	µg/kg	PASS	NA	NA	
	n-Propylbenzene	90.3	µg/kg	PASS	NA	NA	
	Toluene	7210.0	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	350.0	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	123.0	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	59.5	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	5170.0	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1500.0	µg/kg	PASS	EXCEEDANCE	NA	
SS-16-5	2-Butanone (MEK)	996.0	µg/kg	PASS	EXCEEDANCE	PASS	
	cis-1,2-Dichloroethene	6460.0	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	1300.0	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	38.5	µg/kg	PASS	NA	NA	
	Methylene Chloride	30.7	µg/kg	PASS	EXCEEDANCE	NA	
	n-Propylbenzene	81.7	µg/kg	PASS	NA	NA	
	Toluene	4990.0	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	333.0	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	107.0	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	47.9	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	4480.0	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1420.0	µg/kg	PASS	EXCEEDANCE	NA	
SS-16-13	cis-1,2-Dichloroethene	35.8	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	2880.0	µg/kg	PASS	EXCEEDANCE	NA	
	Toluene	114.0	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	95.2	µg/kg	PASS	PASS	NA	
	m&p-Xylene	8940.0	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	2890.0	µg/kg	PASS	EXCEEDANCE	NA	
SS-17-2	2-Butanone (MEK)	2880.00	µg/kg	PASS	EXCEEDANCE	PASS	SS-17 through SS-19 5/15/15
	n-Butylbenzene	51.60	µg/kg	PASS	NA	NA	
	cis-1,2-Dichloroethene	1730.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	2450.00	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	81.70	µg/kg	PASS	NA	NA	
	n-Propylbenzene	186.00	µg/kg	PASS	NA	NA	
	Toluene	6450.00	µg/kg	PASS	EXCEEDANCE	NA	
	Trichloroethene	39.50	µg/kg	PASS	EXCEEDANCE	PASS	
	1,2,4-Trimethylbenzene	915.00	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	266.00	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	45.80	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	8160.00	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	2840.00	µg/kg	PASS	EXCEEDANCE	NA	
SS-17-4	2-Butanone (MEK)	2930.00	µg/kg	PASS	EXCEEDANCE	PASS	
	n-Butylbenzene	47.00	µg/kg	PASS	NA	NA	
	cis-1,2-Dichloroethene	524.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	1470.00	µg/kg	PASS	PASS	NA	
	Isopropylbenzene (Cumene)	56.60	µg/kg	PASS	NA	NA	
	n-Propylbenzene	128.00	µg/kg	PASS	NA	NA	
	Toluene	3070.00	µg/kg	PASS	EXCEEDANCE	NA	
	1,2,4-Trimethylbenzene	619.00	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	186.00	µg/kg	PASS	PASS	NA	
	m&p-Xylene	4890.00	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	1670.00	µg/kg	PASS	EXCEEDANCE	NA	
SS-17-7	Ethylbenzene	425.00	µg/kg	PASS	PASS	NA	
	Toluene	114.00	µg/kg	PASS	PASS	NA	
	1,2,4-Trimethylbenzene	101.00	µg/kg	PASS	PASS	NA	
	1,3,5-Trimethylbenzene	30.50	µg/kg	PASS	PASS	NA	
	m&p-Xylene	1320.00	µg/kg	PASS	PASS	NA	
	o-Xylene	528.00	µg/kg	PASS	PASS	NA	

Below Waste Soil Test Results
LGRL Phase B Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	STANDARDS			Comments
				RCL for Direct Contact	RCL for Protection of Groundwater	TCLP	
SS-18	n-Butylbenzene	3550.00	µg/kg	PASS	NA	NA	Cumulative HI>1, CR>1e-5
	sec-Butylbenzene	1500.00	µg/kg	PASS	NA	NA	
	cis-1,2-Dichloroethene	7710.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	182000.00	µg/kg	EXCEEDANCE	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	7840.00	µg/kg	PASS	NA	NA	
	n-Propylbenzene	13500.00	µg/kg	PASS	NA	NA	
	Tetrachloroethylene	3310.00	µg/kg	PASS	EXCEEDANCE	PASS	
	Toluene	323000.00	µg/kg	PASS	EXCEEDANCE	NA	
	Trichloroethylene	133000.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	
	1,2,4-Trimethylbenzene	61400.00	µg/kg	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	18500.00	µg/kg	PASS	EXCEEDANCE	NA	
	m&p-Xylene	614000.00	µg/kg	EXCEEDANCE	EXCEEDANCE	NA	
	o-Xylene	227000.00	µg/kg	PASS	EXCEEDANCE	NA	
SS-19	2-Butanone (MEK)	1200.00	µg/kg	PASS	PASS	PASS	
	n-Butylbenzene	649.00	µg/kg	PASS	NA	NA	
	sec-Butylbenzene	256.00	µg/kg	PASS	NA	NA	
	cis-1,2-Dichloroethene	1540.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	21700.00	µg/kg	PASS	EXCEEDANCE	NA	
	Isopropylbenzene (Cumene)	953.00	µg/kg	PASS	NA	NA	
	p-Isoropyltoluene	208.00	µg/kg	PASS	NA	NA	
	Napthalene	341.00	µg/kg	PASS	PASS	NA	
	n-Propylbenzene	1760.00	µg/kg	PASS	NA	NA	
	Tetrachloroethylene	401.00	µg/kg	PASS	EXCEEDANCE	PASS	
	Toluene	39100.00	µg/kg	PASS	EXCEEDANCE	NA	
	Trichloroethylene	13500.00	µg/kg	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE	
	1,2,4-Trimethylbenzene	9750.00	µg/kg	PASS	EXCEEDANCE	NA	
	1,3,5-Trimethylbenzene	2760.00	µg/kg	PASS	EXCEEDANCE	NA	
	m&p-Xylene	74500.00	µg/kg	PASS	EXCEEDANCE	NA	
	o-Xylene	29600.00	µg/kg	PASS	EXCEEDANCE	NA	
SS-20	2-Butanone (MEK)	438.00	µg/kg	PASS	PASS	PASS	SS-20 through SS-23 5/20/15
	cis-1,2-Dichloroethene	33.50	µg/kg	PASS	PASS	NA	
	Toluene	79.30	µg/kg	PASS	PASS	NA	
	Vinyl Chloride	28.20	µg/kg	PASS	EXCEEDANCE	PASS	
SS-21	2-Butanone (MEK)	1220.00	µg/kg	PASS	PASS	PASS	
	cis-1,2-Dichloroethene	113.00	µg/kg	PASS	EXCEEDANCE	NA	
	Toluene	72.10	µg/kg	PASS	PASS	NA	
	Trichloroethylene	169.00	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	60.50	µg/kg	PASS	PASS	NA	
SS-22	cis-1,2-Dichloroethene	229.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	74.60	µg/kg	PASS	PASS	NA	
	Toluene	82.90	µg/kg	PASS	PASS	NA	
	Trichloroethylene	495.00	µg/kg	PASS	EXCEEDANCE	PASS	
	1,2,4-Trimethylbenzene	26.80	µg/kg	PASS	PASS	NA	
	m&p-Xylene	195.00	µg/kg	PASS	PASS	NA	
	o-Xylene	49.60	µg/kg	PASS	PASS	NA	
SS-23	cis-1,2-Dichloroethene	278.00	µg/kg	PASS	EXCEEDANCE	NA	
	Ethylbenzene	148.00	µg/kg	PASS	PASS	NA	
	Toluene	50.90	µg/kg	PASS	PASS	NA	
	Trichloroethylene	56.30	µg/kg	PASS	EXCEEDANCE	PASS	
	m&p-Xylene	284.00	µg/kg	PASS	PASS	NA	
	o-Xylene	71.60	µg/kg	PASS	PASS	NA	



LEGEND

- 780 DESIGN SUBBASE CONTOURS
- GRADE BREAK
- LIMITS OF WASTE
- LIMITS OF 4' LINER CONSTRUCTION
- LIMITS OF SUBBASE
- PHASE DELINEATION LINE
- ×400 SURVEY POINT NUMBER AND LOCATION
- ▨ SUBBASE UNDERCUT AREA

NOTES:

1. CONTOURS REPRESENT DESIGN SUBBASE GRADES (BOTTOM OF 4 FOOT THICK COMPACTED CLAY LINER).

Point No.	Coordinates North	Coordinates East	Underdrain System Design (ft)	Underdrain System Record (ft)	Underdrain System Delta (ft)	Subbase Elevation Design (ft)	Subbase Elevation Record (ft)	Subbase Elevation Delta (ft)	Description
34	1078.00	4572.25				939.87	939.82	0.06	Existing Subbase Limits
35	1100.00	4565.38				940.78	940.68	0.09	Existing Subbase Limits
36	1150.00	4565.38				939.28	939.21	0.06	Existing Subbase Limits
37	1189.02	4565.38				938.10	938.05	0.05	Existing Subbase Limits
38	1200.00	4565.38				936.28	936.19	0.09	Existing Subbase Limits
39	1210.98	4565.38				938.10	938.06	0.05	Existing Subbase Limits
40	1250.00	4565.38				939.27	939.26	0.02	Existing Subbase Limits
41	1300.00	4565.38				940.77	940.67	0.10	Existing Subbase Limits
42	1350.00	4565.38				938.77	938.69	0.08	Existing Subbase Limits
43	1388.16	4565.38				937.25	937.15	0.10	Existing Subbase Limits
44	1400.00	4565.38				935.27	935.22	0.06	Existing Subbase Limits
45	1410.23	4565.38				936.98	936.89	0.09	Existing Subbase Limits
46	1450.00	4565.38				937.77	937.74	0.03	Existing Subbase Limits
47	1470.00	4565.52				938.16	938.09	0.08	Existing Subbase Limits
48	1470.00	4576.72				937.42	937.40	0.02	Existing Subbase Limits
49	1470.00	4600.00				937.28	937.25	0.03	Existing Subbase Limits
50	1470.00	4650.00				936.98	936.88	0.10	Existing Subbase Limits
51	1470.00	4700.00				936.68	936.62	0.06	Existing Subbase Limits
52	1470.00	4750.00				936.38	936.28	0.10	Existing Subbase Limits
53	1470.00	4800.00				936.08	936.02	0.06	Existing Subbase Limits
54	1470.00	4850.00				935.78	935.74	0.04	Existing Subbase Limits
55	1470.00	4900.00				935.48	935.40	0.08	Existing Subbase Limits
56	1470.00	4950.00				935.18	935.18	0.00	Existing Subbase Limits
57	1470.00	5000.00				934.88	934.87	0.01	Existing Subbase Limits
58	1470.00	5050.00				934.58	934.57	0.01	Existing Subbase Limits
59	1470.00	5100.00				934.28	934.24	0.04	Existing Subbase Limits
60	1470.00	5150.00				933.98	933.92	0.06	Existing Subbase Limits
61	1470.00	5200.00				933.68	933.64	0.04	Existing Subbase Limits
62	1470.00	5250.00				933.38	933.33	0.05	Existing Subbase Limits
63	1470.00	5278.29				933.21	933.12	0.08	Existing Subbase Limits
64	1470.00	5283.58				933.44	933.35	0.09	Existing Subbase Limits
65	1470.00	5300.00				938.92	938.85	0.07	Existing Subbase Limits
66	1470.00	5332.53				949.76	949.68	0.08	Existing Subbase Limits
67	1425.00	4576.72	935.42	935.39	0.03	936.52	936.50	0.01	Gradient Control Limits
68	1425.00	4600.00	935.28	935.26	0.01	936.38	936.36	0.02	Gradient Control Limits
69	1425.00	4650.00	934.98	934.94	0.04	936.08	936.07	0.01	Gradient Control Limits
70	1425.00	4700.00	934.68	934.64	0.04	935.78	935.76	0.02	Gradient Control Limits
71	1425.00	4750.00	934.38	934.36	0.02	935.48	935.43	0.05	Gradient Control Limits
72	1425.00	4800.00	934.08	934.04	0.04	935.18	935.14	0.03	Gradient Control Limits
73	1425.00	4850.00	933.78	933.77	0.01	934.88	934.87	0.01	Gradient Control Limits
74	1425.00	4900.00	933.48	933.42	0.05	934.58	934.55	0.03	Gradient Control Limits
75	1425.00	4950.00	933.18	933.17	0.01	934.28	934.26	0.01	Gradient Control Limits
76	1425.00	5000.00	932.88	932.87	0.01	933.98	933.96	0.02	Gradient Control Limits
77	1425.00	5050.00	932.58	932.57	0.01	933.68	933.67	0.01	Gradient Control Limits
78	1425.00	5100.00	932.28	932.26	0.01	933.38	933.37	0.00	Gradient Control Limits
79	1425.00	5150.00	931.98	931.96	0.02	933.08	933.05	0.02	Gradient Control Limits
80	1425.00	5200.00	931.68	931.67	0.01	932.78	932.72	0.05	Gradient Control Limits
81	1425.00	5250.00	931.38	931.31	0.07	932.48	932.30	0.18	Gradient Control Limits
82	1425.00	5269.49	931.26	931.22	0.04	932.36	932.30	0.06	Gradient Control Limits
83	1425.00	5282.72	931.85	931.83	0.02	932.95	932.78	0.17	Gradient Control Limits
84	1420.31	5282.63	931.80	931.77	0.03	932.90	932.84	0.06	Toe of Slope
85	1420.55	5300.00				938.69	938.55	0.14	Gradebreak
86	1421.02	5333.92				950.00	949.95	0.04	Crest of Liner
87	1410.22	4576.73	935.12	935.08	0.04	936.22	936.18	0.04	Trench Crest
88	1400.00	4576.73	933.42	933.37	0.04	934.52	934.48	0.03	Trench Centerline
89	1388.49	4577.43	935.33	935.26	0.07	936.43	936.42	0.01	Trench Crest
90	1410.22	4600.00	934.98	934.93	0.05	936.08	936.07	0.01	Trench Crest
91	1400.00	4600.00	933.28	933.26	0.02	934.38	934.33	0.05	Trench Centerline
92	1388.83	4600.00	935.14	935.02	0.12	936.24	936.22	0.02	Trench Crest
93	1410.22	4650.00	934.68	934.65	0.03	935.78	935.73	0.05	Trench Crest
94	1400.00	4650.00	932.98	932.94	0.03	934.08	934.06	0.02	Trench Centerline
95	1388.83	4650.00	934.84	934.81	0.03	935.94	935.91	0.03	Trench Crest
96	1410.22	4700.00	934.38	934.34	0.04	935.48	935.42	0.06	Trench Crest
97	1400.00	4700.00	932.68	932.62	0.06	933.78	933.77	0.00	Trench Centerline
98	1388.83	4700.00	934.54	934.48	0.06	935.64	935.59	0.05	Trench Crest
99	1410.22	4750.00	934.08	934.06	0.02	935.18	935.17	0.01	Trench Crest
100	1400.00	4750.00	932.38	932.38	0.00	933.48	933.45	0.02	Trench Centerline
101	1388.83	4750.00	934.24	934.19	0.04	935.34	935.31	0.02	Trench Crest
102	1410.22	4800.00	933.78	933.74	0.04	934.88	934.83	0.06	Trench Crest
103	1400.00	4800.00	932.08	932.03	0.04	933.18	933.17	0.00	Trench Centerline
104	1388.83	4800.00	933.94	933.92	0.01	935.04	935.02	0.02	Trench Crest
105	1410.22	4850.00	933.48	933.42	0.06	934.58	934.53	0.05	Trench Crest
106	1400.00	4850.00	931.78	931.71	0.07	932.88	932.84	0.03	Trench Centerline
107	1388.83	4850.00	933.64	933.59	0.05	934.74	934.70	0.03	Trench Crest
108	1410.22	4900.00	933.18	933.14	0.04	934.28	934.23	0.05	Trench Crest
109	1400.00	4900.00	931.48	931.45	0.03	932.58	932.54	0.04	Trench Centerline
110	1388.83	4900.00	933.34	933.31	0.02	934.44	934.40	0.04	Trench Crest
111	1410.22	4950.00	932.88	932.81	0.07	933.98	933.96	0.02	Trench Crest
112	1400.00	4950.00	931.18	931.13	0.04	932.28	932.27	0.01	Trench Centerline
113	1388.83	4950.00	933.04	932.96	0.08	934.14	934.11	0.03	Trench Crest
114	1410.22	5000.00	932.58	932.56	0.02	933.68	933.67	0.01	Trench Crest
115	1400.00	5000.00	930.88	930.82	0.06	931.98	931.98	0.00	Trench Centerline
116	1388.83	5000.00	932.74	932.65	0.09	933.84	933.81	0.03	Trench Crest
117	1410.22	5050.00	932.28	932.24	0.04	933.38	933.36	0.02	Trench Crest
118	1400.00	5050.00	930.58	930.52	0.05	931.68	931.67	0.01	Trench Centerline
119	1388.83	5050.00	932.44	932.40	0.04	933.54	933.53	0.01	Trench Crest
120	1410.22	5100.00	931.98	931.90	0.08	933.08	933.06	0.02	Trench Crest
121	1400.00	5100.00	930.28	930.23	0.04	931.38	931.36	0.02	Trench Centerline
122	1388.83	5100.00	932.14	932.12	0.02	933.24	933.20	0.04	Trench Crest
123	1410.22	5150.00	931.68	931.63	0.05	932.78	932.77	0.01	Trench Crest
124	1400.00	5150.00	929.98	929.93	0.04	931.08	931.06	0.02	Trench Centerline
125	1388.83	5150.00	931.84	931.79	0.05	932.94	932.91	0.02	Trench Crest
126	1410.22	5200.00	931.38	931.34	0.04	932.48	932.45	0.03	Trench Crest
127	1400.00	5200.00	929.68	929.65	0.02	930.78	930.75	0.02	Trench Centerline
128	1388.83	5200.00	931.54	931.51	0.03	932.64	932.60	0.04	Trench Crest
129	1400.00	5300.00				938.59	938.44	0.16	Sidewall
130	1400.00	5334.54				950.11	950.09	0.02	Crest of Liner
131	1375.00	4579.88	935.71	935.63	0.08	936.81	936.80	0.00	Gradient Control Limits
132	1375.00	4600.00	935.59	935.54	0.05	936.69	936.68	0.01	Gradient Control Limits
133	1375.00	4650.00	935.29	935.25	0.03	936.39	936.36	0.03	Gradient Control Limits
134	1375.00	4700.00	934.99	934.96	0.03	936.09	936.04	0.04	Gradient Control Limits
135	1375.00	4750.00	934.69	934.66	0.03	935.79	935.77	0.01	Gradient Control Limits
136	1375.00	4800.00	934.39	934.39	0.00	935.49	935.45	0.03	Gradient Control Limits
137	1375.00	4850.00	934.09	934.07	0.01	935.19	935.17	0.01	Gradient Control Limits
138	1375.00	4900.00	933.79	933.74	0.04	934.89	934.85	0.03	Gradient Control Limits
139	1375.00	4950.00	933.49	933.44	0.04	934.59	934.56	0.03	Gradient Control Limits
140	1375.00	5000.00	933.19	933.15	0.04	934.29	934.28	0.01	Gradient Control Limits
141	1375.00	5050.00	932.89	932.80	0.09	933.99	933.95	0.03	Gradient Control Limits
142	1375.00	5100.00	932.59	932.54	0.04	933.69	933.66	0.03	Gradient Control Limits
143	1375.00	5150.00	932.29	932.22	0.06	933.39	933.39	0.00	Gradient Control Limits
144	1375.00	5200.00	931.99	931.99	0.00	933.09	933.05	0.04	Gradient Control Limits
145	1350.00	4583.01				937.60	937.57	0.03	Gradebreak
146	1350.00	4600.00				937.49	937.46	0.03	Floor
147	1350.00	4650.00				937.19	937.16	0.03	Floor
148	1350.00	4700.00				936.89	936.87	0.03	Floor
149	1350.00	4750.00				936.59	936.55	0.05	Floor
150	1350.00	4800.00				936.29	936.27	0.02	Floor
151	1350.00	4850.00				935.99	935.97	0.02	Floor
152	1350.00	4900.00				935.69	935.66	0.04	Floor
153	1350.00	4950.00				935.39	935.35	0.04	Floor
154	1350.00	5000.00				935.09	935.09	0.01	Floor
155	1350.00	5050.00				934.79	934.77	0.02	Floor
156	1350.00	5100.00				934.49	934.47	0.03	Floor
157	1350.00	5150.00				934.19	934.16	0.04	Floor
158	1350.00	5200.00				933.89	933.88	0.02	Floor
159	1350.00	5236.43				933.68	933.64	0.03	Gradebreak
160	1350.00	5253.31				932.83	932.78	0.05	Trench Crest
161	1350.00	5266.20				930.69	930.62	0.07	Trench Centerline
162	1350.00	5279.04				932.83	932.83	0.00	Trench Crest
163	1350.00	5284.16				933.09	933.06	0.03	Toe of Slope
164	1350.00	5300.00				938.37	938.32	0.04	Sidewall
165	1350.00	5335.98				950.36	950.35	0.01	Crest of Liner
166	1300.00	4589.29				939.18	939.17	0.01	High Point
167	1300.00	4600.00				939.11	939.10	0.02	High Point
168	1300.00	4650.00				938.81	938.76	0.05	High Point
169	1300.00	4700.00				938.51	938.46	0.06	High Point
170	1300.00	4750.00				938.21	938.17	0.05	High Point
171	1300.00	4800.00				937.91	937.90	0.01	High Point
172	1300.00	4850.00				937.61	937.57	0.04	High Point
173	1300.00	4900.00				937.31	937.30	0.01	High Point
174	1300.00	4950.00				937.01	936.98	0.04	High Point
175	1300.00	5000.00				936.71	936.65	0.06	High Point
176	1300.00	5050.00				936.41	936.39	0.02	High Point
177	1300.00	5100.00				936.11	936.09	0.02	High Point
178	1300.00	5150.00				935.81	935.81	0.00	High Point
179	1300.00	5200.00				935.51	935.46	0.06	High Point
180	1300.00	5208.25				935.46	935.41	0.06	High Point
181	1300.00	5254.90				933.13	933.10	0.03	Trench Crest
182	1300.00	5267.78				930.99	930.97	0.01	Trench Centerline
183	1300.00	5280.63				933.13	933.12	0.01	Trench Crest
184	1300.00	5285.75				933.39	933.38	0.00	Toe of Slope
185	1300.00	5300.00				938.14	938.13	0.01	Sidewall
186	1300.00	5337.41				950.61	950.58	0.02	Crest of Liner
187	1250.00	4581.05				938.23	938.20	0.02	Gradebreak
188	1250.00	4600.00				938.11	938.07	0.05	Floor
189	1250.00	4650.00				937.81	937.78	0.03	Floor
190	1250.00	4700.00				937.51	937.50	0.02	Floor
191	1250.00	4750.00				937.21	937.18	0.03	Floor
192	1250.00	4800.00				936.91	936.90	0.01	Floor
193	1250.00	4850.00				936.61	936.55	0.06	Floor
194	1250.00	4900.00				936.31	936.24	0.07	Floor
195	1250.00	4950.00				936.01	935.98	0.03	Floor
196	1250.00	5000.00				935.71	935.69	0.02	Floor
197	1250.00	5050.00				935.41	935.39	0.03	Floor
198	1250.00	5100.00				935.11	935.08	0.03	Floor
199	1250.00	5150.00				934.81	934.80	0.02	Floor
200	1250.00	5200.00				934.51	934.49	0.02	Floor
201	1250.00	5239.60				934.28	934.21	0.07	Gradebreak
202	1250.00	5256.48				933.43	933.39	0.05	Trench Crest
203	1250.00	5269.37				931.29	931.21	0.08	Trench Centerline
204	1250.00	5282.22				933.43	933.35	0.08	Trench Crest
205	1250.00	5287.34				933.69	933.69	0.00	Toe of Slope
206	1250.00	5300.00				937.91	937.91	0.00	Sidewall
207	1250.00	5338.85				950.86	950.81	0.05	Crest of Liner
208	1225.00	4576.94	936.65	936.60	0.05	937.75	937.73	0.02	Gradient Control Limits
209	1225.00	4600.00	936.51	936.47	0.05	937.61	937.58	0.03	Gradient Control Limits
210	1225.00	4650.00	936.21	936.18	0.03	937.31	937.28	0.04	Gradient Control Limits
211	1225.00	4700.00	935.91	935.89	0.03	937.01	937.01	0.00	Gradient Control Limits
212	1225.00	4750.00	935.61	935.57	0.04	936.71	936.70	0.01	Gradient Control Limits
213	1225.00	4800.00	935.31	935.24	0.08	936.41	936.41	0.01	Gradient Control Limits
214	1225.00	4850.00	935.01	935.00	0.01	936.11	936.11	0.01	Gradient Control Limits
215	1225.00	4900.00	934.71	934.58	0.13	935.81	935.77	0.04	Gradient Control Limits
216	1225.00	4950.00	934.41	934.38	0.04	935.51	935.47	0.04	Gradient Control Limits
217	1225.00	5000.00	934.11	934.04	0.07	935.21	935.15	0.07	Gradient Control Limits
218	1225.00	5050.00	933.81	933.75	0.07	934.91	934.88	0.03	Gradient Control Limits
219	1225.00	5100.00	933.51	933.49	0.02	934.61	934.61	0.01	Gradient Control Limits
220	1225.00	5150.00	933.21	933.21	0.00	934.31	934.30	0.01	Gradient Control Limits
221	1225.00	5200.00	932.91	932.90	0.02	934.01	934.00	0.01	Gradient Control Limits
222	1210.60	4573.66	936.44	936.40	0.04	937.54	937.52	0.02	Trench Crest
223	1200.00	4572.82	934.68	934.66	0.02	935.78	935.77	0.00	Trench Centerline
224	1188.99	4572.82	936.51	936.47	0.04	937.61	937.55	0.06	Trench Crest
225	1210.22	4600.00	936.22	936.20	0.02	937.32	937.24	0.08	Trench Crest
226	1200.00	4600.00	934.51	934.49	0.02	935.61	935.59	0.02	Trench Centerline
227	1188.99	4600.00	936.35	936.29	0.06	937.45	937.41	0.04	Trench Crest
228	1210.22	4650.00	935.92	935.86	0.06	937.02	937.02	0.00	Trench Crest
229	1200.00	4650.00	934.21	934.19	0.02	935.31	935.26	0.06	Trench Centerline
230	1188.99	4650.00	936.05	936.01	0.04	937.15	937.14	0.00	Trench Crest
231	1210.22	4700.00	935.62	935.57	0.05	936.72	936.71	0.01	Trench Crest
232	1200.00	4700.00	933.91	933.86	0.05	935.01	934.95	0.07	Trench Centerline
233	1188.99	4700.00	935.75	935.70	0.04	936.85	936.82	0.02	Trench Crest
234	1210.22	4750.00	935.32	935.31	0.01	936.42	936.41	0.00	Trench Crest
235	1200.00	4750.00	933.61	933.55	0.06	934.71	934.68	0.04	Trench Centerline
236	1188.99	4750.00	935.45	935.43	0.02	936.55	936.54	0.01	Trench Crest
237	1210.22	4800.00	935.02	934.98	0.04	936.12	936.10	0.02	Trench Crest
238	1200.00	4800.00	933.31	933.28	0.04	934.41	934.38	0.04	Trench Centerline
239	1188.99	4800.00	935.15	935.07	0.08	936.25	936.23	0.02	Trench Crest
240	1210.22	4850.00	934.72	934.64	0.08	935.82	935.79	0.03	Trench Crest
241	1200.00	4850.00	933.01	932.96	0.05	934.11	934.10	0.01	Trench Centerline
242	1188.99	4850.00	934.85	934.81	0.03	935.95	935.92	0.03	Trench Crest
243	1210.22	4900.00	934.42	934.32	0.10	935.52	935.48	0.04	Trench Crest
244	1200.00	4900.00	932.71	932.64	0.08	933.81	933.81	0.01	Trench Centerline
245	1188.99	4900.00	934.55	934.52	0.02	935.65	935.64	0.01	Trench Crest
246	1210.22	4950.00	934.12	934.05	0.07	935.22	935.19	0.03	Trench Crest
247	1200.00	4950.00	932.41	932.33	0.08	933.51	933.50	0.01	Trench Centerline
248	1188.99	4950.00	934.25	934.22	0.03	935.35	935.32	0.03	Trench Crest
249	1210.22	5000.00	933.82	933.80	0.02	934.92	934.88	0.04	Trench Crest
250	1200.00	5000.00	932.11	932.05	0.06	933.21	933.17	0.04	Trench Centerline
251	1188.99	5000.37	933.95	933.93	0.02	935.05	935.02	0.03	Trench Crest
252	1210.22	5050.00	933.52	933.47	0.04	934.62	934.61	0.01	Trench Crest
253	1200.00	5050.00	931.81	931.76	0.05	932.91	932.89	0.03	Trench Centerline
254	1188.99	5050.00	933.65	933.59	0.06	934.75	934.70	0.05	Trench Crest
255	1210.22	5100.00	933.22	933.16	0.06	934.32	934.30	0.02	Trench Crest
256	1200.00	5100.00	931.51	931.45	0.06	932.61	932.61	0.01	Trench Centerline
257	1188.99	5100.00	933.35	933.28	0.07	934.45	934.43	0.02	Trench Crest
258	1210.22	5150.00	932.92	932.83	0.09	934.02	933.98	0.04	Trench Crest
259	1200.00	5150.00	931.21	931.14	0.08	932.31	932.28	0.04	Trench Centerline
260	1188.99	5150.00	933.05	933.00	0.04	934.15	934.14	0.00	Trench Crest
261	1210.22	5200.00	932.62	932.60	0.01	933.72	933.72	0.00	Trench Crest
262	1200.00	5200.00	930.91	930.86	0.06	932.01	931.99	0.02	Trench Centerline
263	1188.99	5200.00	932.75	932.75	0.00	933.85	933.81	0.03	Trench Crest
264	1200.00	5300.00				937.68	937.64	0.04	Sidewall
265	1200.00	5340.29				951.11	951.07	0.04	Crest of Liner
266	1175.00	4572.67	936.94	936.91	0.02	938.04	938.02	0.02	Gradient Control Limits
267	1175.00	4600.00	936.77	936.75	0.02	937.87	937.86	0.01	Gradient Control Limits
268	1175.00	4650.00	936.47	936.43	0.04	937.57	937.53	0.04	Gradient Control Limits
269	1175.00	4700.00	936.17	936.14	0.03	937.27	937.25	0.03	Gradient Control Limits
270	1175.00	4750.00	935.87	935.87	0.01	936.97	936.94	0.03	Gradient Control Limits
271	1175.00	4800.00	935.57	935.54	0.03	936.67	936.64	0.03	Gradient Control Limits
272	1175.00	4850.00	935.27	935.22	0.05	936.37	936.35	0.02	Gradient Control Limits
273	1175.00	4900.00	934.97	934.96	0.01	936.07	936.03	0.04	Gradient Control Limits
274	1175.00	4950.00	934.67	934.67	0.00	935.77	935.75	0.02	Gradient Control Limits
275	1175.00	5000.00	934.37	934.33	0.05	935.47	935.44	0.03	Gradient Control Limits
276	1175.00	5050.00	934.07	934.06	0.02	935.17	935.15	0.03	Gradient Control Limits
277	1175.00	5100.00	933.77	933.75	0.02	934.87	934.83	0.04	Gradient Control Limits
278	1175.00	5150.00	933.47	933.50	-0.03	934.57	934.52	0.05	Gradient Control Limits
279	1175.00	5200.00	933.17	933.13	0.05	934.27	934.24	0.03	Gradient Control Limits
280	1175.00	5250.00	932.87	932.86	0.01	933.97	933.95	0.02	Gradient Control Limits
281	1175.00	5277.28	932.71	932.65	0.06	933.81	933.81	0.00	Gradient Control Limits
282	1175.00	5290.76	933.38	933.19	0.19	934.48	934.44	0.05	Gradient Control Limits
283	1150.00	4572.53				938.80	938.76	0.04	Gradebreak
284	1150.00	4600.00				938.63	938.62	0.01	Floor
285	1150.00	4650.00				938.33	938.25	0.08	Floor
286	1150.00	4700.00				938.03	937.98	0.05	Floor
287	1150.00	4750.00				937.73	937.73	0.00	Floor
288	1150.00	4800.00				937.43	937.38	0.05	Floor
289	1150.00	4850.00				937.13	937.11	0.02	Floor
290	1150.00	4900.00				936.83	936.83	0.00	Floor
291	1150.00	4950.00				936.53	936.46	0.07	Floor
292	1150.00	5000.00				936.23	936.22	0.01	Floor
293	1150.00	5050.00				935.93	935.89	0.04	Floor
294	1150.00	5100.00				935.63	935.60	0.03	Floor
295	1150.00	5150.00				935.33	935.32	0.01	Floor
296	1150.00	5200.00				935.03	934.97	0.06	Floor
297	1150.00	5250.00				934.73	934.67	0.06	Floor
298	1150.00	5283.60				934.53	934.48	0.05	Gradebreak
299	1150.00	5292.59				934.98	934.97	0.01	Gradebreak
300	1150.00	5341.73				951.36	951.32	0.04	Crest of Liner
301	1100.00	4572.25				940.31	940.29	0.03	High Point
302	1100.00	4600.00				940.15	940.13	0.02	High Point
303	1100.00	4650.00				939.85	939.83	0.02	High Point
304	1100.00	4700.00				939.55	939.54	0.00	High Point
305	1100.00	4750.00				939.25	939.22	0.03	High Point
306	1100.00	4800.00				938.95	938.93	0.02	High Point
307	1100.00	4850.00				938.65	938.58	0.07	High Point
308	1100.00	4900.00				938.35	938.30	0.04	High Point
309	1100.00	4950.00				938.05	938.02	0.03	High Point
310	1100.00	5000.00				937.75	937.72	0.03	High Point
311	1100.00	5050.00				937.45	937.43	0.02	High Point
312	1100.00	5100.00				937.15	937.14	0.01	High Point
313	1100.00	5150.00				936.85	936.85	0.00	High Point
314	1100.00	5200.00				936.55	936.54	0.01	High Point
315	1100.00	5250.00				936.25	936.23	0.02	High Point
316	1100.00	5296.25				935.97	935.93	0.04	High Point
317	1100.00	5343.17				951.61	951.59	0.01	Crest of Liner
318	1078.00	4600.00				939.71	939.67	0.04	Base Limits
319	1078.00	4650.00				939.41	939.38	0.03	Base Limits
320	1078.00	4700.00				939.11	939.10	0.01	Base Limits
321	1078.00	4750.00				938.81	938.78	0.03	Base Limits
322	1078.00	4800.00				938.51	938.47	0.03	Base Limits
323	1078.00	4850.00				938.21	938.19	0.02	Base Limits
324	1078.00	4900.00				937.91	937.90	0.01	Base Limits
325	1078.00	4950.00				937.61	937.59	0.02	Base Limits
326	1078.00	5000.00				937.31	937.30	0.01	Base Limits
327	1078.00	5050.00				937.01	937.00	0.01	Base Limits
328	1078.00	5100.00				936.71	936.69	0.02	Base Limits
329	1078.00	5150.00				936.41	936.40	0.01	Base Limits
330	1078.00	5200.00				936.11	936.06	0.05	Base Limits
331	1078.00	5250.00				935.81	935.76	0.05	Base Limits
332	1078.00	5291.95				935.56	935.50	0.05	Base Limits
333	1078.00	5295.90				935.75	935.71	0.05	Base Limits
334	1078.00	5343.79				951.71	951.67	0.04	Base Limits
335	1070.00	4565.52				940.16	940.08	0.08	Subbase Limits
336	1070.00	4572.25				939.71	939.65	0.07	Subbase Limits
337	1070.00	4600.00				939.55	939.50	0.05	Subbase Limits
338	1070.00	4650.00				939.25	939.21	0.04	Subbase Limits
339	1070.00	4700.00				938.95	938.95	0.00	Subbase Limits
340	1070.00	4750.00				938.65	938.64	0.01	Subbase Limits
341	1070.00	4800.00				938.35	938.30	0.05	Subbase Limits
342	1070.00	4850.00				938.05	938.05	0.00	Subbase Limits
343	1070.00	4900.00				937.75	937.74	0.01	Subbase Limits
344	1070.00	4950.00				937.45	937.41	0.04	Subbase Limits
345	1070.00	5000.00				937.15	937.13	0.02	Subbase Limits
346	1070.00	5050.00				936.85	936.84	0.01	Subbase Limits
347	1070.00	5100.00				936.55	936.54	0.01	Subbase Limits
348	1070.00	5150.00				936.25	936.21	0.04	Subbase Limits
349	1070.00	5200.00				935.95	935.92	0.02	Subbase Limits
350	1070.00	5250.00				935.65	935.60	0.04	Subbase Limits
351	1070.00	5290.39				935.41	935.39	0.02	Subbase Limits
352	1070.00	5295.78				935.68	935.66	0.02	Subbase Limits
353	1070.00	5356.02				955.76	955.75	0.01	Subbase Limits
354	1100.00	5355.16				955.61	955.58	0.02	Subbase Limits
355	1150.00	5353.72				955.36	955.33	0.03	Subbase Limits
356	1200.00	5352.28				955.11	955.08	0.03	Subbase Limits
357	1250.00	5350.85				954.86	954.84	0.01	Subbase Limits
358	1300.00	5349.41				954.61	954.57	0.03	Subbase Limits
359	1350.00	5347.97				954.36	954.31	0.04	Subbase Limits
360	1400.00	5346.53				954.10	954.05	0.05	Subbase Limits
361	1450.00	5345.10				953.85	953.79	0.06	Subbase Limits
362	1470.00	5344.52				953.75	953.70	0.05	Subbase Limits

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

Advanced Disposal

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Subbase Grades

Construction Documentation Drawings
Phase 7 Liner
Advanced Disposal Services
Glacier Ridge Landfill, LLC.
Horicon, Wisconsin

DRAWN BY: WBE
DATE: Sept. 2015
SCALE: 1" = 40'
DRAWING NO.
A–5

G:\Project Data\VEOLIA\Glacier Ridge\Expansion\Phase 7\Doc\A-5.dwg 9/24/2015 8:52 AM BJ Ebach

Attachment D

Construction Documentation Report, Glacier Ridge Landfill –
LGRL Phase C Waste Relocation
(Text and Selected Tables and Drawings only)

cornerstone environmental

Building lifetime relationships with our clients and employees.

Construction Documentation Report

Glacier Ridge Landfill – LGRL Phase C Waste Relocation

December 2016

Prepared for:

Advanced Disposal

Glacier Ridge Landfill, LLC
N7296 County Hwy V
Horicon, WI 53032

8413 Excelsior Drive, Suite 160
Madison, WI 53717
(877) 633-5520

REPORT CERTIFICATION

Construction Documentation Report
Glacier Ridge Landfill – LGRL Phase C Waste Relocation
Horicon, Dodge County, Wisconsin

I, Mark J. Torresani, P.E., hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wisconsin Administrative Code (Wis. Adm. Code); that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of knowledge, all information contained in this document is correct, and the document was prepared in compliance with all applicable requirements of chs. NR 140, NR 500, NR 600, NR 700, Wis. Adm. Code, and the LGRL Waste Relocation Plan dated December 2013.

Mark J. Torresani, P.E.
Wisconsin P.E. No. 29355

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1 INTRODUCTION

1.1 General Information

This Construction Documentation Report documents the Land and Gas Reclamation Landfill (LGRL) Phase C Waste Relocation Project. LGRL is a Superfund site, Wisconsin Department of Natural Resources (WDNR) License No. 1118, Environmental Protection Agency (EPA) ID No. WID0529060888 that is located within the approved Advanced Disposal Services (Advanced) Glacier Ridge Landfill (GRL) Southeast Expansion footprint. LGRL is located in the SW ¼ of Section 35 T12N, R16E, Town of Williamstown, Dodge County, Wisconsin.

LGRL is part of the larger Advanced GRL facility which is comprised of LGRL, the Closed North Landfill, the South Expansion and the Southeast Expansion. With the exception of LGRL all of the other landfill areas accept or accepted only non-hazardous waste in accordance with Chapter NR 500 Wisconsin Administrative Code. The facility is owned and operated by Advanced Disposal Services Glacier Ridge Landfill, LLC.

1.2 Site History

LGRL is a Superfund site that began accepting waste in the 1950s and was closed in the mid-1980s. A combination of municipal solid waste, construction debris, and solvent waste were accepted at LGRL over its life. LGRL is located in the footprint of the proposed GRL Southeast Expansion. As part of the Plan of Operation for the GRL Southeast Expansion, prepared by SCS Engineers, Madison, WI (date of WDNR approval October 2013), LGRL would be removed in three phases to remediate the site and to allow for the construction of the Southeast Expansion. Phase C, the final phase of the waste relocation, was completed in March 2016.

A plan for relocating the LGRL waste (LGRL Waste Removal Plan, Dec. 2013) was prepared as part of the Plan of Operation for the Southeast Expansion and approved by the WDNR. The LGRL Waste Removal Plan was used as the basis for the relocation of the LGRL waste.

1.3 Purpose and Scope

Cornerstone was retained by Advanced to provide oversight during Phase C of the LGRL Waste Relocation Project to ensure completion of the project in accordance with the GRL Southeast Expansion Plan of Operation, the LGRL Waste Removal Plan, and the GRL Southeast Expansion Plan of Operation WDNR Conditions of Approval.

2 CONSTRUCTION DOCUMENTS AND PARTIES

2.1 Reference Documents

The following reference documents were utilized during the execution of the LGRL Phase C Waste Relocation:

- Chapter NR 500 Wisconsin Administrative Code
- Chapter NR 600 Wisconsin Administrative Code
- Chapter NR 140 Wisconsin Administrative Code
- USEPA SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"
- Southeast Expansion Conditional Plan of Operation Approval and Hazardous Waste Remediation Variance dated October 13, 2014
- Document Titled: "Land & Gas Reclamation Landfill Waste Removal Plan for Glacier Ridge Landfill Southeast Expansion" (Revision 1) prepared by SCS Engineers, Madison, WI dated December 2013.
- Document Titled: "Plan of Operation – Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated April 23, 2013.
- Document Titled: "Plan of Operation Addendum No. 1 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated June 28, 2013.
- Document Titled: "Plan of Operation Addendum No. 2 - Advanced Disposal Services Glacier Ridge Landfill Southeast Expansion" prepared by SCS Engineers, Madison, WI dated October 3, 2013.

2.2 Parties

The following parties were involved in the LGRL Phase C Waste Relocation:

<u>Wisconsin Department of Natural Resources (WDNR)</u>

Ann Bekta, P.E. – Waste Management Engineer

Adam Hogan, P.G. – Hydrogeologist

Will (Woody) Myers – Hydrogeologist

Advanced Disposal Glacier Ridge Landfill, LLC

Jay Warzinski – Corporate Director of Landfill Operations

Tim Curry – Regional Landfill Operations Manager

Lonn Walter – General Manager

Jake Margelofsky – Operations Manager

Cornerstone Environmental Group, LLC (Project Management)

Tyler Field – Project Manager

Mark Torresani, P.E. – Certifying Engineer

CQM, Incorporated (Survey, CQA, Physical Soil Analysis)

Nick Sturzl, P.E. – Project Manager

Rick Wiemann – Project Technician

Austin Field – Projecct Technician

Tom Bishop – Project Technician

SCS Engineers, Inc. (Design Engineer)

Sherren Clark, P.E., P.G. – Hydrogeology

Hoffman Construction Company (General Contractor)

Chad Sell –Project Manager

Jay Kahl – Project Superintendent

PACE Analytical (Soil/Waste/Liquid Analytical Laboratory)

Dan Milewsky – Project Manager

Air Technology Laboratories, Inc. (Air Sample Analytical Laboratory)

Joann De La Ossa – Project Manager

3 EROSION CONTROL AND WETLAND PROTECTION

Prior to construction startup, erosion control measures were installed to protect the wetland areas to the north and east of the LGRL Phase C Excavation Area. The wetland protection included the protection provisions specified in the Wetland Protection and Erosion Control Plan. The Wetland Protection and Erosion Control Plan was included in Appendix E of the Southeast Expansion Plan of Operation. At the beginning of the project steel backed silt fence with a warning ribbon was installed prior to any construction commencing. The silt fence was installed along the approved line as specified in the Plan of Operation and as shown in the attached plan set. After storm events occurred and on a minimum weekly basis, the project technician inspected the silt fence and recorded the results on wetland inspection forms. The wetland inspection forms are included in Appendix A.

No work occurred in the wetland outside of the predetermined boundaries specified in the Wetland Protection and Erosion Control Plan. In addition, during construction all non-contact surface water runoff was directed to Sedimentation Basin No.2 located to the north of the LGRL Phase C Excavation Area. All precipitation and storm water runoff that came into contact with waste or contaminated soils was contained in the area of excavation, collected and routed or hauled to the leachate collection system for subsequent treatment. No contact water was allowed to run off of the excavation area, and enter the wetlands or landfill storm water management systems.

4 COVER SOIL EXCAVATION

Prior to performing waste excavation activities, the cover soils on top of the waste removed. The cap consisted of the following layers from top to bottom:

- Vegetative layer
- 6-inch minimum topsoil layer
- Rooting zone layer (variable depth, 24 inches min.)
- 24-inch thick clay cap layer
- Grading Layer (variable depth, min. 6 inches)

A large portion of the topsoil and rooting zone layers in Phase C were excavated during 2015. These soils were utilized to construct portions of the perimeter berm for the Phase 7 Liner Project. Clay cap soils were kept intact until just prior to the excavation of the Phase C Waste.

Efforts were made to segregate soils during the remainder of the excavation. Topsoil was stockpiled in south stockpile area for future projects, rooting zone was stockpiled or used for daily cover. Clay was segregated, then used as intermediate cover on the south slope of Phase 3 and stockpiled for future use to the north of the LGRL facility. Soils that were within 6 inches of the waste or that were too frozen to separate from the underlying waste were not segregated and were treated as waste in accordance with the LGRL Waste Removal Plan, and were tested and hauled to active area of landfill for disposal.

5 LANDFILL GAS SYSTEM ABANDONMENT

5.1 LFG Well and Piping Abandonment

LGRL contained an active gas extraction system. During the Phase A waste relocation project, eight (8) vertical landfill gas (LFG) extraction wells were abandoned and the blower/flare station was relocated. During the Phase B waste relocation project, four (4) vertical wells and all associated lateral and header piping was abandoned. Following the Phase B construction, a total of two (2) vertical LFG extraction wells were still in place and operational. Each well was connected to the blower flare station located near the center of the Phase C LGRL area. Prior to the Phase C waste relocation the two (2) remaining vertical wells were abandoned by the site, along with all associated lateral and header piping. The two (2) wells were GWL1 and GWL10. Wells and piping were removed as the waste was excavated. All well and lateral components were disposed of in the active GRL.

5.2 Blower / Flare System Removal

The blower/flare system was originally located at the northwest corner of LGRL which was in the excavation area. As part of Phase A, the blower/flare system was relocated to south end of LGRL in Phase C as shown on Drawing No. 5. The blower/flare system was then abandoned and removed from this location just prior to Phase C waste relocation.

5.3 LFG Condensate Management

One temporary condensate management sump CS-1 was abandoned and removed prior to Phase C waste relocation. This was the last condensate management feature in the LGRL area.

All remaining components of the previously existing LGRL active gas extraction system were removed prior to, or during Phase C construction. Material was disposed of in the active GRL.

6 MONITORING WELL ABANDONMENT

6.1 Non-Groundwater Well Abandonments

No non-groundwater wells were abandoned as part of the Phase C Waste Relocation project.

6.2 Groundwater Well Abandonments

One groundwater monitoring well required abandonment as part of the Phase C Waste Relocation project to allow for the construction of the subsequent Phase 8 Composite Liner. The groundwater monitoring well abandoned was outside of the LGRL waste limits:

- MW407 (WI Unique Well # VW503)

This well was over drilled, the casing and screen was removed, and the borehole backfilled in accordance with Chapter NR 141 Wis. Adm. Code. The Well Abandonment Form is included in Appendix C.

7 WASTE EXCAVATION

7.1 Introduction

Excavation of LGRL Waste began on January 4, 2016 and was completed by March 21, 2016. This section details the site health and safety, environmental monitoring and protection, waste handling, screening and characterization methods, quantities and types of waste removed, details of waste handling and screening procedures, and details of suspicious waste removal and handling. Photos of the waste excavation and associated activities are presented in Appendix B.

7.2 Environmental Monitoring / Protection

The LGRL Waste Removal Plan specified environmental monitoring and protection methods that were required in association with waste excavation and relocation activities. The required environmental monitoring / environmental protection items included:

- Ambient Air Monitoring
- Dust and Odor Control
- Surface Water Management
- Waste Contact Water Management

Each of the above items is discussed in the sections below.

7.2.1 Ambient Air Monitoring

Section 4.5.1 of the LGRL Waste Removal Plan required that ambient air-monitoring be conducted both on and off site at upwind and downwind locations. Ambient air monitoring was to be conducted weekly for the first six weeks and if no contaminants were discovered, biweekly thereafter. The main constituents of concern were volatile organic compounds (VOCs). During the project a total of 40 ambient air samples were collected. Samples were collected using SilcoCans that were put under a vacuum in the lab. Each can was fitted with a regulator that allowed for continuous sample collection over an approximately 8-hour period. A total of four samples were required for each sampling event per the LGRL Waste Removal Plan: one upwind, one in the public drop off area, and two downwind. An additional sample was added at the working face of the LGRL landfill to assess the VOC concentrations within the waste itself. This was done as a safety precaution for workers that were consistently present in or near the waste. There were no instances where sampling containers were placed in the waste excavation equipment, because PID readings inside the equipment never indicated elevated VOC levels during excavation operations.

During sampling, weather conditions such as temperature, precipitation, barometric pressure, pressure trend, wind speed, and wind direction were recorded with each sampling event. Samples were not collected when sustained winds over 15 miles per hour (mph) were present.

Following collection, samples were shipped to Air Technologies Laboratories (ATL) in the City of Industry, California. ATL analyzed each of the samples for VOCs in accordance with EPA Method TO 15.

Appendix D of the report summarizes sample detections from air monitoring taking place during the project. Sample detections were compared to OSHA permissible exposure limits (PELs) as is shown in Appendix D. All of the constituents that were detected were well below the OSHA PELs. Due to the low concentrations of VOCs that were detected, it is difficult to state whether the VOCs that were detected were from the waste, vehicle exhaust, or to other activities on or off the site.

Samples were to be collected weekly for the first 6 weeks of the project. If clean results were obtained, sampling could be reduced to biweekly per the LGRL Waste Removal Plan. Sampled dates are summarized below:

Week 1: 01/07/2016
Week 2: 01/14/2016
Week 3: 01/20/2016
Week 4: 01/27/2016
Week 5: 02/04/2016
Week 6: 02/11/2016
Week 8: 02/23/2016
Week 10: 03/10/2016

No additional air samples were completed after March 10, 2016 due to the small amount of waste that remained and the fact that previous sample results had VOC concentrations well below the OHSA permitted levels.

Based on the results obtained from the air monitoring sample analyses, no apparent threat to the environment or human health due to airborne VOCs was noted during the project.

7.2.2 Dust and Odor Control Measures

Throughout the excavation process dust was controlled by watering haul roads, and if necessary, the waste excavation area. Watering of roads was completed on an as needed basis to control dust. During days when dust control was required, roads were watered several times per day to mitigate dust on site haul roads.

As a preventative measure, Advanced employed the use of odor control devices that utilize odor neutralizing agents mixed with water. A portable trailer mounted system consisting of a trailer mounted 1,000 gallon water tank, spray bars, and pump was utilized. Water and odor neutralizing agent were pumped from the tank to the spray bars where a fine mist was produced. The trailer mounted system could more easily be moved to areas that had higher odor concentrations.

Odors were not excessive during the project and did not migrate off site. The odor systems were run continuously during non-freezing weather while waste was being relocated.

7.2.3 Surface Water Management

During waste excavation any clean storm water runoff was prevented from entering the excavation area. The main method used to prevent clean runoff from entering the excavation was grading around the excavation to divert surface water away from the working excavation. Surface water that did contact waste was managed as leachate.

7.2.4 Contact Water / Leachate Management

Water that contacted waste or contaminated soils was treated as leachate. To prevent the migration of contact water off site, the working face excavation was continually kept graded to a low point where contact water could be contained. The low point consisted of a collection sump and pump station that was used to transfer the contact water to leachate trucks. All contact water was treated as leachate and taken off site for disposal at a wastewater treatment plants (WWTP).

7.2.5 Groundwater Dewatering

During the excavation of the waste and the construction of the Phase 8 east perimeter berm breaker run, groundwater dewatering was required. Groundwater that did not contact waste was pumped to the underdrain system and treated with the existing air stripper. Sampling of the groundwater was conducted in accordance with the site's WPDES permit. ESC, Inc. reported the results on a monthly basis as required by the WPDES permit. Groundwater testing results are included in Appendix F.

7.3 Waste Handling, Screening and Characterization

Waste handling, screening and characterization procedures are specified in Section 4 of the LGRL Waste Removal Plan. The LGRL Waste Removal Plan identified four major waste categories as listed below:

- Typical waste (municipal and industrial)
- Salvageable waste

- Suspicious waste
- Hazardous waste

During the excavation process, CQM's Technician screened and characterized the waste removed from Phase C through visual observations, odor observations and performed periodic readings with a Photo Ionization Detector (PID) to identify suspicious and potentially hazardous wastes. The waste screening process and subsequent handling process is described in the sections below.

7.3.1 Typical Waste

Waste was classified as typical waste if it exhibited the following characteristics:

- The waste resembled MSW or waste typically disposed of in GRL
- The waste did not exhibit solvent odor
- The waste did not exhibit PID readings above 10 ppm

The majority of the waste exhumed from LGRL was classified as typical waste.

Typical waste was handled by Hoffman Construction Company (Hoffman) using two CAT 385 Excavators to load between six and eight articulated 40 ton haul trucks daily. The excavators loaded the typical LGRL waste into the haul trucks, and the haul trucks transported the waste to the active GRL. Typical waste was dumped in the active area and spread utilizing CAT D8 dozers and the landfill's compactors. LGRL typical waste was either commingled with incoming waste or was mono-filled. At times it was difficult to commingle excavated LGRL waste with incoming MSW due to safety and traffic pattern concerns. Waste within GRL was covered on a daily basis with alternate daily cover (ADC) or clean soil materials. Waste that was placed on outboard slopes was covered with one foot of intermediate cover soil after placement. The minimum separation distance between the leachate drainage layer and the LGRL waste was 15 feet.

7.3.2 Salvageable Waste

Salvageable waste was not identified during the waste screening and characterization. As such no waste was salvaged as part of the Phase C Waste Removal.

7.3.3 Suspicious Waste

Suspicious wastes were identified through visual and odor observations, and by screening the waste with a PID. All workers and equipment operators that were continually in the waste excavation area wore personal gas detection meters that had PID capability. The meters were utilized for worker health and safety primarily, but were also utilized to detect potentially VOC contaminated waste. The LGRL Waste Removal Plan did not specify a VOC concentration determined in the field that would in turn characterize the waste as

suspicious. Discussions were conducted with the WDNR regarding the lack of a VOC concentration specifications for treating waste in the field. Through the discussions with the WDNR, if a VOC reading of 10 ppm or greater was detected with the PID, the waste would be characterized as suspicious and further testing would be required. The basis for the 10 ppm limit is from the LGRL Waste Removal Plan Soil Management Section. Section 6.2.2 of the LGRL Waste Removal Plan specified a VOC concentration of 10 ppm for soil found within the waste to determine the use for the soil. Since this was used for the soil within the waste, it was determined that this standard could also apply to suspicious waste. Equipment operators and the CQM Field Technician also visually observed the excavation for the presence of intact drums, transformers, and other containers that may have housed waste meeting the definition of non-bulk suspicious.

Suspicious waste was identified on a relatively routine basis. CQM monitored the waste on a 30 minute basis to aid in identifying bulk suspicious waste. In general, levels read by the PID were below 50 ppm. Prior to initiating lab testing, the waste was transported and staged in the active GRL site. The waste was allowed to "air out" over the course of the work day and PID readings were taken at the end of the day. If the PID readings fell below 10 ppm, the waste was considered typical and incorporated into the active GRL. All bulk suspicious loads of waste dropped below 10 ppm after relocation and as such no laboratory testing was conducted. The total volume of suspicious waste removed from the Phase C was approximately 8,410 cubic yards.

7.3.4 Hazardous Waste

No hazardous waste was identified through the screening procedures described in the LGRL waste removal plan.

7.4 Waste Types and Quantities

As noted above the majority of waste that was excavated in the Phase C area was disposed of in the GRL as typical waste. Bulk and non-bulk suspicious waste was identified during the waste screening and characterization. All bulk and non-bulk suspicious wastes were tested in the laboratory for total VOCs and met the minimum disposal requirements for disposal in GRL. No hazardous wastes were identified. The total volume of waste removed is as follows:

Phase C

- Typical Waste = 301,252 cubic yards (CY)
- Bulk Suspicious Waste = 8,410 cubic yards (CY)
- Non-Bulk Suspicious Waste = 3 intact cylinder tanks

Total LGRL (Phases A, B, C)

- Typical Waste = 1,299,404 CY
- Bulk Suspicious Waste = 29,002 CY

8 SOIL EXCAVATION

8.1 Introduction

Soil excavation followed the Soil Management Plan included as in Section 6 of the LGRL Waste Removal Plan. Soils that were excavated generally consisted of cover soils, soils within the waste, berms, and native soil underlying the waste. Soil was classified in accordance with the LGRL Waste Removal Plan and used for beneficial reuse, disposed of or treated. The following sections detail the soil excavation from the site.

8.2 Soil Types

The LGRL Waste Removal Plan identified four different types of soils. Soils removed from LGRL were classified into one of the four types described below based on contamination levels. The LGRL Waste Removal Plan identified how each type of soil was to be managed. The soil types identified in the LGRL Waste Removal Plan are as follows (see the LGRL Waste Removal Plan for more detailed descriptions):

- Type 1 – Soil that is not impacted above soil standards. Type 1 soil could be used anywhere on the site. To confirm soil could be classified as Type 1, it was tested in the lab for Lead, Cadmium, and VOCs. PCB Testing was not completed as the soils did not contain potentially PCB laden equipment or materials. If soil was not impacted above the soil residual contaminant level established under NR 720, the soil could be utilized on site without restrictions.
- Type 2 – Soil that was impacted and may contain contaminants above the NR 720 RCLs but below the allowable TCLP limits. Type 2 soil could be used within the lined area of the landfill as daily cover. Type 2 soils did not require laboratory testing to be used in the footprint or disposed of as waste unless they were identified as suspicious wastes.
- Type 3 – Soil that is impacted and may contain contaminants above the NR 720 RCLs for direct contact but are below the groundwater standards.
- Type 4 – Soil that was identified as suspicious, was tested, exceeded the TCLP limits, and must be treated prior to disposal.

8.3 Soil Sampling, Analysis and Classification

Several different soils were encountered during the excavation of the LGRL waste and included cover soils, soil within the waste, soil between the bottom of waste and Phase 8 Subbase, and additional soils excavated for remediation. Each of the soils excavated are described in detail in the following sections:

8.3.1 LGRL Final Cover Soils

As was discussed in Section 6.2.1 of the LGRL Waste Removal Plan, final cover soils could be classified as Type 1 soils unless they were observed to be in direct contact with waste or exhibited other characteristics such as staining or odor. Soils that were within 6 inches of the waste were treated as waste and disposed of. Detailed cover soil excavation and stockpiling is discussed in Section 4 of this report.

8.3.2 Soil Within the LGRL Waste Mass

Soil within the LGRL waste mass was treated entirely as waste. Based on the observations during the excavation it was not practical to separate any soil from waste and as such the soil was not tested for reuse. Soil within the waste was only tested if it was part of a suspicious waste observation as detailed in Section 7 of this report.

8.3.3 Soil Between the Bottom of LGRL Waste and Above Phase 8 Liner Subbase Grades

The base of the LGRL waste mass was above the subbase grades for the Phase 8 composite liner. Soil in this zone required excavation to achieve the subbase grades and was required to be tested if used outside of the GRL footprint. Soil removal depths in this region ranged from 0 to 18 feet with an average depth of approximately 10 feet. During waste excavation, soil that was visually stained was treated as waste and disposed of in the GRL active area.

Testing of the remaining soil above the Phase 8 subbase grades consisted of dividing the site into approximately 0.5 acre subareas where test pits were dug to test the underlying soils. Samples were collected at each of the test pit locations on maximum 5 foot intervals and analyzed for VOCs, Cadmium and Lead. Figure 1 shows the location of the test pits.

The soil test results were compared to NR 720 RCLs for groundwater and direct contact, TCLP limits. A summary of the data is presented in Appendix E. There were several exceedances for various contaminants as shown in the summary of the data. Soil that did not meet the limits for use outside of the GRL footprint was disposed of or used as daily cover within the limits of waste. Contaminated soil was disposed of in Phases 6 and 7 of the active GRL.

8.3.4 Additional Soil Excavation for Remediation

As part of the LGRL Waste Relocation plan, a soil remediation plan was put into place that required removal of some of the soils from below the Southeast Expansion subbase grades. As part of the Waste Relocation Plan, up to a total of 3,000 cubic yards of soil could be removed for remediation at the request of the WDNR across the entire LGRL area.

After all of the LGRL waste had been removed from the Phase C area, the subbase was inspected with a WDNR representative (Woody Myers) for areas that had high levels of VOC contamination.

The WDNR was informed of the area of VOC contamination. Advanced Disposal and the WDNR collaborated to determine a course of action for removing the soil. The bullet points below describe the methods used to bound the area and remove the contaminated soil.

- First, additional test pits were dug surrounding the center of the VOC contamination under the direction of the WDNR. Figure 1 indicates the test pit locations. Several additional test pits were dug and soils were analyzed with the PID. The center of the VOC contamination areas were used as the starting point and test pits were dug moving out form the center. The boundary of the VOC contaminated soil was determined based on field PID readings. When field PID readings fell below 10ppm, the bounds of the contaminated soil were assumed to be detected.
- Figure 2 shows the area of soil that was removed below the subbase grades. The total volume of soil removed from area C below Phase 8 subbase grades was approximately 2,856 cubic yards. Additional soil samples were taken after soil was removed to assess the level of contamination remaining. The combined additional soil excavation for remediation between Phases A, B, and C is 4,226 cubic yards.
- The impacted soil was relocated to the active GRL. Lab results indicated that none of the soil removed was above the maximum disposal limits.

9 CONCLUSION

The LGRL Phase C Waste Relocation project has been completed in accordance with the approved LGRL Waste Relocation Plan, the construction plans and specifications, Chapters NR 140, 500, 600 and 700 Wis. Adm. Code. On behalf of Advanced Disposal, Cornerstone respectfully requests the review and approval of this Construction Documentation Report.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

GRL-SS-1 through SS-6
2/11/16

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-1-1'	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	707.0	µg/kg	0.7070	0.0354	200.0000	PASS	PASS	PASS
	Trichloroethene	64.9	µg/kg	0.0649	0.0032	0.5000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	49.3	µg/kg	0.0493	0.0025	0.5000	PASS	EXCEEDANCE	PASS
SS-1-5'	Lead	3.3	mg/kg	3.3000	0.1650	5.0000	PASS	PASS	PASS
SS-1-10'	Lead	3.2	mg/kg	3.2000	0.1600	5.0000	PASS	PASS	PASS
	m&p-Xylene	79.9	µg/kg	0.0799	0.0040		PASS	PASS	N/A
SS-1-15'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS
	Toluene	97.8	µg/kg	0.0978	0.0049		PASS	PASS	N/A
SS-1-19'	Lead	2.4	mg/kg	2.4000	0.1200	5.0000	PASS	PASS	PASS
	Toluene	51.7	µg/kg	0.0517	0.0026		PASS	PASS	N/A
SS-2-1'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	701.0	µg/kg	0.7010	0.0351		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	289.0	µg/kg	0.2890	0.0145		PASS	PASS	N/A
	2-Butanone (MEK)	1230.0	µg/kg	1.2300	0.0615	200.0000	PASS	PASS	PASS
	Ethylbenzene	427.0	µg/kg	0.4270	0.0214		PASS	PASS	N/A
	Isopropylbenzene (Cumene)	30.1	µg/kg	0.0301	0.0015		PASS	N/A	N/A
	Naphthalene	102.0	µg/kg	0.1020	0.0051		PASS	PASS	N/A
	Tetrachloroethene	28.8	µg/kg	0.0288	0.0014	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	415.0	µg/kg	0.4150	0.0208		PASS	PASS	N/A
	Trichloroethene	242.0	µg/kg	0.2420	0.0121	0.5000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	278.0	µg/kg	0.2780	0.0139	0.5000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	1450.0	µg/kg	1.4500	0.0725		PASS	PASS	N/A
	n-Butylbenzene	136.0	µg/kg	0.1360	0.0068		PASS	N/A	N/A
	n-Propylbenzene	106.0	µg/kg	0.1060	0.0053		PASS	N/A	N/A
	o-Xylene	327.0	µg/kg	0.3270	0.0164		PASS	PASS	N/A
	p-Isopropyltoluene	51.3	µg/kg	0.0513	0.0026		PASS	N/A	N/A
	sec-Butylbenzene	46.8	µg/kg	0.0468	0.0023		PASS	N/A	N/A
SS-2-5'	Lead	2.5	mg/kg	2.5000	0.1250	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	50100.0	µg/kg	50.1000	2.5050		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	21200.0	µg/kg	21.2000	1.0600		PASS	EXCEEDANCE	N/A
	Ethylbenzene	67900.0	µg/kg	67.9000	3.3950		EXCEEDANCE	EXCEEDANCE	N/A
	Tetrachloroethene	12800.0	µg/kg	12.8000	0.6400	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	123000.0	µg/kg	123.0000	6.1500		PASS	EXCEEDANCE	N/A
	Trichloroethene	2470000.0	µg/kg	2470.0000	123.5000	0.5000	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE
	cis-1,2-Dichloroethene	70200.0	µg/kg	70.2000	3.5100	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	m&p-Xylene	204000.0	µg/kg	204.0000	10.2000		PASS	EXCEEDANCE	N/A
	o-Xylene	40400.0	µg/kg	40.4000	2.0200		PASS	EXCEEDANCE	N/A
SS-2-10'	Lead	2.7	mg/kg	2.7000	0.1350	5.0000	PASS	PASS	PASS
	1,1,1-Trichloroethane	2120.0	µg/kg	2.1200	0.1060		PASS	EXCEEDANCE	N/A
	1,2,4-Trimethylbenzene	36400.0	µg/kg	36.4000	1.8200		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	15800.0	µg/kg	15.8000	0.7900		PASS	EXCEEDANCE	N/A
	2-Butanone (MEK)	4610.0	µg/kg	4.6100	0.2305	200.0000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	37500.0	µg/kg	37.5000	1.8750		EXCEEDANCE	EXCEEDANCE	N/A
	Isopropylbenzene (Cumene)	2100.0	µg/kg	2.1000	0.1050		PASS	N/A	N/A
	Naphthalene	2750.0	µg/kg	2.7500	0.1375		PASS	EXCEEDANCE	N/A
	Tetrachloroethene	2760.0	µg/kg	2.7600	0.1380	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	41200.0	µg/kg	41.2000	2.0600		PASS	EXCEEDANCE	N/A
	Trichloroethene	137000.0	µg/kg	137.0000	6.8500	0.5000	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE
	cis-1,2-Dichloroethene	144000.0	µg/kg	144.0000	7.2000	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	m&p-Xylene	131000.0	µg/kg	131.0000	6.5500		PASS	EXCEEDANCE	N/A
	n-Butylbenzene	4140.0	µg/kg	4.1400	0.2070		PASS	N/A	N/A
	n-Propylbenzene	6310.0	µg/kg	6.3100	0.3155		PASS	N/A	N/A
	o-Xylene	25700.0	µg/kg	25.7000	1.2850		PASS	EXCEEDANCE	N/A
	p-Isopropyltoluene	2230.0	µg/kg	2.2300	0.1115		PASS	N/A	N/A
	sec-Butylbenzene	1990.0	µg/kg	1.9900	0.0995		PASS	N/A	N/A

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-2-15'	Lead	2.7	mg/kg	2.7000	0.1350	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	3940.0	µg/kg	3.9400	0.1970		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	1460.0	µg/kg	1.4600	0.0730		PASS	EXCEEDANCE	N/A
	2-Butanone (MEK)	3280.0	µg/kg	3.2800	0.1640	200.0000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	2900.0	µg/kg	2.9000	0.1450		PASS	EXCEEDANCE	N/A
	Tetrachloroethene	405.0	µg/kg	0.4050	0.0203	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	3210.0	µg/kg	3.2100	0.1605		PASS	EXCEEDANCE	N/A
	Trichloroethene	52100.0	µg/kg	52.1000	2.6050	0.5000	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE
	cis-1,2-Dichloroethene	14800.0	µg/kg	14.8000	0.7400	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	m&p-Xylene	10300.0	µg/kg	10.3000	0.5150		PASS	EXCEEDANCE	N/A
	n-Butylbenzene	508.0	µg/kg	0.5080	0.0254		PASS	N/A	N/A
	n-Propylbenzene	551.0	µg/kg	0.5510	0.0276		PASS	N/A	N/A
	o-Xylene	2140.0	µg/kg	2.1400	0.1070		PASS	EXCEEDANCE	N/A
SS-2-20'	Lead	2.7	mg/kg	2.7000	0.1350	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	632.0	µg/kg	0.6320	0.0316		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	260.0	µg/kg	0.2600	0.0130		PASS	PASS	N/A
	2-Butanone (MEK)	1140.0	µg/kg	1.1400	0.0570	200.0000	PASS	PASS	PASS
	Ethylbenzene	618.0	µg/kg	0.6180	0.0309		PASS	PASS	N/A
	Isopropylbenzene (Cumene)	38.9	µg/kg	0.0389	0.0019		PASS	N/A	N/A
	Naphthalene	69.3	µg/kg	0.0693	0.0035		PASS	PASS	N/A
	Tetrachloroethene	28.2	µg/kg	0.0282	0.0014	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	825.0	µg/kg	0.8250	0.0413		PASS	PASS	N/A
	Trichloroethene	436.0	µg/kg	0.4360	0.0218	0.5000	PASS	EXCEEDANCE	PASS
	Vinyl chloride	596.0	µg/kg	0.5960	0.0298	0.2000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	11100.0	µg/kg	11.1000	0.5550	0.5000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	2150.0	µg/kg	2.1500	0.1075		PASS	PASS	N/A
	n-Butylbenzene	73.0	µg/kg	0.0730	0.0037		PASS	N/A	N/A
	n-Propylbenzene	94.4	µg/kg	0.0944	0.0047		PASS	N/A	N/A
	o-Xylene	476.0	µg/kg	0.4760	0.0238		PASS	PASS	N/A
	p-Isopropyltoluene	33.5	µg/kg	0.0335	0.0017		PASS	N/A	N/A
	sec-Butylbenzene	28.1	µg/kg	0.0281	0.0014		PASS	N/A	N/A
SS-3-1'	Lead	4.6	mg/kg	4.6000	0.2300	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	80.1	µg/kg	0.0801	0.0040		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	36.1	µg/kg	0.0361	0.0018		PASS	PASS	N/A
	1,4-Dichlorobenzene	80.4	µg/kg	0.0804	0.0040		PASS	PASS	PASS
	2-Butanone (MEK)	902.0	µg/kg	0.9020	0.0451	200.0000	PASS	PASS	PASS
	Ethylbenzene	109.0	µg/kg	0.1090	0.0055		PASS	PASS	N/A
	Toluene	194.0	µg/kg	0.1940	0.0097		PASS	PASS	N/A
	Trichloroethene	107.0	µg/kg	0.1070	0.0054	0.5	PASS	EXCEEDANCE	PASS
	Vinyl chloride	70.2	µg/kg	0.0702	0.0035	0.2	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	2220.0	µg/kg	2.2200	0.1110	0.5000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	422.0	µg/kg	0.4220	0.0211		PASS	PASS	N/A
	o-Xylene	95.7	µg/kg	0.0957	0.0048		PASS	PASS	N/A
SS-3-6'	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	133.0	µg/kg	0.1330	0.0067		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	54.4	µg/kg	0.0544	0.0027		PASS	PASS	N/A
	2-Butanone (MEK)	2890.0	µg/kg	2.8900	0.1445	200.0000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	122.0	µg/kg	0.1220	0.0061		PASS	PASS	N/A
	Toluene	161.0	µg/kg	0.1610	0.0081		PASS	PASS	N/A
	Vinyl chloride	52.7	µg/kg	0.0527	0.0026	0.2000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	1830.0	µg/kg	1.8300	0.0915	0.5000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	452.0	µg/kg	0.4520	0.0226		PASS	PASS	N/A
	o-Xylene	101.0	µg/kg	0.1010	0.0051		PASS	PASS	N/A

GRL-SS-7 through SS-20
2/22/16

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-3-11'	Lead	2.2	mg/kg	2.2000	0.1100	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	117.0	µg/kg	0.1170	0.0059		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	53.6	µg/kg	0.0536	0.0027		PASS	PASS	N/A
	2-Butanone (MEK)	447.0	µg/kg	0.4470	0.0224	200.0000	PASS	PASS	PASS
	Ethylbenzene	113.0	µg/kg	0.1130	0.0057		PASS	PASS	N/A
	Toluene	128.0	µg/kg	0.1280	0.0064		PASS	PASS	N/A
	Vinyl chloride	171.0	µg/kg	0.1710	0.0086	0.2000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	1030.0	µg/kg	1.0300	0.0515	0.5000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	377.0	µg/kg	0.3770	0.0189		PASS	PASS	N/A
	o-Xylene	87.0	µg/kg	0.0870	0.0044		PASS	PASS	N/A
SS-3-16'	Lead	2.8	mg/kg	2.8000	0.1400	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	93.0	µg/kg	0.0930	0.0047		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	40.0	µg/kg	0.0400	0.0020		PASS	PASS	N/A
	Ethylbenzene	172.0	µg/kg	0.1720	0.0086		PASS	PASS	N/A
	m&p-Xylene	552.0	µg/kg	0.5520	0.0276		PASS	PASS	N/A
	o-Xylene	128.0	µg/kg	0.1280	0.0064		PASS	PASS	N/A
SS-4-1'	Lead	3.1	mg/kg	3.1000	0.1550	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	21200.0	µg/kg	21.2000	1.0600	200.0000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	159.0	µg/kg	0.1590	0.0080		PASS	PASS	N/A
	Toluene	352.0	µg/kg	0.3520	0.0176		PASS	PASS	N/A
	m&p-Xylene	548.0	µg/kg	0.5480	0.0274		PASS	PASS	N/A
	o-Xylene	211.0	µg/kg	0.2110	0.0106		PASS	PASS	N/A
SS-4-5'	Lead	3.7	mg/kg	3.7000	0.1850	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	31700.0	µg/kg	31.7000	1.5850	200.0000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	188.0	µg/kg	0.1880	0.0094		PASS	PASS	N/A
	Toluene	441.0	µg/kg	0.4410	0.0221		PASS	PASS	N/A
	m&p-Xylene	692.0	µg/kg	0.6920	0.0346		PASS	PASS	N/A
	o-Xylene	256.0	µg/kg	0.2560	0.0128		PASS	PASS	N/A
SS-4-10'	Lead	2.3	mg/kg	2.3000	0.1150	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	10300.0	µg/kg	10.3000	0.5150	200.0000	PASS	PASS	PASS
	Ethylbenzene	73.8	µg/kg	0.0738	0.0037		PASS	PASS	N/A
	Toluene	196.0	µg/kg	0.1960	0.0098		PASS	PASS	N/A
	m&p-Xylene	206.0	µg/kg	0.2060	0.0103		PASS	PASS	N/A
	o-Xylene	46.5	µg/kg	0.0465	0.0023		PASS	PASS	N/A
SS-5-1'	Lead	3.7	mg/kg	3.7000	0.1850	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	43900.0	µg/kg	43.9000	2.1950	200.0000	PASS	EXCEEDANCE	PASS
	Toluene	372.0	µg/kg	0.3720	0.0186		PASS	PASS	N/A
	m&p-Xylene	303.0	µg/kg	0.3030	0.0152		PASS	PASS	N/A
SS-5-6'	Lead	3.3	mg/kg	3.3000	0.1650	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	42600.0	µg/kg	42.6000	2.1300	200.0000	PASS	EXCEEDANCE	PASS
	Toluene	216.0	µg/kg	0.2160	0.0108		PASS	PASS	N/A
SS-5-11'	Lead	3.6	mg/kg	3.6000	0.1800	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	63900.0	µg/kg	63.9000	3.1950	200.0000	PASS	EXCEEDANCE	PASS
	Toluene	439.0	µg/kg	0.4390	0.0220		PASS	PASS	N/A
SS-5-16'	Lead	3.8	mg/kg	3.8000	0.1900	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	60300.0	µg/kg	60.3000	3.0150	200.0000	PASS	EXCEEDANCE	PASS
	Toluene	459.0	µg/kg	0.4590	0.0230		PASS	PASS	N/A
SS-6-1'	Lead	3.3	mg/kg	3.3000	0.1650	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	18400.0	µg/kg	18.4000	0.9200	200.0000	PASS	EXCEEDANCE	PASS
SS-6-6'	Lead	3.0	mg/kg	3.0000	0.1500	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	808.0	µg/kg	0.8080	0.0404	200.0000	PASS	PASS	PASS
SS-6-11'	Lead	5.2	mg/kg	5.2000	0.2600	5.0000	PASS	PASS	PASS
	1,2,4-Trimethylbenzene	29.0	µg/kg	0.0290	0.0015		PASS	PASS	N/A
	Ethylbenzene	51.9	µg/kg	0.0519	0.0026		PASS	PASS	N/A
	m&p-Xylene	133.0	µg/kg	0.1330	0.0067		PASS	PASS	N/A
	o-Xylene	43.0	µg/kg	0.0430	0.0022		PASS	PASS	N/A
SS-6-15'	Lead	5.0	mg/kg	5.0000	0.2500	5.0000	PASS	PASS	PASS
	Ethylbenzene	48.3	µg/kg	0.0483	0.0024		PASS	PASS	N/A
	m&p-Xylene	128.0	µg/kg	0.1280	0.0064		PASS	PASS	N/A
	o-Xylene	40.7	µg/kg	0.0407	0.0020		PASS	PASS	N/A

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-7-1'	Lead	3.0	mg/kg	3.0000	0.1500	5.0000	PASS	PASS	PASS
	Ethylbenzene	38.7	µg/kg	0.0387	0.0019		PASS	PASS	N/A
	p-Isopropyltoluene	47.4	µg/kg	0.0474	0.0024		PASS	N/A	N/A
	Toluene	38.7	µg/kg	0.0387	0.0019		PASS	PASS	N/A
	1,2,4-Trimethylbenzene	29.1	µg/kg	0.0291	0.0015		PASS	PASS	N/A
	m&p-Xylene	114.0	µg/kg	0.1140	0.0057		PASS	PASS	N/A
	o-Xylene	38.2	µg/kg	0.0382	0.0019		PASS	PASS	N/A
SS-7-5'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	963.0	µg/kg	0.9630	0.0482	200.0000	PASS	PASS	PASS
	Ethylbenzene	57.5	µg/kg	0.0575	0.0029		PASS	PASS	N/A
	Toluene	471.0	µg/kg	0.4710	0.0236		PASS	PASS	N/A
	m&p-Xylene	170.0	µg/kg	0.1700	0.0085		PASS	PASS	N/A
	o-Xylene	49.8	µg/kg	0.0498	0.0025		PASS	PASS	N/A
SS-7-10'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS
	Ethylbenzene	53.5	µg/kg	0.0535	0.0027		PASS	PASS	N/A
	Toluene	128.0	µg/kg	0.1280	0.0064		PASS	PASS	N/A
	m&p-Xylene	144.0	µg/kg	0.1440	0.0072		PASS	PASS	N/A
	o-Xylene	55.7	µg/kg	0.0557	0.0028		PASS	PASS	N/A
SS-7-14'	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	275.0	µg/kg	0.2750	0.0138	200.0000	PASS	PASS	PASS
	Ethylbenzene	32.4	µg/kg	0.0324	0.0016		PASS	PASS	N/A
	Toluene	472.0	µg/kg	0.4720	0.0236		PASS	PASS	N/A
	m&p-Xylene	79.8	µg/kg	0.0798	0.0040		PASS	PASS	N/A
	o-Xylene	29.2	µg/kg	0.0292	0.0015		PASS	PASS	N/A
SS-7-17'	Lead	1.9	mg/kg	1.9000	0.0950	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	392.0	µg/kg	0.3920	0.0196	200.0000	PASS	PASS	PASS
	Ethylbenzene	35.2	µg/kg	0.0352	0.0018		PASS	PASS	N/A
	Toluene	402.0	µg/kg	0.4020	0.0201		PASS	PASS	N/A
	m&p-Xylene	79.5	µg/kg	0.0795	0.0040		PASS	PASS	N/A
SS-8-1'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
	Ethylbenzene	27.0	µg/kg	0.0270	0.0014		PASS	PASS	N/A
	m&p-Xylene	82.5	µg/kg	0.0825	0.0041		PASS	PASS	N/A
	o-Xylene	50.9	µg/kg	0.0509	0.0025		PASS	PASS	N/A
SS-8-5'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	652.0	µg/kg	0.6520	0.0326	200.0000	PASS	PASS	PASS
	Ethylbenzene	108.0	µg/kg	0.1080	0.0054		PASS	PASS	N/A
	m&p-Xylene	297.0	µg/kg	0.2970	0.0149		PASS	PASS	N/A
	o-Xylene	31.5	µg/kg	0.0315	0.0016		PASS	PASS	N/A
SS-8-10'	Lead	3.0	mg/kg	3.0000	0.1500	5.0000	PASS	PASS	PASS
	Ethylbenzene	53.9	µg/kg	0.0539	0.0027		PASS	PASS	N/A
	m&p-Xylene	168.0	µg/kg	0.1680	0.0084		PASS	PASS	N/A
SS-8-15'	Lead	1.5	mg/kg	1.5000	0.0750	5.0000	PASS	PASS	PASS
SS-8-19'	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
SS-9-1'	Lead	3.7	mg/kg	3.7000	0.1850	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	312.0	µg/kg	0.3120	0.0156	200.0000	PASS	PASS	PASS
	Toluene	87.6	µg/kg	0.0876	0.0044		PASS	PASS	N/A
SS-9-6'	Lead	3.6	mg/kg	3.6000	0.1800	5.0000	PASS	PASS	PASS
SS-9-16'	Lead	3.1	mg/kg	3.1000	0.1550	5.0000	PASS	PASS	PASS
SS-10-1'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	4040.0	µg/kg	4.0400	0.2020	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	664.0	µg/kg	0.6640	0.0332	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	32.9	µg/kg	0.0329	0.0016		PASS	PASS	N/A
	Toluene	75.7	µg/kg	0.0757	0.0038		PASS	PASS	N/A
	Vinyl chloride	68.8	µg/kg	0.0688	0.0034	0.2000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	94.3	µg/kg	0.0943	0.0047		PASS	PASS	N/A

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-10-5'	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	13400.0	µg/kg	13.4000	0.6700	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	20700.0	µg/kg	20.7000	1.0350	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	Ethylbenzene	445.0	µg/kg	0.4450	0.0223		PASS	PASS	N/A
	Toluene	514.0	µg/kg	0.5140	0.0257		PASS	PASS	N/A
	Trichloroethene	571.0	µg/kg	0.5710	0.0286	0.5000	PASS	EXCEEDANCE	PASS
	1,2,4-Trimethylbenzene	435.0	µg/kg	0.4350	0.0218		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	195.0	µg/kg	0.1950	0.0098		PASS	PASS	N/A
	Vinyl chloride	817.0	µg/kg	0.8170	0.0409	0.2000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	1490.0	µg/kg	1.4900	0.0745		PASS	PASS	N/A
	o-Xylene	302.0	µg/kg	0.3020	0.0151		PASS	PASS	N/A
SS-10-10'	Lead	2.0	mg/kg	2.0000	0.1000	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	6530.0	µg/kg	6.5300	0.3265	200.0000	PASS	EXCEEDANCE	PASS
	n-Butylbenzene	7770.0	µg/kg	7.7700	0.3885		PASS	N/A	N/A
	sec-Butylbenzene	3660.0	µg/kg	3.6600	0.1830		PASS	N/A	N/A
	cis-1,2-Dichloroethene	181000.0	µg/kg	181.0000	9.0500	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	Ethylbenzene	67600.0	µg/kg	67.6000	3.3800		EXCEEDANCE	EXCEEDANCE	N/A
	Isopropylbenzene (Cumene)	3690.0	µg/kg	3.6900	0.1845		PASS	N/A	N/A
	p-Isopropyltoluene	3450.0	µg/kg	3.4500	0.1725		PASS	N/A	N/A
	Naphthalene	4600.0	µg/kg	4.6000	0.2300		PASS	EXCEEDANCE	N/A
	n-Propylbenzene	10500.0	µg/kg	10.5000	0.5250		PASS	N/A	N/A
	Tetrachloroethene	5460.0	µg/kg	5.4600	0.2730	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	33100.0	µg/kg	33.1000	1.6550		PASS	EXCEEDANCE	N/A
	1,1,1-Trichloroethane	986.0	µg/kg	0.9860	0.0493		PASS	EXCEEDANCE	N/A
	Trichloroethene	43700.0	µg/kg	43.7000	2.1850	0.5000	EXCEEDANCE	EXCEEDANCE	EXCEEDANCE
	1,2,4-Trimethylbenzene	66800.0	µg/kg	66.8000	3.3400		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	27500.0	µg/kg	27.5000	1.3750		PASS	EXCEEDANCE	N/A
	Vinyl chloride	3150.0	µg/kg	3.1500	0.1575	0.2000	EXCEEDANCE	EXCEEDANCE	PASS
	m&p-Xylene	238000.0	µg/kg	238.0000	11.9000		PASS	EXCEEDANCE	N/A
	o-Xylene	40900.0	µg/kg	40.9000	2.0450		PASS	EXCEEDANCE	N/A
SS-10-14'	Lead	2.4	mg/kg	2.4000	0.1200	5.0000	PASS	PASS	PASS
	cis-1,2-Dichloroethene	12400.0	µg/kg	12.4000	0.6200	0.5000	PASS	EXCEEDANCE	EXCEEDANCE
	trans-1,2-Dichloroethene	101.0	µg/kg	0.1010	0.0051	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	473.0	µg/kg	0.4730	0.0237		PASS	PASS	N/A
	Toluene	434.0	µg/kg	0.4340	0.0217		PASS	PASS	N/A
	1,2,4-Trimethylbenzene	221.0	µg/kg	0.2210	0.0111		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	104.0	µg/kg	0.1040	0.0052		PASS	PASS	N/A
	Vinyl chloride	2290.0	µg/kg	2.2900	0.1145	0.2000	EXCEEDANCE	EXCEEDANCE	PASS
	m&p-Xylene	1350.0	µg/kg	1.3500	0.0675		PASS	PASS	N/A
	o-Xylene	232.0	µg/kg	0.2320	0.0116		PASS	PASS	N/A
SS-10-17'	Lead	2.3	mg/kg	2.3000	0.1150	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	783.0	µg/kg	0.7830	0.0392	200.0000	PASS	PASS	PASS
	1,1-Dichloroethane	38.0	µg/kg	0.0380	0.0019	0.7000	PASS	PASS	PASS
	cis-1,2-Dichloroethene	651.0	µg/kg	0.6510	0.0326	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	30.2	µg/kg	0.0302	0.0015		PASS	PASS	N/A
	Toluene	29.8	µg/kg	0.0298	0.0015		PASS	PASS	N/A
	Vinyl chloride	101.0	µg/kg	0.1010	0.0051	0.2000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	94.2	µg/kg	0.0942	0.0047		PASS	PASS	N/A

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-11-1'	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	2860.0	µg/kg	2.8600	0.1430	200.0000	PASS	EXCEEDANCE	PASS
	n-Butylbenzene	131.0	µg/kg	0.1310	0.0066		PASS	N/A	N/A
	cis-1,2-Dichloroethene	28.2	µg/kg	0.0282	0.0014	0.5000	PASS	PASS	PASS
	Ethylbenzene	368.0	µg/kg	0.3680	0.0184		PASS	PASS	N/A
	Naphthalene	200.0	µg/kg	0.2000	0.0100		PASS	PASS	N/A
	n-Propylbenzene	48.3	µg/kg	0.0483	0.0024		PASS	N/A	N/A
	Toluene	698.0	µg/kg	0.6980	0.0349		PASS	PASS	N/A
	1,2,4-Trimethylbenzene	357.0	µg/kg	0.3570	0.0179		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	116.0	µg/kg	0.1160	0.0058		PASS	PASS	N/A
	m&p-Xylene	1250.0	µg/kg	1.2500	0.0625		PASS	PASS	N/A
	o-Xylene	400.0	µg/kg	0.4000	0.0200		PASS	PASS	N/A
SS-11-5'	Lead	1.9	mg/kg	1.9000	0.0950	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	6700.0	µg/kg	6.7000	0.3350	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	121.0	µg/kg	0.1210	0.0061	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	441.0	µg/kg	0.4410	0.0221		PASS	PASS	N/A
	n-Propylbenzene	36.5	µg/kg	0.0365	0.0018		PASS	N/A	N/A
	Toluene	1230.0	µg/kg	1.2300	0.0615		PASS	EXCEEDANCE	N/A
	1,2,4-Trimethylbenzene	177.0	µg/kg	0.1770	0.0089		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	79.6	µg/kg	0.0796	0.0040		PASS	PASS	N/A
	m&p-Xylene	1380.0	µg/kg	1.3800	0.0690		PASS	PASS	N/A
	o-Xylene	347.0	µg/kg	0.3470	0.0174		PASS	PASS	N/A
SS-11-10'	Lead	2.5	mg/kg	2.5000	0.1250	5.0000	PASS	PASS	PASS
	Ethylbenzene	358.0	µg/kg	0.3580	0.0179		PASS	PASS	N/A
	Toluene	1130.0	µg/kg	1.1300	0.0565		PASS	EXCEEDANCE	N/A
	1,2,4-Trimethylbenzene	118.0	µg/kg	0.1180	0.0059		PASS	PASS	N/A
	1,3,5-Trimethylbenzene	50.4	µg/kg	0.0504	0.0025		PASS	PASS	N/A
	m&p-Xylene	1070.0	µg/kg	1.0700	0.0535		PASS	PASS	N/A
	o-Xylene	204.0	µg/kg	0.2040	0.0102		PASS	PASS	N/A
SS-11-14'	Lead	2.4	mg/kg	2.5000	0.1250	5.0000	PASS	PASS	PASS
	Ethylbenzene	180.0	µg/kg	0.1800	0.0090		PASS	PASS	N/A
	1,2,4-Trimethylbenzene	49.8	µg/kg	0.0498	0.0025		PASS	PASS	N/A
	m&p-Xylene	561.0	µg/kg	0.5610	0.0281		PASS	PASS	N/A
	o-Xylene	99.1	µg/kg	0.0991	0.0050		PASS	PASS	N/A
SS-11-18'	Lead	2.3	mg/kg	2.3000	0.1150	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	209.0	µg/kg	0.2090	0.0105	200.0000	PASS	PASS	PASS
	Ethylbenzene	32.7	µg/kg	0.0327	0.0016		PASS	PASS	N/A
	Toluene	107.0	µg/kg	0.1070	0.0054		PASS	PASS	N/A
	m&p-Xylene	75.3	µg/kg	0.0753	0.0038		PASS	PASS	N/A
SS-12-1'	Lead	8.6	mg/kg	8.6000	0.4300	5.0000	PASS	PASS	PASS
SS-12-2.5'	Lead	8.7	mg/kg	8.7000	0.4350	5.0000	PASS	PASS	PASS
SS-12-4.6'	Lead	9.3	mg/kg	9.3000	0.4650	5.0000	PASS	PASS	PASS
SS-13-1'	Lead	7.3	mg/kg	7.3000	0.3650	5.0000	PASS	PASS	PASS
SS-13-5'	Lead	8.2	mg/kg	8.2000	0.4100	5.0000	PASS	PASS	PASS
SS-14-1'	Lead	5.8	mg/kg	5.8000	0.2900	5.0000	PASS	PASS	PASS
SS-14-3.5'	Lead	9.1	mg/kg	9.1000	0.4550	5.0000	PASS	PASS	PASS
SS-15-1'	Lead	5.8	mg/kg	5.8000	0.2900	5.0000	PASS	PASS	PASS
SS-15-3.5'	Lead	9.2	mg/kg	9.2000	0.4600	5.0000	PASS	PASS	PASS
SS-16-1'	Lead	3.1	mg/kg	3.1000	0.1550	5.0000	PASS	PASS	PASS
SS-16-5'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
SS-16-10'	Lead	3.3	mg/kg	3.3000	0.1650	5.0000	PASS	PASS	PASS
SS-16-14'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS
SS-17-1'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
SS-17-5'	Lead	8.2	mg/kg	8.2000	0.4100	5.0000	PASS	PASS	PASS
SS-17-9'	Cadmium	0.610	mg/kg	0.6100	0.0305	1.0000	PASS	PASS	PASS
	Lead	9.2	mg/kg	9.2000	0.4600	5.0000	PASS	PASS	PASS
SS-18-1'	Lead	2.7	mg/kg	2.7000	0.1350	5.0000	PASS	PASS	PASS
SS-18-5'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS

GRL-SS-21
through SS-24
2/25/16

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-18-10'	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
SS-18-15'	Lead	2.4	mg/kg	2.4000	0.1200	5.0000	PASS	PASS	PASS
SS-18-19'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
SS-19-1'	Lead	3.7	mg/kg	3.7000	0.1850	5.0000	PASS	PASS	PASS
SS-19-5'	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
SS-19-10'	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
SS-19-15'	Lead	3.1	mg/kg	3.1000	0.1550	5.0000	PASS	PASS	PASS
SS-19-20'	Lead	1.5	mg/kg	1.5000	0.0750	5.0000	PASS	PASS	PASS
SS-20-1'	Lead	3.5	mg/kg	3.5000	0.1750	5.0000	PASS	PASS	PASS
SS-20-6'	Lead	3.2	mg/kg	3.2000	0.1600	5.0000	PASS	PASS	PASS
SS-20-11'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS
SS-20-16'	Lead	3.5	mg/kg	3.5000	0.1750	5.0000	PASS	PASS	PASS
SS-20-21'	Lead	3.3	mg/kg	3.3000	0.1650	5.0000	PASS	PASS	PASS
SS-21-1'	Lead	4.8	mg/kg	4.8000	0.2400	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	2680.0	µg/kg	2.6800	0.1340	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	444.0	µg/kg	0.4440	0.0222	0.5000	PASS	EXCEEDANCE	PASS
	Methylene Chloride	197.0	µg/kg	0.1970	0.0099		PASS	EXCEEDANCE	N/A
	Toluene	299.0	µg/kg	0.2990	0.0150		PASS	PASS	N/A
	Trichloroethene	34.7	µg/kg	0.0347	0.0017	0.5000	PASS	EXCEEDANCE	PASS
SS-21-5'	Lead	3.6	mg/kg	3.6000	0.1800	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	4580.0	µg/kg	4.5800	0.2290	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	629.0	µg/kg	0.6290	0.0315	0.5000	PASS	EXCEEDANCE	PASS
	Methylene Chloride	137.0	µg/kg	0.1370	0.0069		PASS	EXCEEDANCE	N/A
	Toluene	139.0	µg/kg	0.1390	0.0070		PASS	PASS	N/A
SS-21-10'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	3160.0	µg/kg	3.1600	0.1580	200.0000	PASS	EXCEEDANCE	PASS
	cis-1,2-Dichloroethene	348.0	µg/kg	0.3480	0.0174	0.5000	PASS	EXCEEDANCE	PASS
SS-21-13'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	358.0	µg/kg	0.3580	0.0179	200.0000	PASS	PASS	PASS
SS-22-1'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
	Ethylbenzene	31.1	µg/kg	0.0311	0.0016		PASS	PASS	N/A
	Toluene	32.5	µg/kg	0.0325	0.0016		PASS	PASS	N/A
SS-22-5'	Lead	3.2	mg/kg	3.2000	0.1600	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	3900.0	µg/kg	3.9000	0.1950	200.0000	PASS	EXCEEDANCE	PASS
	Toluene	40.1	µg/kg	0.0401	0.0020		PASS	PASS	N/A
SS-22-10'	Lead	2.7	mg/kg	2.7000	0.1350	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	204.0	µg/kg	0.2040	0.0102	200.0000	PASS	PASS	PASS
	Ethylbenzene	28.1	µg/kg	0.0281	0.0014		PASS	PASS	N/A
	p-Isopropyltoluene	40.0	µg/kg	0.0400	0.0020		PASS	N/A	N/A
	Toluene	216.0	µg/kg	0.2160	0.0108		PASS	PASS	N/A
SS-22-12.5'	Lead	3.9	mg/kg	3.9000	0.1950	5.0000	PASS	PASS	PASS
SS-23-1'	Lead	2.9	mg/kg	2.9000	0.1450	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	5420.0	µg/kg	5.4200	0.2710	200.0000	PASS	EXCEEDANCE	PASS
SS-23-5'	Lead	2.8	mg/kg	2.8000	0.1400	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	47200.0	µg/kg	47.2000	2.3600	200.0000	PASS	EXCEEDANCE	PASS
SS-23-10'	Lead	2.6	mg/kg	2.6000	0.1300	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	1770.0	µg/kg	1.7700	0.0885	200.0000	PASS	EXCEEDANCE	PASS
SS-23-14.5'	Lead	3.0	mg/kg	3.0000	0.1500	5.0000	PASS	PASS	PASS
SS-24-1'	Lead	3.1	mg/kg	3.1000	0.1550	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	365.0	µg/kg	0.3650	0.0183	200.0000	PASS	PASS	PASS
	cis-1,2-Dichloroethene	236.0	µg/kg	0.2360	0.0118	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	86.7	µg/kg	0.0867	0.0043		PASS	PASS	N/A
	Toluene	93.3	µg/kg	0.0933	0.0047		PASS	PASS	N/A
	m&p-Xylene	220.0	µg/kg	0.2200	0.0110		PASS	PASS	N/A
	o-Xylene	52.4	µg/kg	0.0524	0.0026		PASS	PASS	N/A

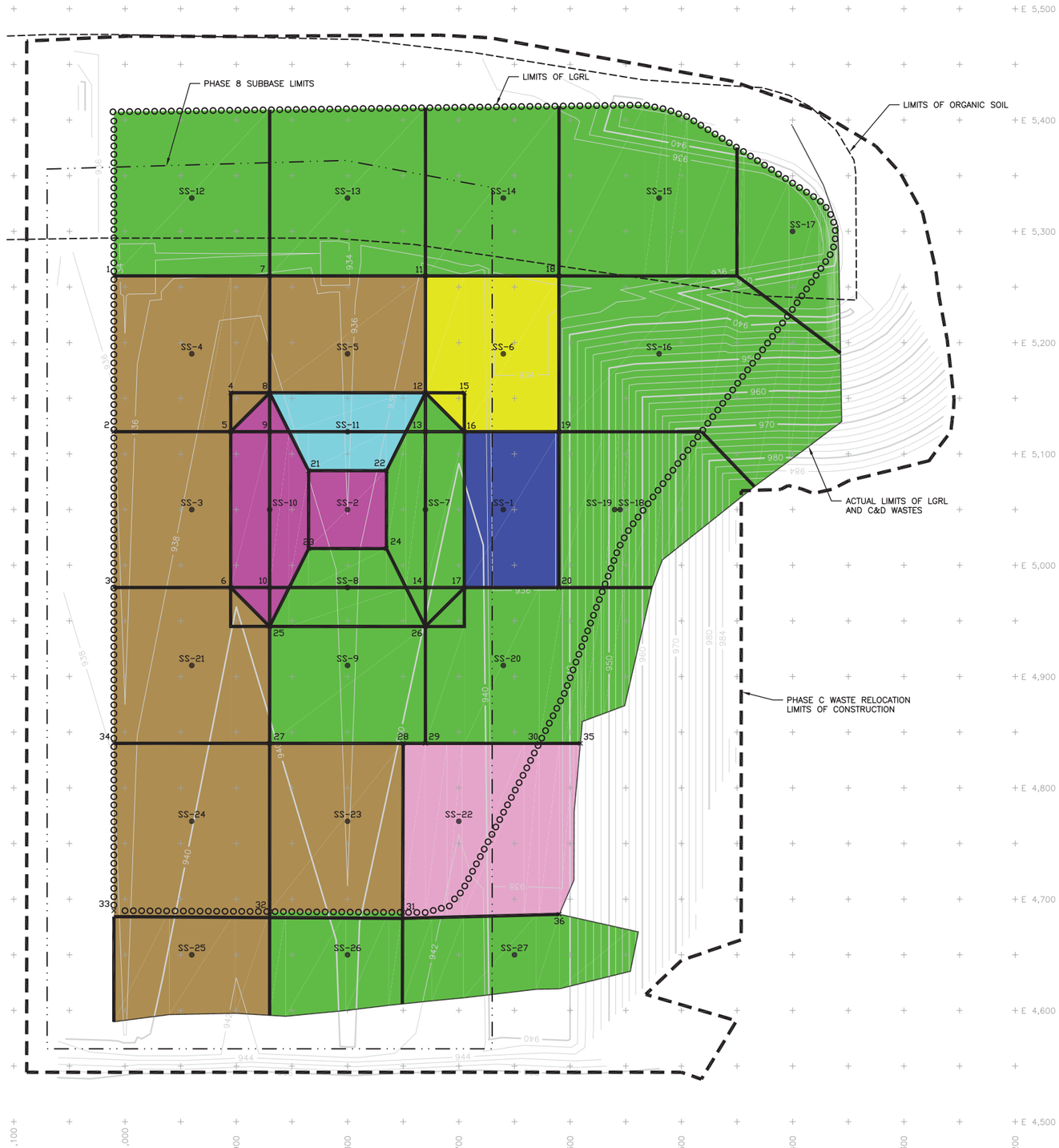
GRL-SS-25 through SS-27 3/4/16

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-24-6'	Lead	3.4	mg/kg	3.4000	0.1700	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	5490.0	µg/kg	5.4900	0.2745	200.0000	PASS	EXCEEDANCE	PASS
	n-Butylbenzene	176.0	µg/kg	0.1760	0.0088		PASS	N/A	N/A
	sec-Butylbenzene	59.9	µg/kg	0.0599	0.0030		PASS	N/A	N/A
	cis-1,2-Dichloroethene	3530.0	µg/kg	3.5300	0.1765	0.5000	PASS	EXCEEDANCE	PASS
	Ethylbenzene	4580.0	µg/kg	4.5800	0.2290		PASS	EXCEEDANCE	N/A
	Isopropylbenzene (Cumene)	117.0	µg/kg	0.1170	0.0059		PASS	N/A	N/A
	p-Isopropyltoluene	50.0	µg/kg	0.0500	0.0025		PASS	N/A	N/A
	Methylene Chloride	87.1	µg/kg	0.0871	0.0044		PASS	EXCEEDANCE	N/A
	Naphthalene	269.0	µg/kg	0.2690	0.0135		PASS	PASS	N/A
	n-Propylbenzene	259.0	µg/kg	0.2590	0.0130		PASS	N/A	N/A
	Tetrachloroethene	106.0	µg/kg	0.1060	0.0053	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	2390.0	µg/kg	2.3900	0.1195		PASS	EXCEEDANCE	N/A
	1,2,4-Trimethylbenzene	1480.0	µg/kg	1.4800	0.0740		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	480.0	µg/kg	0.4800	0.0240		PASS	EXCEEDANCE	N/A
	Vinyl chloride	50.2	µg/kg	0.0502	0.0025	0.2000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	11900.0	µg/kg	11.9000	0.5950		PASS	EXCEEDANCE	N/A
	o-Xylene	3130.0	µg/kg	3.1300	0.1565		PASS	EXCEEDANCE	N/A
SS-24-11'	Lead	2.4	mg/kg	2.4000	0.1200	5.0000	PASS	PASS	PASS
	2-Butanone (MEK)	8190.0	µg/kg	8.1900	0.4095	200.0000	PASS	EXCEEDANCE	PASS
	n-Butylbenzene	246.0	µg/kg	0.2460	0.0123		PASS	N/A	N/A
	sec-Butylbenzene	91.1	µg/kg	0.0911	0.0046		PASS	N/A	N/A
	cis-1,2-Dichloroethene	5090.0	µg/kg	5.0900	0.2545	0.5000	PASS	EXCEEDANCE	PASS
	trans-1,2-Dichloroethene	29.9	µg/kg	0.0299	0.0015	0.5000	PASS	PASS	PASS
	Ethylbenzene	8350.0	µg/kg	8.3500	0.4175		PASS	EXCEEDANCE	N/A
	Isopropylbenzene (Cumene)	186.0	µg/kg	0.1860	0.0093		PASS	N/A	N/A
	p-Isopropyltoluene	80.7	µg/kg	0.0807	0.0040		PASS	N/A	N/A
	Naphthalene	330.0	µg/kg	0.3300	0.0165		PASS	PASS	N/A
	n-Propylbenzene	418.0	µg/kg	0.4180	0.0209		PASS	N/A	N/A
	Tetrachloroethene	57.6	µg/kg	0.0576	0.0029	0.7000	PASS	EXCEEDANCE	PASS
	Toluene	4620.0	µg/kg	4.6200	0.2310		PASS	EXCEEDANCE	N/A
	1,2,4-Trimethylbenzene	2090.0	µg/kg	2.0900	0.1045		PASS	EXCEEDANCE	N/A
	1,3,5-Trimethylbenzene	704.0	µg/kg	0.7040	0.0352		PASS	EXCEEDANCE	N/A
	Vinyl chloride	190.0	µg/kg	0.1900	0.0095	0.2000	PASS	EXCEEDANCE	PASS
	m&p-Xylene	21000.0	µg/kg	21.0000	1.0500		PASS	EXCEEDANCE	N/A
	o-Xylene	5250.0	µg/kg	5.2500	0.2625		PASS	EXCEEDANCE	N/A
SS-25-1'	Cadmium	0.080	mg/kg	0.0800	0.0040	1.0000	PASS	PASS	PASS
	Lead	4.9	mg/kg	4.9000	0.2450	5.0000	PASS	PASS	PASS
	Trichloroethene	37.0	µg/kg	0.0370	0.0019		PASS	EXCEEDANCE	N/A
SS-25-5'	Cadmium	0.072	mg/kg	0.0720	0.0036	1.0000	PASS	PASS	PASS
	Lead	2.2	mg/kg	2.2000	0.1100	5.0000	PASS	PASS	PASS
SS-25-10'	Cadmium	0.063	mg/kg	0.0630	0.0032	1.0000	PASS	PASS	PASS
	Lead	4.9	mg/kg	4.9000	0.2450	5.0000	PASS	PASS	PASS
SS-25-15'	Cadmium	0.072	mg/kg	0.0720	0.0036	1.0000	PASS	PASS	PASS
	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
	Methylene Chloride	26.0	µg/kg	0.0260	0.0013		PASS	EXCEEDANCE	N/A
SS-25-18'	Cadmium	0.120	mg/kg	0.1200	0.0060	1.0000	PASS	PASS	PASS
	Lead	1.9	mg/kg	1.9000	0.0950	5.0000	PASS	PASS	PASS
SS-26-1'	Cadmium	0.055	mg/kg	0.0550	0.0028	1.0000	PASS	PASS	PASS
	Lead	2.1	mg/kg	2.1000	0.1050	5.0000	PASS	PASS	PASS
SS-26-5'	Cadmium	0.051	mg/kg	0.0510	0.0026	1.0000	PASS	PASS	PASS
	Lead	1.0	mg/kg	1.0000	0.0500	5.0000	PASS	PASS	PASS
SS-26-10'	Cadmium	0.058	mg/kg	0.0580	0.0029	1.0000	PASS	PASS	PASS
	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
SS-26-15'	Cadmium	0.067	mg/kg	0.0670	0.0034	1.0000	PASS	PASS	PASS
	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
SS-26-18.6'	Cadmium	0.072	mg/kg	0.0720	0.0036	1.0000	PASS	PASS	PASS
	Lead	1.4	mg/kg	1.4000	0.0700	5.0000	PASS	PASS	PASS

Below Waste Soil Test Results
LGRL Phase C Waste Relocation
Glacier Ridge Landfill, Horicon WI

Sample ID	Constiuents Detected	Lab Results	Units	Results (mg/kg)	Results / 20	TCLP Results mg/L	STANDARDS		
							RCL for Direct Contact	RCL for Protection of Groundwater	TCLP
SS-27-1'	Cadmium	0.093	mg/kg	0.0930	0.0047	1.0000	PASS	PASS	PASS
	Lead	2.3	mg/kg	2.3000	0.1150	5.0000	PASS	PASS	PASS
SS-27-6'	Cadmium	0.081	mg/kg	0.0810	0.0041	1.0000	PASS	PASS	PASS
	Lead	1.4	mg/kg	1.4000	0.0700	5.0000	PASS	PASS	PASS
SS-27-11'	Cadmium	0.067	mg/kg	0.0670	0.0034	1.0000	PASS	PASS	PASS
	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS
SS-27-16'	Cadmium	0.110	mg/kg	0.1100	0.0055	1.0000	PASS	PASS	PASS
	Lead	1.8	mg/kg	1.8000	0.0900	5.0000	PASS	PASS	PASS



LEGEND

- PHASE C WASTE RELOCATION LIMITS
- PHASE 8 SUBBASE LIMITS
- PHASE C WASTE RELOCATION LIMITS OF CONSTRUCTION
- LIMITS OF ORGANIC SOIL
- 782 — PROPOSED EXCAVATION CONTOURS
- SS–5 SAMPLE POINT NUMBER AND LOCATION
- 1 SURVEY POINT LOCATION AND NUMBER
- SOIL EXCAVATION LIMITS FOR COMPLETED SAMPLE LOCATIONS

NOTES:

MINIMUM FREQUENCY OF PROPOSED SOIL SAMPLE LOCATIONS = 1 PER 0.5 ACRES.

	0'–SUBGRADE	TYPE 1 SOIL
	0'–SUBGRADE	TYPE 2 SOIL
	0'–SUBGRADE	TYPE 4 SOIL
	0'–6' / 6'–SUBGRADE	TYPE 2 SOIL / TYPE 1 SOIL
	0'–5' / 5'–SUBGRADE	TYPE 2 SOIL / TYPE 1 SOIL
	0'–14' / 14'–SUBGRADE	TYPE 2 SOIL / TYPE 1 SOIL
	0'–10' / 10'–SUBGRADE	TYPE 2 SOIL / TYPE 1 SOIL

Survey Points

Point Number	Coordinates North	East
1	1010	5260
2	1010	5120
3	1010	4980
4	905	5155
5	905	5120
6	905	4980
7	870	5260
8	870	5155
9	870	5120
10	870	4980
11	730	5260
12	730	5155
13	730	5120
14	730	4980
15	695	5155
16	695	5120
17	695	4980
18	610	5260
19	610	5120
20	610	4980
21	835	5085
22	765	5085
23	835	5015
24	765	5015
25	870	4945
26	730	4945
27	870	4840
28	750	4840
29	730	4840
30	628	4840
31	750	4688
32	870	4689
33	1010	4690
34	1010	4840
35	591	4840
36	610	4686

Proposed Soil Sample Locations

Sample No.	Coordinates North	East	Proposed Excavation Elevation (ft)	As-Built Bottom of Waste Elevation (ft)	Depth of Soil to Remove (ft)	Comments
SS-12	940	5330	934.7			931.5 at Bottom of Rock
SS-13	800	5330	934.7			931.5 at Bottom of Rock
SS-14	660	5330	934.5			931.5 at Bottom of Rock
SS-15	520	5330	934.0			931.5 at Bottom of Rock
SS-17	400	5300	934.0			931.5 at Bottom of Rock
SS-4	940	5190	936.4			
SS-5	800	5190	934.1			
SS-6	660	5190	933.7			
SS-16	520	5190	947.7			
SS-3	940	5050	937.3			
SS-2	800	5050	935.0			
SS-1	660	5050	935.5			
SS-19	565	5050	951.7			
SS-21	940	4910	938.1			
SS-9	800	4910	935.8			
SS-20	660	4910	936.5			
SS-24	940	4770	938.9			
SS-23	800	4770	936.7			
SS-22	700	4770	940.9			
SS-10	870	5050	937.9			
SS-11	800	5120	934.6			
SS-8	800	4980	935.4			
SS-7	730	5050	938.4			
SS-18	555	5050	953.3			
SS-25	940	4650	939.7			
SS-26	800	4650	937.4			
SS-27	650	4650	940.7			

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		

NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

Advanced Disposal

CQM, INC.
Construction Quality Management
2879 Continental Drive
Green Bay, WI 54311

Soil Excavation Plan – 3/8/16

Phase C Waste Relocation
Advanced Disposal Services
Glacier Ridge Landfill, LLC.
Horicon, Wisconsin

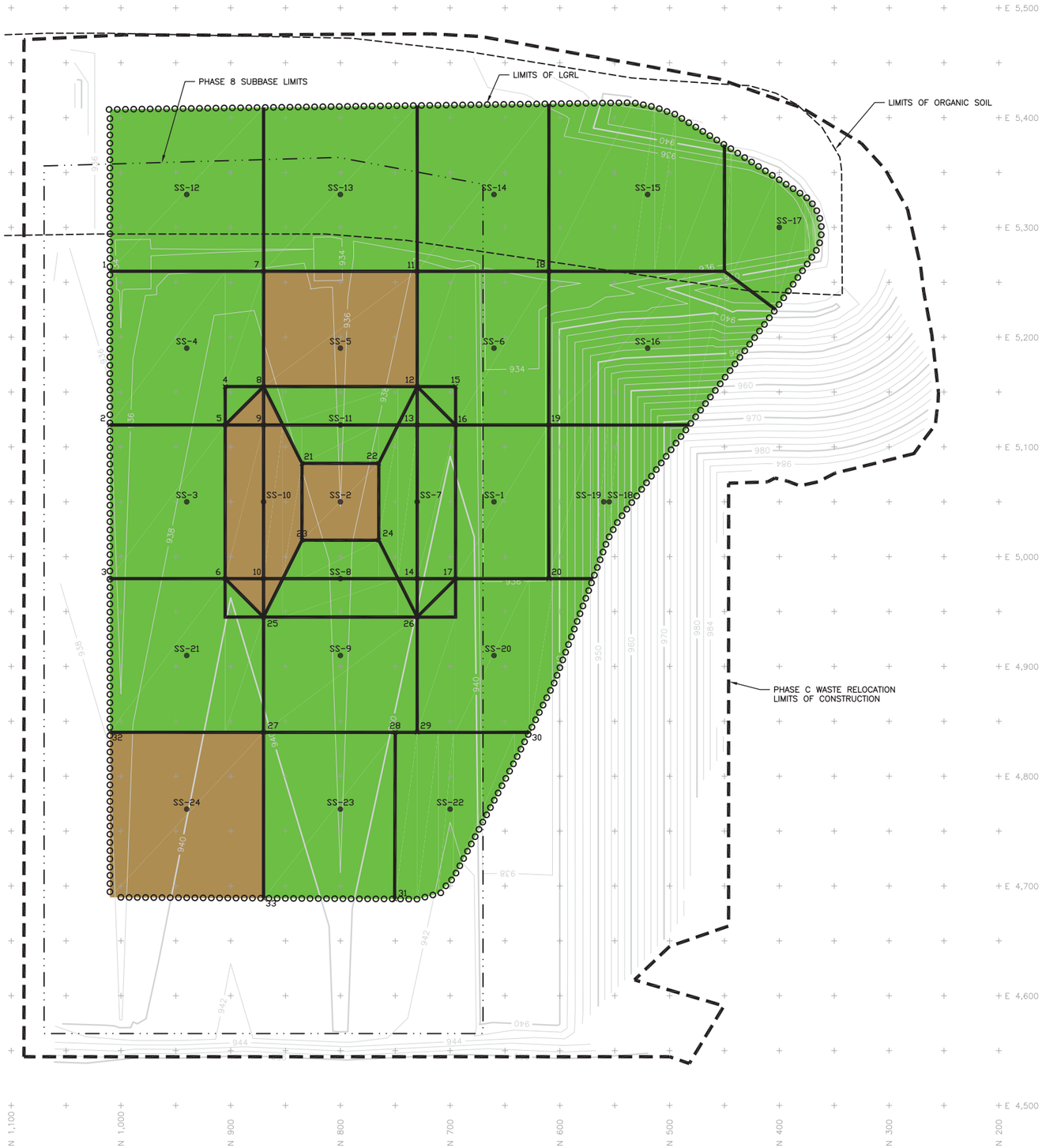
DRAWN BY: WBE

DATE: Mar. 2016

SCALE: 1" = 50'

DRAWING NO. 2

G:\Project Data\VEOLIA\Glacier Ridge\Waste Relocation\Phase C\Const\Soil Excavation Plan.dwg 4/22/2016 2:17 PM BJ Etsch



LEGEND

- PHASE C WASTE RELOCATION LIMITS
- PHASE 8 SUBBASE LIMITS
- PHASE C WASTE RELOCATION LIMITS OF CONSTRUCTION
- LIMITS OF ORGANIC SOIL
- 782 — PROPOSED EXCAVATION CONTOURS
- SS–5 — SAMPLE POINT NUMBER AND LOCATION
- 1 × — SURVEY POINT LOCATION AND NUMBER
- SOIL EXCAVATION LIMITS FOR COMPLETED SAMPLE LOCATIONS

NOTES:

MINIMUM FREQUENCY OF PROPOSED SOIL SAMPLE LOCATIONS = 1 PER 0.5 ACRES.

- TYPE 1 SOIL AT SUBGRADE
- TYPE 2 SOIL AT SUBGRADE
- TYPE 4 SOIL AT SUBGRADE

Survey Points

Point Number	Coordinates North	Coordinates East
1	1010	5260
2	1010	5120
3	1010	4980
4	905	5155
5	905	5120
6	905	4980
7	870	5260
8	870	5155
9	870	5120
10	870	4980
11	730	5260
12	730	5155
13	730	5120
14	730	4980
15	695	5155
16	695	5120
17	695	4980
18	610	5260
19	610	5120
20	610	4980
21	835	5085
22	765	5085
23	835	5015
24	765	5015
25	870	4945
26	730	4945
27	870	4840
28	750	4840
29	730	4840
30	628	4840
31	750	4688
32	870	4689
33	1010	4690

Proposed Soil Sample Locations

Sample No.	Coordinates North	Coordinates East	Proposed Excavation Elevation (ft)	As-Built Bottom of Waste Elevation (ft)	Depth of Soil to Remove (ft)	Comments
SS-12	940	5330	934.7			931.5 at Bottom of Rock
SS-13	800	5330	934.7			931.5 at Bottom of Rock
SS-14	660	5330	934.5			931.5 at Bottom of Rock
SS-15	520	5330	934.0			931.5 at Bottom of Rock
SS-17	400	5300	934.0			931.5 at Bottom of Rock
SS-4	940	5190	936.4			
SS-5	800	5190	934.1			
SS-6	660	5190	933.7			
SS-16	520	5190	947.7			
SS-3	940	5050	937.3			
SS-2	800	5050	935.0			
SS-1	660	5050	935.5			
SS-19	565	5050	951.7			
SS-21	940	4910	938.1			
SS-9	800	4910	935.8			
SS-20	660	4910	936.5			
SS-24	940	4770	938.9			
SS-23	800	4770	936.7			
SS-22	700	4770	940.9			
SS-10	870	5050	937.9			
SS-11	800	5120	934.6			
SS-8	800	4980	935.4			
SS-7	730	5050	938.4			
SS-18	555	5050	953.3			

NO.	DATE:	BY:
	RELEASE	DATE: BY:
	Project Review	
5		
4		
3		
2		
1		

DESCRIPTION

REVISIONS

Advanced Disposal

CQM, INC.
Construction Quality Management
2679 Continental Drive
Green Bay, WI 54311

Type 2 Soil Subgrade Locations

Phase C Waste Relocation
Advanced Disposal Services
Glacier Ridge Landfill, LLC.
Horicon, Wisconsin

DRAWN BY: WBE

DATE: Mar. 2016

SCALE: 1"=50'

DRAWING NO.

2A

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

March 15, 2016

Tyler Field
CORNERSTONE ENV. GROUP, LLC.
8413 Excelsior Drive, Ste 160
Madison, WI 53717

RE: Project: GLACIER RIDGE
Pace Project No.: 40129145

Dear Tyler Field:
Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
Project Manager

Enclosures

cc: Nick Sturzl, CQM Inc.

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
Virginia VELAP ID: 460263
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Virginia VELAP Certification ID: 460263
Virginia VELAP ID: 460263
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: GLACIER RIDGE
Pace Project No.: 40129145

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40129145001	**GRL-SS-28**	Solid	03/09/16 10:05	03/09/16 17:30
40129145002	**GRL-SS-29**	Solid	03/09/16 14:45	03/09/16 17:30
40129145003	**GRL-SS-30**	Solid	03/09/16 14:50	03/09/16 17:30
40129145004	**GRL-SS-31**	Solid	03/09/16 14:55	03/09/16 17:30
40129145005	**GRL-SS-32**	Solid	03/09/16 15:00	03/09/16 17:30
40129145006	**GRL-SS-33**	Solid	03/09/16 15:05	03/09/16 17:30
40129145007	**GRL-SS-34**	Solid	03/09/16 15:10	03/09/16 17:30
40129145008	**GRL-SS-35**	Solid	03/09/16 15:15	03/09/16 17:30
40129145009	**GRL-SS-36**	Solid	03/09/16 15:20	03/09/16 17:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: GLACIER RIDGE
Pace Project No.: 40129145

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40129145001	**GRL-SS-28**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145002	**GRL-SS-29**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145003	**GRL-SS-30**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145004	**GRL-SS-31**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145005	**GRL-SS-32**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145006	**GRL-SS-33**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145007	**GRL-SS-34**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145008	**GRL-SS-35**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G
40129145009	**GRL-SS-36**	EPA 6010C	IP	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260	SMT	65	PASI-G

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SUMMARY OF DETECTION

Project: GLACIER RIDGE
Pace Project No.: 40129145

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40129145001	**GRL-SS-28**					
EPA 6010C	Lead	2.0	mg/kg	1.6	03/14/16 08:08	
ASTM D2974	Percent Moisture	12.7	%	0.10	03/14/16 15:52	
EPA 8260	1,1-Dichloroethane	26.1J	ug/kg	60.0	03/11/16 11:47	
40129145002	**GRL-SS-29**					
EPA 6010C	Lead	2.1	mg/kg	1.8	03/14/16 08:31	D3
ASTM D2974	Percent Moisture	10	%	0.10	03/14/16 15:53	
EPA 8260	Ethylbenzene	125	ug/kg	60.0	03/11/16 12:09	
EPA 8260	Toluene	243	ug/kg	60.0	03/11/16 12:09	
EPA 8260	Vinyl chloride	67.3	ug/kg	60.0	03/11/16 12:09	
EPA 8260	m&p-Xylene	331	ug/kg	120	03/11/16 12:09	
EPA 8260	o-Xylene	65.9	ug/kg	60.0	03/11/16 12:09	
40129145003	**GRL-SS-30**					
EPA 6010C	Lead	2.3	mg/kg	1.8	03/14/16 08:34	
ASTM D2974	Percent Moisture	11.7	%	0.10	03/14/16 15:53	
EPA 8260	2-Butanone (MEK)	3620	ug/kg	250	03/11/16 12:32	
EPA 8260	cis-1,2-Dichloroethene	92.4	ug/kg	60.0	03/11/16 12:32	
EPA 8260	Ethylbenzene	27.1J	ug/kg	60.0	03/11/16 12:32	
EPA 8260	Toluene	29.1J	ug/kg	60.0	03/11/16 12:32	
EPA 8260	Vinyl chloride	711	ug/kg	60.0	03/11/16 12:32	
EPA 8260	m&p-Xylene	82.1J	ug/kg	120	03/11/16 12:32	
40129145004	**GRL-SS-31**					
EPA 6010C	Cadmium	0.18J	mg/kg	0.57	03/14/16 08:37	D3
EPA 6010C	Lead	2.6	mg/kg	1.8	03/14/16 08:37	
ASTM D2974	Percent Moisture	11.8	%	0.10	03/14/16 15:53	
EPA 8260	2-Butanone (MEK)	5520	ug/kg	250	03/11/16 12:56	
EPA 8260	cis-1,2-Dichloroethene	267	ug/kg	60.0	03/11/16 12:56	
EPA 8260	Ethylbenzene	86.9	ug/kg	60.0	03/11/16 12:56	
EPA 8260	Isopropylbenzene (Cumene)	54.9J	ug/kg	60.0	03/11/16 12:56	
EPA 8260	Toluene	101	ug/kg	60.0	03/11/16 12:56	
EPA 8260	Trichloroethene	58.8J	ug/kg	60.0	03/11/16 12:56	
EPA 8260	1,2,4-Trimethylbenzene	93.3	ug/kg	60.0	03/11/16 12:56	
EPA 8260	1,3,5-Trimethylbenzene	39.2J	ug/kg	60.0	03/11/16 12:56	
EPA 8260	Vinyl chloride	551	ug/kg	60.0	03/11/16 12:56	
EPA 8260	m&p-Xylene	293	ug/kg	120	03/11/16 12:56	
EPA 8260	o-Xylene	70.9	ug/kg	60.0	03/11/16 12:56	
40129145005	**GRL-SS-32**					
EPA 6010C	Lead	2.7	mg/kg	1.6	03/14/16 08:40	
ASTM D2974	Percent Moisture	11.0	%	0.10	03/14/16 15:53	
EPA 8260	2-Butanone (MEK)	2960	ug/kg	250	03/11/16 13:19	
EPA 8260	n-Butylbenzene	27.5J	ug/kg	60.0	03/11/16 13:19	
EPA 8260	cis-1,2-Dichloroethene	119	ug/kg	60.0	03/11/16 13:19	
EPA 8260	Ethylbenzene	93.7	ug/kg	60.0	03/11/16 13:19	
EPA 8260	Isopropylbenzene (Cumene)	55.7J	ug/kg	60.0	03/11/16 13:19	
EPA 8260	Toluene	80.2	ug/kg	60.0	03/11/16 13:19	
EPA 8260	Trichloroethene	41.0J	ug/kg	60.0	03/11/16 13:19	

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SUMMARY OF DETECTION

Project: GLACIER RIDGE
Pace Project No.: 40129145

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40129145005	**GRL-SS-32**					
EPA 8260	1,2,4-Trimethylbenzene	145	ug/kg	60.0	03/11/16 13:19	
EPA 8260	1,3,5-Trimethylbenzene	55.7J	ug/kg	60.0	03/11/16 13:19	
EPA 8260	Vinyl chloride	35.9J	ug/kg	60.0	03/11/16 13:19	
EPA 8260	m&p-Xylene	352	ug/kg	120	03/11/16 13:19	
EPA 8260	o-Xylene	68.3	ug/kg	60.0	03/11/16 13:19	
40129145006	**GRL-SS-33**					
EPA 6010C	Cadmium	0.18J	mg/kg	0.52	03/14/16 08:44	D3
EPA 6010C	Lead	2.4	mg/kg	1.6	03/14/16 08:44	
ASTM D2974	Percent Moisture	10.1	%	0.10	03/14/16 15:54	
EPA 8260	cis-1,2-Dichloroethene	62.6	ug/kg	60.0	03/11/16 13:42	
40129145007	**GRL-SS-34**					
EPA 6010C	Lead	2.4	mg/kg	1.6	03/14/16 08:47	
ASTM D2974	Percent Moisture	9.7	%	0.10	03/14/16 15:54	
40129145008	**GRL-SS-35**					
EPA 6010C	Lead	1.7J	mg/kg	1.9	03/14/16 08:50	D3
ASTM D2974	Percent Moisture	10.1	%	0.10	03/14/16 15:54	
EPA 8260	cis-1,2-Dichloroethene	84.4	ug/kg	60.0	03/11/16 14:27	
EPA 8260	Ethylbenzene	80.1	ug/kg	60.0	03/11/16 14:27	
EPA 8260	Isopropylbenzene (Cumene)	54.2J	ug/kg	60.0	03/11/16 14:27	
EPA 8260	Toluene	56.4J	ug/kg	60.0	03/11/16 14:27	
EPA 8260	Trichloroethene	52.9J	ug/kg	60.0	03/11/16 14:27	
EPA 8260	1,2,4-Trimethylbenzene	102	ug/kg	60.0	03/11/16 14:27	
EPA 8260	1,3,5-Trimethylbenzene	47.4J	ug/kg	60.0	03/11/16 14:27	
EPA 8260	m&p-Xylene	278	ug/kg	120	03/11/16 14:27	
EPA 8260	o-Xylene	64.6	ug/kg	60.0	03/11/16 14:27	
40129145009	**GRL-SS-36**					
EPA 6010C	Lead	1.9J	mg/kg	2.0	03/14/16 08:53	D3
ASTM D2974	Percent Moisture	12.6	%	0.10	03/14/16 15:54	
EPA 8260	2-Butanone (MEK)	12300	ug/kg	625	03/14/16 11:37	
EPA 8260	cis-1,2-Dichloroethene	453	ug/kg	60.0	03/11/16 11:11	
EPA 8260	1,2,4-Trimethylbenzene	27.5J	ug/kg	60.0	03/11/16 11:11	
EPA 8260	Vinyl chloride	3030	ug/kg	60.0	03/11/16 11:11	

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ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-28 **Lab ID: 40129145001** Collected: 03/09/16 10:05 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.15**	mg/kg	0.51	0.15	5	03/13/16 20:23	03/14/16 08:08	7440-43-9	D3
Lead	**2.0**	mg/kg	1.6	0.48	5	03/13/16 20:23	03/14/16 08:08	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**12.7**	%	0.10	0.10	1		03/14/16 15:52		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 11:47	74-83-9	W
2-Butanone (MEK)	**<107**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 11:47	78-93-3	W
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 11:47	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 11:47	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 11:47	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-71-8	W
1,1-Dichloroethane	**26.1J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-34-3	
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	100-41-4	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-28 **Lab ID: 40129145001** Collected: 03/09/16 10:05 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 11:47	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	108-88-3	W
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 11:47	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 11:47	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 11:47	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	118	%	49-157		1	03/11/16 07:00	03/11/16 11:47	1868-53-7	
Toluene-d8 (S)	104	%	61-148		1	03/11/16 07:00	03/11/16 11:47	2037-26-5	
4-Bromofluorobenzene (S)	89	%	53-134		1	03/11/16 07:00	03/11/16 11:47	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-29 **Lab ID: 40129145002** Collected: 03/09/16 14:45 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.17**	mg/kg	0.57	0.17	5	03/13/16 20:23	03/14/16 08:31	7440-43-9	D3
Lead	**2.1**	mg/kg	1.8	0.54	5	03/13/16 20:23	03/14/16 08:31	7439-92-1	D3
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**10**	%	0.10	0.10	1		03/14/16 15:53		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 12:09	74-83-9	W
2-Butanone (MEK)	**<107**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 12:09	78-93-3	W
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 12:09	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 12:09	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 12:09	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	108-20-3	W
Ethylbenzene	**125**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	100-41-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-29 **Lab ID: 40129145002** Collected: 03/09/16 14:45 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 12:09	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	127-18-4	W
Toluene	**243**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	108-88-3	
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 12:09	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	108-67-8	W
Vinyl chloride	**67.3**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	75-01-4	
m&p-Xylene	**331**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 12:09	179601-23-1	
o-Xylene	**65.9**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:09	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	49-157		1	03/11/16 07:00	03/11/16 12:09	1868-53-7	
Toluene-d8 (S)	111	%	61-148		1	03/11/16 07:00	03/11/16 12:09	2037-26-5	
4-Bromofluorobenzene (S)	89	%	53-134		1	03/11/16 07:00	03/11/16 12:09	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-30 **Lab ID: 40129145003** Collected: 03/09/16 14:50 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.17**	mg/kg	0.56	0.17	5	03/13/16 20:23	03/14/16 08:34	7440-43-9	D3
Lead	**2.3**	mg/kg	1.8	0.54	5	03/13/16 20:23	03/14/16 08:34	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**11.7**	%	0.10	0.10	1		03/14/16 15:53		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 12:32	74-83-9	W
2-Butanone (MEK)	**3620**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 12:32	78-93-3	
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 12:32	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 12:32	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 12:32	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-35-4	W
cis-1,2-Dichloroethene	**92.4**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	108-20-3	W
Ethylbenzene	**27.1J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	100-41-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-30 **Lab ID: 40129145003** Collected: 03/09/16 14:50 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 12:32	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	127-18-4	W
Toluene	**29.1J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	108-88-3	
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 12:32	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	108-67-8	W
Vinyl chloride	**711**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	75-01-4	
m&p-Xylene	**82.1J**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 12:32	179601-23-1	
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:32	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	121	%	49-157		1	03/11/16 07:00	03/11/16 12:32	1868-53-7	
Toluene-d8 (S)	113	%	61-148		1	03/11/16 07:00	03/11/16 12:32	2037-26-5	
4-Bromofluorobenzene (S)	97	%	53-134		1	03/11/16 07:00	03/11/16 12:32	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-31 **Lab ID: 40129145004** Collected: 03/09/16 14:55 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**0.18J**	mg/kg	0.57	0.17	5	03/13/16 20:23	03/14/16 08:37	7440-43-9	D3
Lead	**2.6**	mg/kg	1.8	0.54	5	03/13/16 20:23	03/14/16 08:37	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**11.8**	%	0.10	0.10	1		03/14/16 15:53		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 12:56	74-83-9	W
2-Butanone (MEK)	**5520**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 12:56	78-93-3	
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 12:56	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 12:56	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 12:56	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-35-4	W
cis-1,2-Dichloroethene	**267**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	108-20-3	W
Ethylbenzene	**86.9**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	100-41-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-31 **Lab ID: 40129145004** Collected: 03/09/16 14:55 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	87-68-3	W
Isopropylbenzene (Cumene)	**54.9J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	98-82-8	
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 12:56	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	127-18-4	W
Toluene	**101**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	108-88-3	
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 12:56	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	79-00-5	W
Trichloroethene	**58.8J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	79-01-6	
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	96-18-4	W
1,2,4-Trimethylbenzene	**93.3**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	95-63-6	
1,3,5-Trimethylbenzene	**39.2J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	108-67-8	
Vinyl chloride	**551**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	75-01-4	
m&p-Xylene	**293**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 12:56	179601-23-1	
o-Xylene	**70.9**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 12:56	95-47-6	
Surrogates									
Dibromofluoromethane (S)	114	%	49-157		1	03/11/16 07:00	03/11/16 12:56	1868-53-7	
Toluene-d8 (S)	107	%	61-148		1	03/11/16 07:00	03/11/16 12:56	2037-26-5	
4-Bromofluorobenzene (S)	93	%	53-134		1	03/11/16 07:00	03/11/16 12:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-32 **Lab ID: 40129145005** Collected: 03/09/16 15:00 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.15**	mg/kg	0.51	0.15	5	03/13/16 20:23	03/14/16 08:40	7440-43-9	D3
Lead	**2.7**	mg/kg	1.6	0.49	5	03/13/16 20:23	03/14/16 08:40	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**11.0**	%	0.10	0.10	1		03/14/16 15:53		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 13:19	74-83-9	W
2-Butanone (MEK)	**2960**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 13:19	78-93-3	
n-Butylbenzene	**27.5J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	104-51-8	
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 13:19	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 13:19	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 13:19	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-35-4	W
cis-1,2-Dichloroethene	**119**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	108-20-3	W
Ethylbenzene	**93.7**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	100-41-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-32 **Lab ID: 40129145005** Collected: 03/09/16 15:00 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	87-68-3	W
Isopropylbenzene (Cumene)	**55.7J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	98-82-8	
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 13:19	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	127-18-4	W
Toluene	**80.2**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	108-88-3	
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 13:19	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	79-00-5	W
Trichloroethene	**41.0J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	79-01-6	
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	96-18-4	W
1,2,4-Trimethylbenzene	**145**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	95-63-6	
1,3,5-Trimethylbenzene	**55.7J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	108-67-8	
Vinyl chloride	**35.9J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	75-01-4	
m&p-Xylene	**352**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 13:19	179601-23-1	
o-Xylene	**68.3**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	124	%	49-157		1	03/11/16 07:00	03/11/16 13:19	1868-53-7	
Toluene-d8 (S)	114	%	61-148		1	03/11/16 07:00	03/11/16 13:19	2037-26-5	
4-Bromofluorobenzene (S)	101	%	53-134		1	03/11/16 07:00	03/11/16 13:19	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-33 **Lab ID: 40129145006** Collected: 03/09/16 15:05 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**0.18J**	mg/kg	0.52	0.16	5	03/13/16 20:23	03/14/16 08:44	7440-43-9	D3
Lead	**2.4**	mg/kg	1.6	0.49	5	03/13/16 20:23	03/14/16 08:44	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**10.1**	%	0.10	0.10	1		03/14/16 15:54		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 13:42	74-83-9	W
2-Butanone (MEK)	**<107**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 13:42	78-93-3	W
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 13:42	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 13:42	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 13:42	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-35-4	W
cis-1,2-Dichloroethene	**62.6**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	100-41-4	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-33 **Lab ID: 40129145006** Collected: 03/09/16 15:05 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 13:42	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	108-88-3	W
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 13:42	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 13:42	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 13:42	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	128	%	49-157		1	03/11/16 07:00	03/11/16 13:42	1868-53-7	
Toluene-d8 (S)	115	%	61-148		1	03/11/16 07:00	03/11/16 13:42	2037-26-5	
4-Bromofluorobenzene (S)	96	%	53-134		1	03/11/16 07:00	03/11/16 13:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-34 **Lab ID: 40129145007** Collected: 03/09/16 15:10 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.15**	mg/kg	0.50	0.15	5	03/13/16 20:23	03/14/16 08:47	7440-43-9	D3
Lead	**2.4**	mg/kg	1.6	0.48	5	03/13/16 20:23	03/14/16 08:47	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**9.7**	%	0.10	0.10	1		03/14/16 15:54		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 14:04	74-83-9	W
2-Butanone (MEK)	**<107**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 14:04	78-93-3	W
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 14:04	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 14:04	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 14:04	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	100-41-4	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-34 **Lab ID: 40129145007** Collected: 03/09/16 15:10 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 14:04	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	108-88-3	W
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 14:04	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 14:04	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:04	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	118	%	49-157		1	03/11/16 07:00	03/11/16 14:04	1868-53-7	
Toluene-d8 (S)	112	%	61-148		1	03/11/16 07:00	03/11/16 14:04	2037-26-5	
4-Bromofluorobenzene (S)	93	%	53-134		1	03/11/16 07:00	03/11/16 14:04	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-35 **Lab ID: 40129145008** Collected: 03/09/16 15:15 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.18**	mg/kg	0.59	0.18	5	03/13/16 20:23	03/14/16 08:50	7440-43-9	D3
Lead	**1.7J**	mg/kg	1.9	0.56	5	03/13/16 20:23	03/14/16 08:50	7439-92-1	D3
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**10.1**	%	0.10	0.10	1		03/14/16 15:54		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:00	03/11/16 14:27	74-83-9	W
2-Butanone (MEK)	**<107**	ug/kg	250	107	1	03/11/16 07:00	03/11/16 14:27	78-93-3	W
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:00	03/11/16 14:27	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:00	03/11/16 14:27	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:00	03/11/16 14:27	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-35-4	W
cis-1,2-Dichloroethene	**84.4**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	108-20-3	W
Ethylbenzene	**80.1**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	100-41-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-35 **Lab ID: 40129145008** Collected: 03/09/16 15:15 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	87-68-3	W
Isopropylbenzene (Cumene)	**54.2J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	98-82-8	
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	1634-04-4	W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:00	03/11/16 14:27	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	127-18-4	W
Toluene	**56.4J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	108-88-3	
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:00	03/11/16 14:27	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	79-00-5	W
Trichloroethene	**52.9J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	79-01-6	
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	96-18-4	W
1,2,4-Trimethylbenzene	**102**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	95-63-6	
1,3,5-Trimethylbenzene	**47.4J**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	108-67-8	
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	75-01-4	W
m&p-Xylene	**278**	ug/kg	120	50.0	1	03/11/16 07:00	03/11/16 14:27	179601-23-1	
o-Xylene	**64.6**	ug/kg	60.0	25.0	1	03/11/16 07:00	03/11/16 14:27	95-47-6	
Surrogates									
Dibromofluoromethane (S)	122	%	49-157		1	03/11/16 07:00	03/11/16 14:27	1868-53-7	
Toluene-d8 (S)	115	%	61-148		1	03/11/16 07:00	03/11/16 14:27	2037-26-5	
4-Bromofluorobenzene (S)	104	%	53-134		1	03/11/16 07:00	03/11/16 14:27	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-36 **Lab ID: 40129145009** Collected: 03/09/16 15:20 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Cadmium	**<0.19**	mg/kg	0.64	0.19	5	03/13/16 20:23	03/14/16 08:53	7440-43-9	D3
Lead	**1.9J**	mg/kg	2.0	0.61	5	03/13/16 20:23	03/14/16 08:53	7439-92-1	D3
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**12.6**	%	0.10	0.10	1		03/14/16 15:54		
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-27-4	W
Bromoform	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-25-2	W
Bromomethane	**<69.9**	ug/kg	250	69.9	1	03/11/16 07:30	03/11/16 11:11	74-83-9	W
2-Butanone (MEK)	**12300**	ug/kg	625	267	2.5	03/11/16 07:30	03/14/16 11:37	78-93-3	
n-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	108-90-7	W
Chloroethane	**<67.0**	ug/kg	250	67.0	1	03/11/16 07:30	03/11/16 11:11	75-00-3	W
Chloroform	**<46.4**	ug/kg	250	46.4	1	03/11/16 07:30	03/11/16 11:11	67-66-3	W
Chloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	106-43-4	W
1,2-Dibromo-3-chloropropane	**<91.2**	ug/kg	250	91.2	1	03/11/16 07:30	03/11/16 11:11	96-12-8	W
Dibromochloromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-35-4	R1,W
cis-1,2-Dichloroethene	**453**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	156-59-2	
trans-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	156-60-5	R1,W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	563-58-6	W
cis-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	100-41-4	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: GLACIER RIDGE
Pace Project No.: 40129145

Sample: GRL-SS-36 **Lab ID: 40129145009** Collected: 03/09/16 15:20 Received: 03/09/16 17:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Hexachloro-1,3-butadiene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	99-87-6	W
Methylene Chloride	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-09-2	R1,W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	1634-04-4	R1,W
Naphthalene	**<40.0**	ug/kg	250	40.0	1	03/11/16 07:30	03/11/16 11:11	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	103-65-1	W
Styrene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	79-34-5	W
Tetrachloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	108-88-3	R1,W
1,2,3-Trichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	87-61-6	W
1,2,4-Trichlorobenzene	**<47.6**	ug/kg	250	47.6	1	03/11/16 07:30	03/11/16 11:11	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-69-4	W
1,2,3-Trichloropropane	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	96-18-4	W
1,2,4-Trimethylbenzene	**27.5J**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	95-63-6	
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	108-67-8	W
Vinyl chloride	**3030**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	75-01-4	
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	03/11/16 07:30	03/11/16 11:11	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	03/11/16 07:30	03/11/16 11:11	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	107	%	49-157		1	03/11/16 07:30	03/11/16 11:11	1868-53-7	
Toluene-d8 (S)	118	%	61-148		1	03/11/16 07:30	03/11/16 11:11	2037-26-5	
4-Bromofluorobenzene (S)	102	%	53-134		1	03/11/16 07:30	03/11/16 11:11	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

QC Batch: MPRP/61937 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008, 40129145009

METHOD BLANK: 2207906 Matrix: Solid
Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008, 40129145009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	mg/kg	<0.033	0.11	03/14/16 06:55	
Lead	mg/kg	<0.11	0.35	03/14/16 06:55	

LABORATORY CONTROL SAMPLE: 2207907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	mg/kg	45.5	45.7	101	80-120	
Lead	mg/kg	45.5	46.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2207908 2207909

Parameter	Units	40129145001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	mg/kg	<0.15	48.6	50.3	50.7	51.5	104	102	75-125	2	20	
Lead	mg/kg	2.0	48.6	50.3	50.2	49.8	99	95	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

QC Batch: MPRP/61992 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008, 40129145009

SAMPLE DUPLICATE: 2209536

Parameter	Units	40129145001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.7	13.0	2	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
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(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

QC Batch: MSV/32526 Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B Analysis Description: 8260 MSV Med Level Normal List
Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008

METHOD BLANK: 1305028 Matrix: Solid
Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	03/11/16 08:42	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	03/11/16 08:42	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	03/11/16 08:42	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	03/11/16 08:42	
1,1-Dichloroethane	ug/kg	<17.6	50.0	03/11/16 08:42	
1,1-Dichloroethene	ug/kg	<17.6	50.0	03/11/16 08:42	
1,1-Dichloropropene	ug/kg	<14.0	50.0	03/11/16 08:42	
1,2,3-Trichlorobenzene	ug/kg	<17.0	50.0	03/11/16 08:42	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	03/11/16 08:42	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	03/11/16 08:42	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	03/11/16 08:42	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	03/11/16 08:42	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	03/11/16 08:42	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	03/11/16 08:42	
1,2-Dichloroethane	ug/kg	<15.0	50.0	03/11/16 08:42	
1,2-Dichloropropane	ug/kg	<16.8	50.0	03/11/16 08:42	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	03/11/16 08:42	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	03/11/16 08:42	
1,3-Dichloropropane	ug/kg	<12.0	50.0	03/11/16 08:42	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	03/11/16 08:42	
2,2-Dichloropropane	ug/kg	<12.6	50.0	03/11/16 08:42	
2-Butanone (MEK)	ug/kg	<124	250	03/11/16 08:42	
2-Chlorotoluene	ug/kg	<15.8	50.0	03/11/16 08:42	
4-Chlorotoluene	ug/kg	<13.0	50.0	03/11/16 08:42	
Benzene	ug/kg	<9.2	20.0	03/11/16 08:42	
Bromobenzene	ug/kg	<20.6	50.0	03/11/16 08:42	
Bromochloromethane	ug/kg	<21.4	50.0	03/11/16 08:42	
Bromodichloromethane	ug/kg	<9.8	50.0	03/11/16 08:42	
Bromoform	ug/kg	<19.8	50.0	03/11/16 08:42	
Bromomethane	ug/kg	<69.9	250	03/11/16 08:42	
Carbon tetrachloride	ug/kg	<12.1	50.0	03/11/16 08:42	
Chlorobenzene	ug/kg	<14.8	50.0	03/11/16 08:42	
Chloroethane	ug/kg	<67.0	250	03/11/16 08:42	
Chloroform	ug/kg	<46.4	250	03/11/16 08:42	
Chloromethane	ug/kg	<20.4	50.0	03/11/16 08:42	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	03/11/16 08:42	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	03/11/16 08:42	
Dibromochloromethane	ug/kg	<17.9	50.0	03/11/16 08:42	
Dibromomethane	ug/kg	<19.3	50.0	03/11/16 08:42	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	03/11/16 08:42	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

METHOD BLANK: 1305028 Matrix: Solid

Associated Lab Samples: 40129145001, 40129145002, 40129145003, 40129145004, 40129145005, 40129145006, 40129145007, 40129145008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	<17.7	50.0	03/11/16 08:42	
Ethylbenzene	ug/kg	<12.4	50.0	03/11/16 08:42	
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	03/11/16 08:42	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	03/11/16 08:42	
m&p-Xylene	ug/kg	<34.4	100	03/11/16 08:42	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	03/11/16 08:42	
Methylene Chloride	ug/kg	<16.2	50.0	03/11/16 08:42	
n-Butylbenzene	ug/kg	<10.5	50.0	03/11/16 08:42	
n-Propylbenzene	ug/kg	<11.6	50.0	03/11/16 08:42	
Naphthalene	ug/kg	<40.0	250	03/11/16 08:42	
o-Xylene	ug/kg	<14.0	50.0	03/11/16 08:42	
p-Isopropyltoluene	ug/kg	<12.0	50.0	03/11/16 08:42	
sec-Butylbenzene	ug/kg	<11.9	50.0	03/11/16 08:42	
Styrene	ug/kg	<9.0	50.0	03/11/16 08:42	
tert-Butylbenzene	ug/kg	<9.5	50.0	03/11/16 08:42	
Tetrachloroethene	ug/kg	<12.9	50.0	03/11/16 08:42	
Toluene	ug/kg	<11.2	50.0	03/11/16 08:42	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	03/11/16 08:42	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	03/11/16 08:42	
Trichloroethene	ug/kg	<23.6	50.0	03/11/16 08:42	
Trichlorofluoromethane	ug/kg	<24.7	50.0	03/11/16 08:42	
Vinyl chloride	ug/kg	<21.1	50.0	03/11/16 08:42	
4-Bromofluorobenzene (S)	%	85	53-134	03/11/16 08:42	
Dibromofluoromethane (S)	%	112	49-157	03/11/16 08:42	
Toluene-d8 (S)	%	101	61-148	03/11/16 08:42	

LABORATORY CONTROL SAMPLE: 1305029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2330	93	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2420	97	70-130	
1,1,2-Trichloroethane	ug/kg	2500	2440	98	70-130	
1,1-Dichloroethane	ug/kg	2500	2380	95	70-130	
1,1-Dichloroethene	ug/kg	2500	2400	96	70-132	
1,2,4-Trichlorobenzene	ug/kg	2500	2230	89	70-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2540	102	45-150	
1,2-Dibromoethane (EDB)	ug/kg	2500	2360	95	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2300	92	70-130	
1,2-Dichloroethane	ug/kg	2500	2440	98	70-134	
1,2-Dichloropropane	ug/kg	2500	2670	107	70-130	
1,3-Dichlorobenzene	ug/kg	2500	2340	93	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2330	93	70-130	
Benzene	ug/kg	2500	2310	92	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

LABORATORY CONTROL SAMPLE: 1305029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromodichloromethane	ug/kg	2500	2740	109	70-130	
Bromoform	ug/kg	2500	2260	90	48-130	
Bromomethane	ug/kg	2500	2260	90	70-169	
Carbon tetrachloride	ug/kg	2500	2440	98	67-130	
Chlorobenzene	ug/kg	2500	2490	100	70-130	
Chloroethane	ug/kg	2500	2180	87	70-191	
Chloroform	ug/kg	2500	2400	96	70-130	
Chloromethane	ug/kg	2500	1910	76	52-132	
cis-1,2-Dichloroethene	ug/kg	2500	2240	90	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2620	105	70-130	
Dibromochloromethane	ug/kg	2500	2500	100	65-130	
Dichlorodifluoromethane	ug/kg	2500	1620	65	12-150	
Ethylbenzene	ug/kg	2500	2490	100	70-130	
Isopropylbenzene (Cumene)	ug/kg	2500	2340	94	70-130	
m&p-Xylene	ug/kg	5000	5140	103	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2350	94	70-130	
Methylene Chloride	ug/kg	2500	2220	89	70-131	
o-Xylene	ug/kg	2500	2510	100	70-130	
Styrene	ug/kg	2500	2370	95	70-130	
Tetrachloroethene	ug/kg	2500	2520	101	70-130	
Toluene	ug/kg	2500	2570	103	70-130	
trans-1,2-Dichloroethene	ug/kg	2500	2220	89	69-130	
trans-1,3-Dichloropropene	ug/kg	2500	2550	102	65-130	
Trichloroethene	ug/kg	2500	2590	104	70-130	
Trichlorofluoromethane	ug/kg	2500	2080	83	50-150	
Vinyl chloride	ug/kg	2500	1960	79	67-134	
4-Bromofluorobenzene (S)	%			93	53-134	
Dibromofluoromethane (S)	%			97	49-157	
Toluene-d8 (S)	%			99	61-148	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1305030 1305031

Parameter	Units	40129114001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	<0.025 mg/kg	1250	1250	1080	1060	87	85	63-130	3	20	
1,1,2,2-Tetrachloroethane	ug/kg	<0.025 mg/kg	1250	1250	1180	1180	94	94	57-136	0	20	
1,1,2-Trichloroethane	ug/kg	<0.025 mg/kg	1250	1250	1180	1190	95	95	70-130	0	20	
1,1-Dichloroethane	ug/kg	<0.025 mg/kg	1250	1250	1160	1150	93	92	62-131	1	23	
1,1-Dichloroethene	ug/kg	<0.025 mg/kg	1250	1250	978	971	78	78	42-137	1	20	
1,2,4-Trichlorobenzene	ug/kg	<0.048 mg/kg	1250	1250	1200	1230	96	98	59-137	2	21	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1305030 1305031

Parameter	Units	40129114001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromo-3-chloropropane	ug/kg	<0.091 mg/kg	1250	1250	1250	1400	100	112	33-150	12	25	
1,2-Dibromoethane (EDB)	ug/kg	<0.025 mg/kg	1250	1250	1180	1180	95	94	70-130	0	20	
1,2-Dichlorobenzene	ug/kg	<0.025 mg/kg	1250	1250	1220	1210	98	97	70-130	1	20	
1,2-Dichloroethane	ug/kg	<0.025 mg/kg	1250	1250	1210	1310	97	105	68-134	8	20	
1,2-Dichloropropane	ug/kg	<0.025 mg/kg	1250	1250	1270	1300	102	104	70-130	2	20	
1,3-Dichlorobenzene	ug/kg	<0.025 mg/kg	1250	1250	1170	1160	94	93	70-130	1	20	
1,4-Dichlorobenzene	ug/kg	<0.025 mg/kg	1250	1250	1170	1250	94	100	69-130	6	20	
Benzene	ug/kg	<0.025 mg/kg	1250	1250	1160	1200	93	96	56-131	3	20	
Bromodichloromethane	ug/kg	<0.025 mg/kg	1250	1250	1290	1300	103	104	64-130	1	20	
Bromoform	ug/kg	<0.025 mg/kg	1250	1250	1150	1120	92	90	48-130	2	20	
Bromomethane	ug/kg	<0.070 mg/kg	1250	1250	1030	1200	83	96	18-169	15	23	
Carbon tetrachloride	ug/kg	<0.025 mg/kg	1250	1250	1070	1080	85	87	59-130	1	20	
Chlorobenzene	ug/kg	<0.025 mg/kg	1250	1250	1190	1200	95	96	70-130	1	20	
Chloroethane	ug/kg	<0.067 mg/kg	1250	1250	1040	1020	83	82	10-191	1	20	
Chloroform	ug/kg	<0.046 mg/kg	1250	1250	1220	1260	97	101	65-130	4	20	
Chloromethane	ug/kg	<0.025 mg/kg	1250	1250	784	871	63	70	36-132	10	20	
cis-1,2-Dichloroethene	ug/kg	<0.025 mg/kg	1250	1250	1120	1180	90	94	59-136	5	24	
cis-1,3-Dichloropropene	ug/kg	<0.025 mg/kg	1250	1250	1190	1260	95	101	60-130	6	20	
Dibromochloromethane	ug/kg	<0.025 mg/kg	1250	1250	1200	1200	96	96	59-130	0	20	
Dichlorodifluoromethane	ug/kg	<0.025 mg/kg	1250	1250	665	588	53	47	10-150	12	27	
Ethylbenzene	ug/kg	<0.025 mg/kg	1250	1250	1110	1110	88	88	64-130	0	20	
Isopropylbenzene (Cumene)	ug/kg	<0.025 mg/kg	1250	1250	1030	1000	82	80	69-138	2	20	
m&p-Xylene	ug/kg	<0.050 mg/kg	2500	2500	2370	2310	94	91	61-130	3	20	
Methyl-tert-butyl ether	ug/kg	<0.025 mg/kg	1250	1250	1190	1220	95	97	52-134	2	20	
Methylene Chloride	ug/kg	<0.025 mg/kg	1250	1250	1260	1210	100	96	61-131	4	20	
o-Xylene	ug/kg	<0.025 mg/kg	1250	1250	1140	1180	90	93	63-130	3	20	
Styrene	ug/kg	<0.025 mg/kg	1250	1250	1140	1150	91	92	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1305030 1305031

Parameter	Units	40129114001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Tetrachloroethene	ug/kg	<0.025 mg/kg	1250	1250	1070	1070	85	85	65-130	0	20	
Toluene	ug/kg	<0.025 mg/kg	1250	1250	1210	1190	96	94	65-130	2	20	
trans-1,2-Dichloroethene	ug/kg	<0.025 mg/kg	1250	1250	1140	1120	91	90	55-130	1	20	
trans-1,3-Dichloropropene	ug/kg	<0.025 mg/kg	1250	1250	1220	1270	98	102	54-130	4	20	
Trichloroethene	ug/kg	<0.025 mg/kg	1250	1250	1190	1140	96	91	70-130	4	20	
Trichlorofluoromethane	ug/kg	<0.025 mg/kg	1250	1250	860	820	67	64	42-150	5	24	
Vinyl chloride	ug/kg	<0.025 mg/kg	1250	1250	847	792	68	63	35-134	7	20	
4-Bromofluorobenzene (S)	%						95	95	53-134			
Dibromofluoromethane (S)	%						104	109	49-157			
Toluene-d8 (S)	%						101	100	61-148			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

QC Batch: MSV/32528
QC Batch Method: EPA 5035/5030B
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Med Level Normal List
Associated Lab Samples: 40129145009

METHOD BLANK: 1305068
Matrix: Solid
Associated Lab Samples: 40129145009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	03/11/16 08:43	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	03/11/16 08:43	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	03/11/16 08:43	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	03/11/16 08:43	
1,1-Dichloroethane	ug/kg	<17.6	50.0	03/11/16 08:43	
1,1-Dichloroethene	ug/kg	<17.6	50.0	03/11/16 08:43	
1,1-Dichloropropene	ug/kg	<14.0	50.0	03/11/16 08:43	
1,2,3-Trichlorobenzene	ug/kg	23.3J	50.0	03/11/16 08:43	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	03/11/16 08:43	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	03/11/16 08:43	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	03/11/16 08:43	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	03/11/16 08:43	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	03/11/16 08:43	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	03/11/16 08:43	
1,2-Dichloroethane	ug/kg	<15.0	50.0	03/11/16 08:43	
1,2-Dichloropropane	ug/kg	<16.8	50.0	03/11/16 08:43	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	03/11/16 08:43	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	03/11/16 08:43	
1,3-Dichloropropane	ug/kg	<12.0	50.0	03/11/16 08:43	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	03/11/16 08:43	
2,2-Dichloropropane	ug/kg	<12.6	50.0	03/11/16 08:43	
2-Butanone (MEK)	ug/kg	<124	250	03/11/16 08:43	
2-Chlorotoluene	ug/kg	<15.8	50.0	03/11/16 08:43	
4-Chlorotoluene	ug/kg	<13.0	50.0	03/11/16 08:43	
Benzene	ug/kg	<9.2	20.0	03/11/16 08:43	
Bromobenzene	ug/kg	<20.6	50.0	03/11/16 08:43	
Bromochloromethane	ug/kg	<21.4	50.0	03/11/16 08:43	
Bromodichloromethane	ug/kg	<9.8	50.0	03/11/16 08:43	
Bromoform	ug/kg	<19.8	50.0	03/11/16 08:43	
Bromomethane	ug/kg	<69.9	250	03/11/16 08:43	
Carbon tetrachloride	ug/kg	<12.1	50.0	03/11/16 08:43	
Chlorobenzene	ug/kg	<14.8	50.0	03/11/16 08:43	
Chloroethane	ug/kg	<67.0	250	03/11/16 08:43	
Chloroform	ug/kg	<46.4	250	03/11/16 08:43	
Chloromethane	ug/kg	<20.4	50.0	03/11/16 08:43	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	03/11/16 08:43	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	03/11/16 08:43	
Dibromochloromethane	ug/kg	<17.9	50.0	03/11/16 08:43	
Dibromomethane	ug/kg	<19.3	50.0	03/11/16 08:43	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	03/11/16 08:43	
Diisopropyl ether	ug/kg	<17.7	50.0	03/11/16 08:43	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

METHOD BLANK: 1305068 Matrix: Solid
Associated Lab Samples: 40129145009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/kg	<12.4	50.0	03/11/16 08:43	
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	03/11/16 08:43	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	03/11/16 08:43	
m&p-Xylene	ug/kg	<34.4	100	03/11/16 08:43	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	03/11/16 08:43	
Methylene Chloride	ug/kg	<16.2	50.0	03/11/16 08:43	
n-Butylbenzene	ug/kg	<10.5	50.0	03/11/16 08:43	
n-Propylbenzene	ug/kg	<11.6	50.0	03/11/16 08:43	
Naphthalene	ug/kg	<40.0	250	03/11/16 08:43	
o-Xylene	ug/kg	<14.0	50.0	03/11/16 08:43	
p-Isopropyltoluene	ug/kg	<12.0	50.0	03/11/16 08:43	
sec-Butylbenzene	ug/kg	<11.9	50.0	03/11/16 08:43	
Styrene	ug/kg	<9.0	50.0	03/11/16 08:43	
tert-Butylbenzene	ug/kg	<9.5	50.0	03/11/16 08:43	
Tetrachloroethene	ug/kg	<12.9	50.0	03/11/16 08:43	
Toluene	ug/kg	<11.2	50.0	03/11/16 08:43	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	03/11/16 08:43	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	03/11/16 08:43	
Trichloroethene	ug/kg	<23.6	50.0	03/11/16 08:43	
Trichlorofluoromethane	ug/kg	<24.7	50.0	03/11/16 08:43	
Vinyl chloride	ug/kg	<21.1	50.0	03/11/16 08:43	
4-Bromofluorobenzene (S)	%	99	53-134	03/11/16 08:43	
Dibromofluoromethane (S)	%	105	49-157	03/11/16 08:43	
Toluene-d8 (S)	%	93	61-148	03/11/16 08:43	

LABORATORY CONTROL SAMPLE: 1305069

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2580	103	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2690	108	70-130	
1,1,2-Trichloroethane	ug/kg	2500	2730	109	70-130	
1,1-Dichloroethane	ug/kg	2500	1970	79	70-130	
1,1-Dichloroethene	ug/kg	2500	1940	78	70-132	
1,2,4-Trichlorobenzene	ug/kg	2500	2430	97	70-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2190	88	45-150	
1,2-Dibromoethane (EDB)	ug/kg	2500	2720	109	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2580	103	70-130	
1,2-Dichloroethane	ug/kg	2500	2570	103	70-134	
1,2-Dichloropropane	ug/kg	2500	2800	112	70-130	
1,3-Dichlorobenzene	ug/kg	2500	2550	102	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2560	102	70-130	
Benzene	ug/kg	2500	2780	111	70-130	
Bromodichloromethane	ug/kg	2500	2410	97	70-130	
Bromoform	ug/kg	2500	2190	88	48-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

LABORATORY CONTROL SAMPLE: 1305069

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2380	95	70-169	
Carbon tetrachloride	ug/kg	2500	2460	98	67-130	
Chlorobenzene	ug/kg	2500	2740	109	70-130	
Chloroethane	ug/kg	2500	2280	91	70-191	
Chloroform	ug/kg	2500	2590	104	70-130	
Chloromethane	ug/kg	2500	2300	92	52-132	
cis-1,2-Dichloroethene	ug/kg	2500	2650	106	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2450	98	70-130	
Dibromochloromethane	ug/kg	2500	2390	95	65-130	
Dichlorodifluoromethane	ug/kg	2500	1440	58	12-150	
Ethylbenzene	ug/kg	2500	2820	113	70-130	
Isopropylbenzene (Cumene)	ug/kg	2500	2840	114	70-130	
m&p-Xylene	ug/kg	5000	5770	115	70-130	
Methyl-tert-butyl ether	ug/kg	2500	1940	78	70-130	
Methylene Chloride	ug/kg	2500	2110	84	70-131	
o-Xylene	ug/kg	2500	2800	112	70-130	
Styrene	ug/kg	2500	2980	119	70-130	
Tetrachloroethene	ug/kg	2500	2460	98	70-130	
Toluene	ug/kg	2500	2920	117	70-130	
trans-1,2-Dichloroethene	ug/kg	2500	2110	84	69-130	
trans-1,3-Dichloropropene	ug/kg	2500	2520	101	65-130	
Trichloroethene	ug/kg	2500	2610	104	70-130	
Trichlorofluoromethane	ug/kg	2500	2260	91	50-150	
Vinyl chloride	ug/kg	2500	2490	99	67-134	
4-Bromofluorobenzene (S)	%			104	53-134	
Dibromofluoromethane (S)	%			104	49-157	
Toluene-d8 (S)	%			113	61-148	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1305070 1305071

Parameter	Units	40129145009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	<25.0	1250	1250	1160	1170	93	94	63-130	1	20	
1,1,2,2-Tetrachloroethane	ug/kg	<25.0	1250	1250	1360	1320	109	106	57-136	3	20	
1,1,2-Trichloroethane	ug/kg	<25.0	1250	1250	1330	1320	106	105	70-130	1	20	
1,1-Dichloroethane	ug/kg	<25.0	1250	1250	1080	1360	86	108	62-131	23	23	
1,1-Dichloroethene	ug/kg	<25.0	1250	1250	1220	838	97	67	42-137	37	20	R1
1,2,4-Trichlorobenzene	ug/kg	<47.6	1250	1250	1320	1330	104	105	59-137	1	21	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	1250	1250	1230	1240	98	99	33-150	1	25	
1,2-Dibromoethane (EDB)	ug/kg	<25.0	1250	1250	1240	1250	99	100	70-130	0	20	
1,2-Dichlorobenzene	ug/kg	<25.0	1250	1250	1320	1310	105	105	70-130	1	20	
1,2-Dichloroethane	ug/kg	<25.0	1250	1250	1160	1280	93	103	68-134	10	20	
1,2-Dichloropropane	ug/kg	<25.0	1250	1250	1150	1390	92	111	70-130	19	20	
1,3-Dichlorobenzene	ug/kg	<25.0	1250	1250	1270	1260	101	101	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: GLACIER RIDGE
Pace Project No.: 40129145

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1305070 1305071

Parameter	Units	40129145009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/kg	<25.0	1250	1250	1310	1300	105	104	69-130	1	20	
Benzene	ug/kg	<25.0	1250	1250	1130	1380	90	110	56-131	20	20	
Bromodichloromethane	ug/kg	<25.0	1250	1250	1230	1230	98	98	64-130	0	20	
Bromoform	ug/kg	<25.0	1250	1250	1130	1140	90	91	48-130	1	20	
Bromomethane	ug/kg	<69.9	1250	1250	1080	1120	87	90	18-169	4	23	
Carbon tetrachloride	ug/kg	<25.0	1250	1250	1190	1090	96	88	59-130	9	20	
Chlorobenzene	ug/kg	<25.0	1250	1250	1300	1290	104	103	70-130	1	20	
Chloroethane	ug/kg	<67.0	1250	1250	1070	984	85	79	10-191	8	20	
Chloroform	ug/kg	<46.4	1250	1250	1190	1300	95	104	65-130	8	20	
Chloromethane	ug/kg	<25.0	1250	1250	1040	1030	83	82	36-132	1	20	
cis-1,2-Dichloroethene	ug/kg	453	1250	1250	1590	1740	91	103	59-136	9	24	
cis-1,3-Dichloropropene	ug/kg	<25.0	1250	1250	1170	1250	93	100	60-130	7	20	
Dibromochloromethane	ug/kg	<25.0	1250	1250	1180	1220	94	98	59-130	4	20	
Dichlorodifluoromethane	ug/kg	<25.0	1250	1250	626	593	50	47	10-150	5	27	
Ethylbenzene	ug/kg	<25.0	1250	1250	1300	1280	104	103	64-130	1	20	
Isopropylbenzene (Cumene)	ug/kg	<25.0	1250	1250	1280	1240	102	99	69-138	3	20	
m&p-Xylene	ug/kg	<50.0	2500	2500	2640	2580	104	102	61-130	2	20	
Methyl-tert-butyl ether	ug/kg	<25.0	1250	1250	1410	1030	113	82	52-134	31	20	R1
Methylene Chloride	ug/kg	<25.0	1250	1250	1430	1080	115	86	61-131	28	20	R1
o-Xylene	ug/kg	<25.0	1250	1250	1290	1290	102	102	63-130	0	20	
Styrene	ug/kg	<25.0	1250	1250	1380	1360	110	109	70-130	1	20	
Tetrachloroethene	ug/kg	<25.0	1250	1250	1110	1090	88	87	65-130	1	20	
Toluene	ug/kg	<25.0	1250	1250	1070	1350	84	106	65-130	23	20	R1
trans-1,2-Dichloroethene	ug/kg	<25.0	1250	1250	1410	1040	112	82	55-130	31	20	R1
trans-1,3-Dichloropropene	ug/kg	<25.0	1250	1250	1090	1250	87	100	54-130	14	20	
Trichloroethene	ug/kg	<25.0	1250	1250	1200	1240	96	99	70-130	3	20	
Trichlorofluoromethane	ug/kg	<25.0	1250	1250	966	978	77	78	42-150	1	24	
Vinyl chloride	ug/kg	3030	1250	1250	4300	3930	102	72	35-134	9	20	
4-Bromofluorobenzene (S)	%						106	102	53-134			
Dibromofluoromethane (S)	%						108	107	49-157			
Toluene-d8 (S)	%						94	110	61-148			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: GLACIER RIDGE
Pace Project No.: 40129145

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G	Pace Analytical Services - Green Bay
PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
R1	RPD value was outside control limits.
W	Non-detect results are reported on a wet weight basis.

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GLACIER RIDGE
Pace Project No.: 40129145

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40129145001	**GRL-SS-28**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145002	**GRL-SS-29**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145003	**GRL-SS-30**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145004	**GRL-SS-31**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145005	**GRL-SS-32**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145006	**GRL-SS-33**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145007	**GRL-SS-34**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145008	**GRL-SS-35**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145009	**GRL-SS-36**	EPA 3050	MPRP/61937	EPA 6010C	ICP/27078
40129145001	**GRL-SS-28**	ASTM D2974	MPRP/61992		
40129145002	**GRL-SS-29**	ASTM D2974	MPRP/61992		
40129145003	**GRL-SS-30**	ASTM D2974	MPRP/61992		
40129145004	**GRL-SS-31**	ASTM D2974	MPRP/61992		
40129145005	**GRL-SS-32**	ASTM D2974	MPRP/61992		
40129145006	**GRL-SS-33**	ASTM D2974	MPRP/61992		
40129145007	**GRL-SS-34**	ASTM D2974	MPRP/61992		
40129145008	**GRL-SS-35**	ASTM D2974	MPRP/61992		
40129145009	**GRL-SS-36**	ASTM D2974	MPRP/61992		
40129145001	**GRL-SS-28**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145002	**GRL-SS-29**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145003	**GRL-SS-30**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145004	**GRL-SS-31**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145005	**GRL-SS-32**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145006	**GRL-SS-33**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145007	**GRL-SS-34**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145008	**GRL-SS-35**	EPA 5035/5030B	MSV/32526	EPA 8260	MSV/32527
40129145009	**GRL-SS-36**	EPA 5035/5030B	MSV/32528	EPA 8260	MSV/32530

REPORT OF LABORATORY ANALYSIS

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

4012914 5

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	CQM INC
Branch/Location:	GREEN BAY WI
Project Contact:	NICK STURZL
Phone:	920-362-3870
Project Number:	
Project Name:	GLACIER RIDGE
Project State:	LANDFILL, WI
Sampled By (Print):	A.G.F. AUSTIN FIELD
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	TYLER FIELD, CORNER STONE
Invoice To Company:	ADS GLACIER RIDG LANDFILL
Invoice To Address:	N 7296 HWY 45 ✓ HORICON WI, 53032
Invoice To Phone:	630-633-5839

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: VOC's	LEAD/CADMIUM	MOISTURE CONTENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					N	F	A	A				
001	GRL-SS-28	3-9-16	10:05			X	X	X			1-40zpA 1-40mlvF	
002	GRL-SS-29		2:45			X	X	X				
003	GRL-SS-30		2:50			X	X	X				
004	GRL-SS-31		2:55			X	X	X				
005	GRL-SS-32		3:00			X	X	X				
006	GRL-SS-33		3:05			X	X	X				
007	GRL-SS-34		3:10			X	X	X				
008	GRL-SS-35		3:15			X	X	X				
009	GRL-SS-36		3:20			X	X	X				

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	TYLER.FIELD@CORNERSTONEFG.COM
Email #2:	STURZL@CQMINC.COM
Telephone:	920-362-3870
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
AUSTIN FIELD	3-9-16 3:30	Nick Sturzl	3/9/16 3:30
Nick Sturzl	3-9-16 5:30	Kathleen Johnson Pace	3/9/16 1730

PACE Project No. 4012914 5

Receipt Temp = ROI °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / ~~Not Present~~ Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

ORIGINAL

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical™

Client Name: CQM

Project # **WO# : 40129145**

40129145

Courier: ☐ Fed Ex ☐ UPS ☒ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used N/A **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROI /Corr: **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Person examining contents:
Date: 3-10-16
Initials:

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☒Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☒N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☐Yes	☐No	☒N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes	☒No		Initial when completed / Lab Std #ID of preservative / Date/ Time:
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	14.
Trip Blank Present:	☐Yes	☐No	☒N/A	15.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: AMM-for DM **Date:** 3/10/16

Attachment E

VOC Mass Removal Calculations

Land and Gas Reclamation Landfill
Volatile Organic Compound (VOC) Mass Removal Calculations

Waste Removal - Typical Waste

Phase	Typical Waste Volume (cubic yards)	Waste Density (lb/cy)	Waste Mass (tons)	Estimated Average VOC Concentration (mg/kg)	VOC Mass (lb)
A	584,394	1,200	350,636	38	26,648
B	413,758	1,200	248,255	38	18,867
C	301,252	1,200	180,751	38	13,737
Total	1,299,404		779,642		59,253

Notes:
1. Waste volumes from waste removal documentation reports.
2. Estimated average VOC concentration is t he median total VOC concentration from the waste characterization boring samples collected in 2006.
3. Dry density of waste is 1,200 pounds per cubic yard

Waste Removal - Suspicious Waste

Phase	Suspicious Waste Volume (cubic yards)	Waste Density (lb/cy)	Waste Mass (tons)	Estimated Average VOC Concentration (mg/kg)	VOC Mass (lb)
A	120	1,200	72	14	2
B	20,472	1,200	12,283	38	934
C	8,410	1,200	5,046	38	383
Total	29,002		17,401		1,319

Notes:
1. Waste volumes from waste removal documentation reports.
2. For Phase A, estimated average VOC concentration is the average of samples collected from the Phase A suspicious waste.
3. Suspicious waste from Phases B and C was not separately sampled (field screened only); therefore, estimated average VOC concentration is the median total VOC concentration from the waste characterization boring samples collected in 2006.
4. Dry density of waste is 1,200 pounds per cubic yard

Land and Gas Reclamation Landfill
Volatile Organic Compound (VOC) Mass Removal Calculations

Soil Removal

Soil Excavation to Subbase

Phase	Contaminated Soil Excavation to Subbase (cubic yards)	Assumed Soil Density (lb/cy)	Soil Mass (tons)	Estimated Average VOC Concentration (mg/kg)	VOC Mass (lb)
A	8,497	3,100	13,170	18	474
B	89,014	3,100	137,972	10	2,759
C	44,000	3,100	68,200	141	19,232
Total	141,511		219,342		22,466

Notes:
1. Contaminated soil volumes for Phases A and B from waste removal documentation reports.
2. Contaminated soil volume for Phase C was not in the waste removal documentation report, so it was estimated from the total expected soil excavation volume from the 2013 Plan of Operation, Plan Sheet 10 (133,600 cubic yards), and the percent of Phase C samples that exceeded NR 702 standards (32%).
3. Estimated average VOC concentration for each phase is based on post-waste-removal samples collected from test pits excavated from the soil surface below the waste to the approximate subbase grades for the GRL liner.
4. Dry density of soil is 3,100 pounds per cubic yard (based on test results for till in GRL 2010 Feasibility Report)

Targeted DNR Over Excavation Below Subbase

Phase	DNR Over Excavation (cubic yards)	Assumed Soil Density (lb/cy)	Soil Mass (tons)	Estimated Average VOC Concentration (mg/kg)	VOC Mass (lb)
A	570	3,100	884	207	366
B	800	3,100	1,240	158	392
C	2,856	3,100	4,427	4	35
Total	4,226		6,550		793

Notes:
1. Contaminated soil volumes from waste removal documentation reports.
2. Estimated average VOC concentration for Phases A and B are based on samples collected from test pits and confirmation samples collected in the additional excavation area.
3. Estimated average VOC concentration for Phase C are based on confirmation samples collected in the additional excavation area.
4. Dry density of soil is 3,100 pounds per cubic yard (based on test results for till in GRL 2010 Feasibility Report)

Total Waste VOCs (lb), rounded	61,000
Total Soil VOCs (lb), rounded	23,000
Total Waste and Soil VOCs (lb)	84,000

I:\25221008.02\Deliverables\Changed Conditions Memo\E - VOC Calcs\[Mass removal calculation_v0.6.xlsx]Totals

Pre-Removal Waste and Soil Analytical Results Summary - VOCs
Land and Gas Reclamation Landfill
(Results are in mg/kg, except where noted otherwise)

Sample	WC1	WC1	WC2	WC2	WC2	WC2	WC2	WC3	WC3	WC3	WC4	WC4	WC4	WC5	WC5	WC5	WC6	WC6	WC6	WC7	WC7	WC7	WC8	WC8	WC8
Date	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	1/10/07	1/10/07	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/31/06	8/30/06	8/30/06	8/30/06	8/29/06	8/29/06	1/9/07
Surface Elevation	947.5	947.5	957.4	957.4	957.4	957.4	957.4	993.9	993.9	993.9	985.5	985.5	985.5	977.9	977.9	977.9	1007.4	1007.4	1007.4	991.9	991.9	991.9	997.2	997.2	997.2
Depth (feet)	--	21	8-10	25-30	32	35-36.5	40-41.5	30-35	45-50	53	20-25	35-40	48	15-20	50-55	62	30-35	40-45	60-63	10-15	35-40	48	15-20	50	52.5-54
Sample Elevation	--	927	948	930	925	922	917	961	946	941	963	948	938	960	925	916	975	965	946	979	954	944	980	947	944
Approx High Water Table El.	928	928	928	928	928	928	928	929	929	929	931	931	931	931	931	931	934	934	934	935	935	935	941	941	941
Matrix	Paint Waste	Soil	Waste	Waste	Soil	Soil	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Soil	Soil
Below WT	--	Sat	--	--	Sat	Sat	Sat	--	--	--	--	--	--	--	Sat	Sat	--	--	--	--	--	--	--	--	--
Photoionization Detector (ppm)	--	--	281	20	2	4	9	525	25	--	226	293	25	239	1,280	62	229	175	250	230	215	60	450	3,700	217
Diesel Range Organics	32,100	<4.25	1,660	247	18.2	<3.75	34.1	1,140	60	8.12	2,780	2,670	15.9	3,250	1,590	31.5	2,980	2,300	370	3,910	1,480	62.5	3,010	146	<3.82
Gasoline Range Organics	5,360	<5.00	209	11.3	<5.00	<100	<100	370	9.39	6.56	134	332	<5.00	202	1,130	7.03	313	107	31.2	160	106	<5.00	157	60.5	1,100
VOCs																									
Benzene	<8.00	<0.016	<0.160	0.168	<0.016	<0.016	<0.016	<1.60	<0.080	<0.016	<2.24	<0.320	<0.016	<0.160	<3.20	0.088	<0.160	<0.080	<0.016	<0.080	<0.080	<0.016	<0.320	<0.800	<3.20
n-Butylbenzene	65.3	<0.024	<0.240	<0.041	<0.024	<0.024	<0.024	<2.40	<0.120	0.058	<3.36	<0.480	<0.024	<0.240	<4.80	0.167	<0.240	<0.120	<0.024	1.24	<0.120	<0.024	<0.480	<1.20	<4.80
sec-Butylbenzene	<10.5	<0.021	1.77	0.124	<0.021	<0.021	<0.021	<2.10	<0.105	<0.021	31.8	6.29	0.075	3.940	<4.20	<0.021	2.55	2.86	<0.021	<0.105	<0.105	<0.021	<0.420	<1.05	<4.20
Chloroethane	<10.0	<0.020	<0.200	<0.020	<0.020	<0.020	<0.020	<2.00	<0.100	<0.020	<2.80	<0.400	<0.020	<0.200	<4.00	<0.020	<0.200	<0.100	<0.020	<0.100	<0.100	<0.020	<0.400	<1.00	<4.00
1,2-Dichlorobenzene	<7.50	<0.015	1.01	<0.015	<0.015	<0.015	<0.015	<1.50	<0.075	<0.015	<2.10	<0.300	<0.015	<0.150	<3.00	<0.015	<0.150	<0.075	<0.015	<0.075	<0.075	<0.015	<0.300	<0.750	<3.00
1,4-Dichlorobenzene	<9.50	<0.019	<0.190	0.108	<0.019	<0.019	<0.019	<1.90	<0.095	<0.019	22.1	1.46	<0.019	1.47	<3.80	<0.019	2.13	<0.095	<0.019	1.33	0.928	<0.019	<0.380	<0.950	<3.80
1,1-Dichloroethane	<12.5	<0.025	<0.250	0.053	<0.025	<0.025	<0.025	<2.50	<0.125	<0.025	<3.50	<0.500	<0.025	<0.250	<5.00	<0.025	<0.250	<0.125	<0.025	<0.125	<0.125	<0.022	<0.500	<1.25	<5.00
cis-1,2-Dichloroethylene	<11.0	<0.022	<0.220	0.091	0.064	0.092	0.041	<2.20	<0.110	<0.022	<3.08	<0.440	<0.022	<0.220	<4.40	0.600	<0.220	<0.110	<0.022	<0.110	<0.110	<0.022	<0.440	1.80	5.92
Ethylbenzene	422	0.217	5.29	0.419	<0.018	0.087	0.113	20.5	0.581	0.313	26.7	2.97	<0.018	3.34	25.2	0.790	4.09	1.62	0.283	1.57	0.75	0.029	2.9	1.94	5.13
Isopropylbenzene	24.2	<0.017	<0.170	<0.017	<0.017	<0.017	<0.017	<1.70	<0.085	<0.017	<2.38	<0.340	<0.017	<0.170	<3.40	0.038	<0.170	<0.085	0.090	<0.085	<0.085	<0.017	<0.340	<0.850	<3.40
p-Isopropyltoluene	<12.0	<0.024	<0.240	<0.024	<0.024	<0.024	<0.024	4.77	<0.120	<0.024	<3.36	47.4	0.163	<0.240	<4.80	<0.024	<0.240	<0.120	0.189	<0.120	<0.120	0.122	<0.480	<1.20	<4.80
Methylene Chloride	<9.50	<0.019	<0.190	<0.019	<0.019	<0.019	<0.019	<1.90	<0.095	<0.019	<2.66	<0.380	<0.019	<0.190	<3.80	<0.019	<0.190	<0.095	<0.019	<0.095	<0.095	<0.019	<0.380	<0.950	<3.80
Naphthalene	178	<0.018	0.283	0.091	<0.018	<0.018	<0.018	3.13	<0.090	0.039	71.7	2.3	<0.018	7.48	6.23	<0.018	2.03	5.90	0.134	2.37	1.03	<0.018	<0.360	<0.900	<3.60
n-Propylbenzene	30.4	<0.021	0.977	0.056	<0.021	<0.021	0.036	6.00	<0.105	0.096	16.9	3.40	<0.021	1.51	13.4	0.104	1.17	1.42	0.091	1.25	0.745	<0.021	<0.420	<1.05	<4.20
Styrene	<7.50	<0.015	<0.150	<0.015	<0.015	<0.015	<0.015	<1.50	<0.075	<0.015	10.2	2.05	<0.015	2.00	<3.00	<0.015	4.86	0.242	<0.015	0.497	0.410	<0.015	1.53	<0.750	<3.00
Tetrachloroethylene	<11.5	<0.023	<0.230	0.039	<0.023	<0.023	<0.023	<2.30	<0.115	<0.023	**26.8**	4.11	<0.023	2.70	<4.60	<0.023	3.74	0.312	0.029	0.233	0.433	<0.023	0.96	<1.15	<4.60
Toluene	39.6	<0.017	13.7	0.617	<0.017	0.105	0.234	8.91	0.210	0.174	103	20.1	0.061	10.5	111	0.381	7.02	1.23	0.933	4.62	1.75	0.036	8.54	2.29	<3.40
Trichloroethylene	<11.5	<0.023	<0.230	0.292	0.042	0.115	0.035	<2.30	<0.115	<0.023	8.95	1.75	<0.023	0.338	<4.60	<0.023	0.548	<0.115	<0.023	<0.115	<0.115	<0.023	<0.460	**71.6**	**59.6**
Trichlorofluoro-methane	<12.5	<0.025	<0.250	<0.025	<0.025	<0.025	<0.025	<2.50	<0.125	<0.025	<3.50	0.799	<0.025	<0.250	<5.00	<0.025	<0.250	<0.125	<0.025	<0.125	<0.125	<0.025	<0.500	<1.25	<5.00
1,2,4-Trimethylbenzene	156	<0.013	5.47	0.161	<0.013	0.059	0.057	35.8	1.12	0.694	32.3	4.23	<0.013	3.68	136	0.435	3.62	3.98	0.226	4.01	2.4	0.062	2.44	<0.650	<2.60
1,3,5-Trimethylbenzene	53.5	<0.018	1.96	0.113	<0.018	0.035	0.034	10.7	0.357	0.186	11.4	3.27	<0.018	3.09	33.8	0.140	6.29	1.51	0.163	1.74	1.07	0.051	1.62	<0.900	<3.60
Vinyl Chloride	<12.0	<0.024	<0.240	<0.024	<0.024	<0.024	<0.024	<2.40	<0.120	<0.024	<3.36	<0.480	<0.024	<0.240	<4.80	<0.024	<0.240	<0.120	<0.024	<0.120	<0.120	<0.024	<0.480	<1.20	<4.80
Xylenes	2,254	0.061	24.97	1.887	<0.037	0.396	0.459	94.2	2.699	1.584	80.9	10.76	<0.037	10.3	166.1	0.803	13.43	5.52	0.943	6.28	2.368	0.121	10.9	6.31	10.4
Total VOCs	3,223	0.278	55.43	4.219	0.106	0.889	1.009	184	4.967	3.144	442.8	110.9	0.299	50.35	491.7	3.546	51.48	24.59	3.081	25.14	11.88	0.421	28.89	83.94	81.05

Total VOC Results by Material/Location Category

Boring/Test Pit	WC1	WC1	WC2	WC2	WC2	WC2	WC2	WC3	WC3	WC3	WC4	WC4	WC4	WC5	WC5	WC5	WC6	WC6	WC6	WC7	WC7	WC7	WC8	WC8	WC8
Sample Elevation	--	926.5	948.4	929.9	925.4	921.65	916.65	961.4	946.4	940.9	963	948	937.5	960.4	925.4	915.9	974.9	964.9	945.9	979.4	954.4	943.9	979.7	947.2	943.95
Paint	3,223																								
Waste			55.43	4.219				184.01	4.967		442.75	110.889		50.348	491.73		51.478	24.594		25.14	11.884		28.89		
Soil		0.278			0.106	0.889	1.009			3.144			0.299			3.546			3.081			0.421		83.94	81.05
Soil Phase A		0.278			0.106	0.889	1.009			3.144			0.299			3.546									
Soil Phase B																			3.081			0.421			
Soil Phase C																								83.94	81.05

Pre-Removal Waste and Soil Analytical Results Summary - VOCs
Land and Gas Reclamation Landfill
(Results are in mg/kg, except where noted otherwise)

Sample	WC8	WC8	WC9	WC9	WC10	WC10	WC10	WC10	WC10	WC10	WC10	WC10	WC11	WC11	WC11	WC12	WC12	WC12	WC13	WC13	WC13	WC14	WC14	WC14	WC15
Date	1/9/07	1/9/07	8/29/06	8/29/06	8/29/06	8/29/06	1/2/07	1/2/07	1/2/07	1/3/07	1/3/07	1/4/07	8/29/06	8/29/06	8/29/06	8/30/06	8/30/06	8/30/06	8/31/06	8/31/06	8/31/06	8/29/06	8/29/06	8/29/06	1/11/07
Surface Elevation	997.2	997.2	1001.3	1001.3	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.7	1009.7	1009.7	1000	1000	1000	987.2	987.2	987.2	991.4	991.4	991.4	942.91
Depth (feet)	57.5-59	62.5-64	40-45	51	40-45	61	65	70	74	79	84	89	25-30	55-60	60	10-15	25-30	56	25-30	45-50	53	5-10	30-35	43	5-6.5
Sample Elevation	939	934	959	950	967	948	944	939	935	930	925	920	982	952	950	988	973	944	960	940	934	984	959	948	937
Approx High Water Table El.	941	941	942	942	936	936	936	936	936	936	936	936	938	938	938	937	937	937	930	930	930	940	940	940	927
Matrix	Soil	Soil	Waste	Soil	Waste	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Waste	Waste	Soil	Soil
Below WT	Sat	Sat	--	--	--	--	--	--	Sat	Sat	Sat	Sat	--	--	--	--	--	--	--	--	--	--	--	--	--
Photoionization Detector (ppm)	2	1	540	240	490	1,830	610	244	83	2	5	1	425	535	110	230	210	475	297	745	172	350	3,000	500	123
Diesel Range Organics	<3.68	<3.73	1,980	279	4,660	6,130	3,570	19.4	14	<4.18	<4.26	<4.44	2,320	7,460	42.7	1,020	1,920	582	1,280	1,340	4.08	3,960	1,600	55	73.6
Gasoline Range Organics	<100	<100	146	34.7	159	3,720	4,890	116	<5.00	11.2	<100	<100	209	167	<5.00	75.7	199	277	129	108	NA	266	922	6.47	101
VOCs																									
Benzene	<0.016	<0.016	<0.320	<0.080	<0.320	<1.60	<3.20	<0.080	<0.016	0.048	<0.016	<0.016	<0.320	<0.320	<0.016	<0.080	<0.080	<0.080	<0.320	<0.320	<0.080	<0.320	<1.60	<0.016	<0.016
n-Butylbenzene	<0.024	<0.024	<0.480	<0.120	<0.480	11.3	<4.80	<0.120	<0.024	<0.024	<0.024	<0.024	<0.480	<0.480	<0.024	<0.120	<0.120	1.17	<0.480	<0.480	<0.120	<0.480	<2.40	<0.024	<0.024
sec-Butylbenzene	<0.021	<0.021	<0.420	<0.105	<0.420	<2.10	60.7	<0.105	0.066	<0.021	<0.021	<0.021	<0.420	<0.420	<0.021	<0.105	<0.105	1.56	<0.420	<0.420	<0.105	<0.420	<2.10	<0.021	0.169
Chloroethane	<0.020	<0.020	<0.400	<0.100	<0.400	<2.00	<4.00	<0.100	<0.020	<0.020	<0.020	<0.020	<0.400	<0.400	<0.020	<0.100	<0.100	<0.105	<0.400	<0.400	<0.100	<0.400	<2.00	<0.020	<0.020
1,2-Dichlorobenzene	<0.015	<0.015	<0.300	<0.075	<0.300	<1.50	<3.00	<0.075	<0.015	<0.015	<0.015	<0.015	<0.300	<0.300	<0.015	<0.075	<0.075	<0.075	<0.300	1.55	<0.075	<0.300	<1.50	<0.015	<0.015
1,4-Dichlorobenzene	<0.019	<0.019	2.35	<0.095	1.94	<1.90	<3.80	<0.095	<0.019	<0.019	<0.019	<0.019	2.83	1.74	<0.01	0.483	1.95	<0.095	<0.380	<0.380	<0.095	<0.380	<1.90	<0.019	<0.019
1,1-Dichloroethane	<0.025	<0.025	<0.500	<0.125	<0.500	<2.50	<5.00	<0.125	0.050	0.062	<0.025	<0.025	<0.500	<0.500	<0.025	<0.125	<0.125	<0.125	<0.500	<0.500	<0.125	<0.500	<2.50	<0.025	<0.025
cis-1,2-Dichloroethylene	<0.022	<0.022	<0.440	2.63	<0.440	10.5	17.7	5.08	0.074	0.183	<0.022	<0.022	<0.440	<0.440	0.148	0.502	<0.110	0.584	<0.440	<0.440	<0.110	<0.440	<2.20	<0.022	<0.022
Ethylbenzene	<0.018	<0.018	2.73	0.476	2.62	19.7	42.5	0.671	<0.018	0.157	<0.018	<0.018	2.71	6.14	0.131	0.558	1.99	10.9	2.23	6.32	0.393	1.69	70.7	0.099	0.162
Isopropylbenzene	<0.017	<0.017	<0.340	<0.085	<0.340	<1.70	<3.40	<0.085	<0.017	<0.017	<0.017	<0.017	<0.340	<0.340	<0.017	<0.085	<0.085	<0.085	<0.340	<0.340	<0.085	<0.340	5.21	<0.017	<0.017
p-Isopropyltoluene	<0.024	<0.024	<0.480	<0.120	<0.480	46.1	<4.80	<0.120	<0.024	<0.024	<0.024	<0.024	<0.480	<0.480	<0.024	<0.120	<0.120	2.21	<0.480	2.07	<0.120	<0.480	10.7	<0.024	<0.024
Methylene Chloride	<0.019	<0.019	<0.380	<0.095	<0.380	<1.90	<3.80	<0.095	<0.019	<0.019	<0.019	<0.019	<0.380	<0.380	<0.019	<0.095	0.179	<0.095	0.860	<0.380	<0.095	<0.380	<1.90	<0.019	<0.019
Naphthalene	<0.018	<0.018	<0.360	<0.090	3.92	<1.80	<3.60	<0.090	<0.018	<0.018	<0.018	<0.018	2.53	<0.360	<0.018	1.19	0.927	0.864	1.09	<0.360	<0.090	<0.360	<1.80	<0.018	0.072
n-Propylbenzene	<0.021	<0.021	<0.420	<0.105	<0.420	<2.10	<4.20	<0.105	<0.021	0.049	<0.021	<0.021	1.32	<0.420	<0.021	<0.105	0.889	1.54	<0.420	<0.420	<0.105	<0.420	14.9	<0.021	<0.021
Styrene	<0.015	<0.015	<0.300	<0.075	<0.300	<1.50	<3.00	<0.075	<0.015	<0.015	<0.015	<0.015	2.77	0.978	<0.015	0.309	1.04	<0.075	1.10	<0.300	<0.075	<0.300	<1.50	<0.015	<0.015
Tetrachloroethylene	<0.023	<0.023	<0.460	<0.115	<0.460	11.3	13.6	<0.115	<0.023	0.075	<0.023	<0.023	<0.460	<0.460	0.023	6.53	0.888	1.49	<0.460	<0.460	<0.115	<0.460	10.2	<0.023	<0.023
Toluene	<0.017	<0.017	2.84	0.784	11.2	17.9	35	0.215	0.678	0.479	<0.017	<0.017	8.79	16.8	0.367	2.18	7.93	4.75	28.3	13.2	1.81	1.65	49.5	0.265	0.840
Trichloroethylene	0.146	<0.023	<0.460	<0.115	<0.460	<2.30	<4.60	<0.115	<0.023	<0.023	<0.023	<0.023	<0.460	<0.460	<0.023	0.462	0.322	2.60	<0.460	<0.460	<0.115	<0.460	<2.30	<0.023	<0.023
Trichlorofluoro-methane	<0.025	<0.025	<0.500	<0.125	<0.500	<2.50	<5.00	<0.125	<0.025	<0.025	<0.025	<0.025	<0.500	<0.500	<0.025	0.932	<0.125	<0.125	<0.500	<0.500	<0.125	<0.500	<2.50	<0.025	<0.025
1,2,4-Trimethylbenzene	<0.013	<0.013	2.06	0.517	5.65	20.8	<2.60	<0.065	<0.013	0.089	<0.013	<0.013	4.99	2.07	0.032	1.17	2.0	4.81	2.72	1.48	<0.065	3.71	56.7	0.056	0.086
1,3,5-Trimethylbenzene	<0.018	<0.018	0.835	0.511	1.97	<1.80	44	<0.090	<0.018	0.052	<0.018	<0.018	5.45	1.67	<0.018	0.748	1.95	2.65	<0.360	0.692	0.210	<0.360	19.4	<0.018	0.046
Vinyl Chloride	<0.024	<0.024	<0.480	<0.120	<0.480	<2.40	<4.80	<0.120	<0.024	<0.024	<0.024	<0.024	<0.480	<0.480	<0.024	<0.120	<0.120	<0.120	<0.480	<0.480	<0.120	<0.480	<2.40	<0.024	<0.024
Xylenes	0.039	0.038	9.89	1.422	9.32	82	174.8	2.275	0.082	0.54	<0.037	<0.037	6.91	19.63	0.423	1.716	7.05	34.93	6.67	20.65	1.120	6.43	291.9	0.353	0.811
Total VOCs	0.185	0.038	20.71	6.34	36.62	219.6	388.3	8.241	0.95	1.734	ND	ND	38.3	49.03	1.124	16.78	27.13	70.06	42.97	45.96	3.533	13.48	529.2	0.773	2.186

Total VOC Results by Material/L

Boring/Test Pit	WC8	WC8	WC9	WC9	WC10	WC10	WC10	WC10	WC10	WC10	WC10	WC10	WC11	WC11	WC11	WC12	WC12	WC12	WC13	WC13	WC13	WC14	WC14	WC14	WC15
Sample Elevation	938.95	933.95	958.8	950.3	966.9	948.4	944.4	939.4	935.4	930.4	925.4	920.4	982.2	952.2	949.7	987.5	972.5	944	959.7	939.7	934.2	983.9	958.9	948.4	937.16
Paint																									
Waste			20.705		36.62								38.3	49.028		16.78	27.125		42.97	45.962		13.48	529.21		
Soil	0.185	0.038		6.34		219.6	388.3	8.241	0.95	1.734	ND	ND			1.124			70.058			3.533			0.773	2.186
Soil Phase A																					3.533				2.186
Soil Phase B						219.6	388.3	8.241							1.124			70.058							
Soil Phase C				6.34																				0.773	

Pre-Removal Waste and Soil Analytical Results Summary - VOCs
Land and Gas Reclamation Landfill
(Results are in mg/kg, except where noted otherwise)

Sample	WC15	WC15	WC15	TP101	TP101	TP101	TP102	TP102	TP102	TP103	TP103	TP103	TP103
Date	1/11/07	1/11/07	1/11/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07	5/3/07
Surface Elevation	942.91	942.91	942.91	935.4	935.4	935.4	937.7	937.7	937.7	939.4	939.4	939.4	939.4
Depth (feet)	10-11.5	12.5-14	17.5-19	5	10	15	5	10-11	16.5	5	11	15.5	18
Sample Elevation	932	930	925	930	925	920	933	928	921	934	928	924	921
Approx High Water Table El.	927	927	927	928	928	928	928	928	928	928	928	928	928
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Below WT	--	--	Sat	--	Sat	Sat	--	Sat	Sat	--	--	Sat	Sat
Photoionization Detector (ppm)	1	1	1	0	0	16	2	0	35	0	3	14	8
Diesel Range Organics	8.85	<3.86	<3.88	--	--	--	--	--	--	--	--	--	--
Gasoline Range Organics	<100	<100	<100	--	--	--	--	--	--	--	--	--	--
VOCs													
Benzene	<0.016	<0.016	<0.016	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
n-Butylbenzene	<0.024	<0.024	<0.024	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	<0.021	<0.021	<0.021	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Chloroethane	<0.020	<0.020	<0.020	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	0.196	<0.121	<0.119
1,2-Dichlorobenzene	<0.015	<0.015	<0.015	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
1,4-Dichlorobenzene	<0.019	<0.019	<0.019	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
1,1-Dichloroethane	<0.025	<0.025	<0.025	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	0.210	<0.121	<0.119
cis-1,2-Dichloroethylene	<0.022	<0.022	<0.022	<0.110	<0.162	0.91	<0.116	<0.159	4.53	<0.109	0.149	0.709	0.943
Ethylbenzene	<0.018	<0.018	<0.018	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Isopropylbenzene	<0.017	<0.017	<0.017	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
p-Isopropyltoluene	<0.024	<0.024	<0.024	--	--	--	--	--	--	--	--	--	--
Methylene Chloride	<0.019	<0.019	<0.019	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Naphthalene	<0.018	<0.018	<0.018	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
n-Propylbenzene	<0.021	<0.021	<0.021	--	--	--	--	--	--	--	--	--	--
Styrene	<0.015	<0.015	<0.015	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Tetrachloroethylene	<0.023	<0.023	<0.023	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Toluene	<0.017	<0.017	<0.017	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Trichloroethylene	<0.023	<0.023	<0.023	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	0.142	1.290
Trichlorofluoro-methane	<0.025	<0.025	<0.025	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
1,2,4-Trimethylbenzene	<0.013	<0.013	<0.013	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
1,3,5-Trimethylbenzene	<0.018	<0.018	<0.018	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	<0.138	<0.121	<0.119
Vinyl Chloride	<0.024	<0.024	<0.024	<0.110	<0.162	0.279	<0.116	<0.159	0.330	<0.109	<0.138	<0.121	0.143
Xylenes	<0.037	<0.037	<0.037	<0.110	<0.162	<0.118	<0.116	<0.159	<0.123	<0.109	0.184	<0.121	<0.119
Total VOCs	ND	ND	ND	ND	ND	1.189	ND	ND	4.86	ND	0.739	0.851	2.376

Total VOC Results by Material/L

Boring/Test Pit	WC15	WC15	WC15	TP101	TP101	TP101	TP102	TP102	TP102	TP103	TP103	TP103	TP103	Maximum	Average	Median	Count
Sample Elevation	932.16	929.66	924.66	930.4	925.4	920.4	932.7	927.7	921.2	934.4	928.4	923.9	921.4				
Paint														**3,223**	**3,223**	**3,223**	**1**
Waste														**529**	**100**	**38**	**23**
Soil	ND	ND	ND	ND	ND	1.189	ND	ND	4.86	ND	0.739	0.851	2.376	**388**	**31**	**2**	**29**
Soil Phase A	0			0	0	1.189	0	0	4.86		0.739	0.851	2.376	**5**	**1**	**1**	**19**
Soil Phase B														**388**	**99**	**8**	**7**
Soil Phase C														**84**	**43**	**44**	**4**

Average Total VOC Concentration Calculation - Phase A Suspicious Waste

Date	3/8/2014			5/9/2014			7/16/2014		
Sample	1-A	1-B	1-C	2-A	2-B	2-C	3-A	3-B	3-C
Detected VOC	407	134	70.7	609	437	720	347	2350	3320
Concentrations	1560	89.5	36.7	196	135	204	137	667	895
(ug/kg)	438	303	174	327	155	479	29.4	2690	4350
	192	52.5	35.7	866	388	512	364	139	171
	88.1	61.5	44.7	326	235	1530	289	191	110
	3200	159	503	1270	922	67.2	1890	1490	4780
	222	3920	73.2	183	353	579	45.4	69.6	69.4
	302	281	221	387	403	558	552	16300	22300
	359	92.2	65.4	949	675	64.1	48.8	322	443
	4690	262	250	118	80.3	2810		4530	6170
	6360			82.9	55.4	3520		110	120
	124			297	202	114		107	119
	130					175			
	1850					750			
	4440								
Total (ug/kg)	24,362	5,355	1,474	5,611	4,041	12,082	3,703	28,966	42,847
Total (mg/kg)	24	5.4	1.5	5.6	4.0	12	3.7	29	43

Average (mg/kg)	**14**

Note: Individual VOC concentration data from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, Appendix F.

Average Total VOC Concentration
Calculation - Phase A Subbase Excavation

Date	4/3/2014												5/27/2014			
Sample	TVOC 6	TVOC 7	TVOC 8	TVOC 9	TVOC 10	TVOC 11	TVOC 12	TVOC 13	TVOC 14	TVOC 15	TVOC 16	TVOC 17	TVOC 24A	TVOC 24B	TVOC 25A	TVOC 26A/B
Detected VOC	1540	15900	2310	31.3	31.3	33.4	5940	13500	516	127	513	102	0	190	32.4	32.4
Concentrations	43.2	623	29	89.3	89.3	29.2	58.1	83.6	34.8	355	122	56.5		105	237	237
(ug/kg)	59.5		64.8	37.2	37.2	100	133	225	144	94.6	263			84.7		
	81.5		98.1				148	198	170		45.5			29.2		
	34		38.8				39.4		49.9		347			368		
									453		104			71		
									126							
Total (ug/kg)	1,758	16,523	2,541	158	158	163	6,319	14,007	1,494	577	1,395	159	0	848	269	269
NR 720 Exceedance?	N	N	Y	N	N	N	Y	Y	N	N	N	N	N	Y	Y	Y
Total (mg/kg)	--	--	2.5	--	--	--	6.3	14.0	--	--	--	--	--	0.8	0.3	0.3

Average (mg/kg)	**18**

Average calculated for samples with at least one VOC result above an NR 720 standard, to represent excavated contaminated soil.
Percent NR 720 Exceedance 22%

Note: Individual VOC concentration data and NR 720 Exceedance Y/N from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, Appendix F.

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Average Total VOC Concentr
Calculation - Phase A Subba

Date		6/12/2014					6/17/2014										
Sample	TVOC 27A	TVOC 31	TVOC 32	TVOC 33	TVOC 34	TVOC 35	TVOC 36	TVOC 37	TVOC 38	TVOC 39/39A	TVOC 40	TVOC 41	TVOC 42	TVOC 43	TVOC 44	TVOC 45	TVOC 46
Detected VOC	0	0	0	0	207	104	0	80.6	0	52.4	0	0	98.4	261	1270	458	0
Concentrations					124			30.7		35.6			36.2	32.7			
(ug/kg)								326		34			107	40.1			
								83.6		222			35.1	128			
													433	45.1			
													119	812			
														190			
Total (ug/kg)	0	0	0	0	331	104	0	521	0	344	0	0	829	1,509	1,270	458	0
NR 720 Exceedance?	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
Total (mg/kg)	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--	--	--

Average Total VOC Concentr
Calculation - Phase A Subba

Date	7/17/2014							
Sample	TVOC 47	TVOC 48	TVOC 49	TVOC 50	TVOC 51	TVOC 52	TVOC 53	TVOC 54
Detected VOC	1350	30.9	0	164	0	61.8	0	68.6
Concentrations		108		333				
(ug/kg)				18200				
				520				
				215				
				486				
				29300				
				2560				
				1270				
				403				
				64400				
				16300				
Total (ug/kg)	1,350	139	0	134,151	0	62	0	69
NR 720 Exceedance?	Y	N	N	Y	N	N	N	N
Total (mg/kg)	1.4	--	--	134.2	--	--	--	--

Average Total VOC Concentration Calculation - Phase A DNR Excavation

Date	7/17/2014	7/25/2014		8/1/2014			
Sample	50	50-E	50-F	CON-1	CON-2	CON-3	CON-4
Detected VOC	164	69.6	1070	43.9	22800	114	13900
Concentrations	333	445	7040	114	6970	32.7	4330
(ug/kg)	18200	6560	52300	563	49300	1250	12800
	520	301	2650	438	1970	678	1110
	215	200	752	29.8	183000	55.9	286
	486	715	8520	289	14700	6590	14300
	29300	9330	194000	406	1960	33.9	567
	2560	159	12300	93.5	67900	1000	39900
	1270	3580	45900		151000		933
	403	1150	11700		932		4110
	64400	24800	209000		5970		10500
	16300	6830	57300		39300		206
							398
Total (ug/kg)	134,151	54,140	602,532	1,977	545,802	9,755	103,340
Total (mg/kg)	134	54.1	602.5	2.0	545.8	9.8	103.3

Average (mg/kg)	**207**

Note: Individual VOC concentration data from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, Appendix F.

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Average Total VOC Concentration Calculation - Phase B Subbase Excavation

Date	4/8/2015																				
Sample	SS-1-1	SS-1-5	SS-1-10	SS-1-14	SS-2-1	SS-2-5	SS-2-10	SS-2-15	SS-2-16	SS-3-1	SS-3-5	SS-3-10	SS-3-14.7	SS-4-1	SS-4-5.5	SS-5-1	SS-5-5	SS-5-11	SS-6-1	SS-6-5	SS-6-8
Detected VOC	34.6	1370	94.2	0	200	263	31.6	71.8	235	3390	676	13500	820	11800	29500	17600	34100	5350	2880	135	0
Concentrations	109	76	157		376	422	151	921	31.9	481	205	8220	51.3	382	1300	368	398	59.9	140	109	
(ug/kg)	173	161	27		196	1010	110	46	267	243	320	286	73.3	829	152	651	711	104	32.3	435	
	298	361	273			38.8	309	39.3	234	1190	35.1	124	2470	115	2810	296	226	40.5	205	170	
	102	34.3	95			56.3	103	625		545	286	566	800	56.5	396	91.5		192	82.5		
		428				30.3		211		105	43.9	19700		1460	172	1210		60	523		
		157				545		60.3				2720		508		400			208		
						210		2700				755		679							
						62		1010				229		194							
						2850						28100		2990							
						1260						10200		1100							
Total (ug/kg)	717	2,587	646	0	772	6,747	705	5,684	768	5,954	1,566	84,400	4,215	20,114	34,330	20,617	35,435	5,806	4,071	849	0
NR 720 Exceedance?	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Total for Avg (mg/kg)	--	2.6	--	--	--	6.7	0.7	5.7	0.8	6.0	1.6	84.4	4.2	20.1	34.3	20.6	35.4	5.8	4.1	--	--

Average (mg/kg)	**10**

Average calculated for samples with at least one VOC result above an NR 720 standard, to represent excavated contaminated soil.

Percent NR 720 Exceedance 53%

Note: Individual VOC concentration data and NR 720 exceedance Y/N from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase B Waste Relocation, Appendix F.

I:\25221008.02\Deliverables\Changed Conditions Memo\E - VOC Calcs\[Mass removal calculation_v0.5.xlsx]Phase B Subbase Excavation

Average Total VOC Concentration Calculation - Phase B Subbase Excavation

Date	4/20/2015					4/28/2015								4/23/2015									
Sample	SS-7-1	SS-7-5	SS-7-11	SS-8-1	SS-8-5	SS-9-1	SS-9-5	SS-9-10	SS-9-14	SS-10-1	SS-10-5	SS-10-10	SS-10-14	SS-11-1	SS-12-1	SS-13-1	SS-14-1	SS-14-5	SS-14-10	SS-14-12.4	SS-15-1	SS-15-5	SS-15-10	SS-15-11.4
Detected VOC	102	1160	1670	344	300	169	869	982	410	55.1	0	0	0	0	0	361	444	0	105	166	1550	0	73.7	143
Concentrations	33.4	2680	1560			84.3	262	63.8		69.4													60.8	52.9
(ug/kg)	331	203	448			30.3	101			113														
	91.7	355	895			70.5	334			61.1														
		52.6	34.5			228	41.1																	
		96.5	136			68.7	233																	
		575	1070			470	84.7																	
		174	252			200																		
Total (ug/kg)	558	5,296	6,066	344	300	1,321	1,925	1,046	410	299	0	0	0	0	0	361	444	0	105	166	1,550	0	135	196
NR 720 Exceedance?	Y	Y	Y	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	Y	Y
Total for Avg (mg/kg)	0.6	5.3	6.1	--	--	--	1.9	1.0	--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	--	0.1	0.2

Average Total VOC Concentration Calculation - Phase B DNR Excavation

Date												
Sample	SS-16-1	SS-16-5	SS-16-13	SS-17-2	SS-17-4	SS-17-7	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23
Detected VOC	2100	996	35.8	2880	2930	425	3550	1200	438	1220	229	278
Concentrations	5080	6460	2880	51.6	47	114	1500	649	33.5	113	74.6	148
(ug/kg)	1610	1300	114	1730	524	101	7710	256	79.3	72.1	82.9	50.9
	44.7	38.5	95.2	2450	1470	30.5	182000	1540	28.2	169	495	56.3
	90.3	30.7	8940	81.7	56.6	1320	7840	21700		60.5	26.8	284
	7210	81.7	2890	186	128	528	13500	953			195	71.6
	350	4990		6450	3070		3310	208			49.6	
	123	333		39.5	619		323000	341				
	59.5	107		915	186		133000	1760				
	5170	47.9		266	4890		61400	401				
	1500	4480		45.8	1670		18500	39100				
		1420		8160			614000	13500				
				2840			227000	9750				
								2760				
								74500				
								29600				
Total (ug/kg)	23,338	20,285	14,955	23,256	15,591	2,519	1,596,310	198,218	579	1,635	1,153	889
Total (mg/kg)	23	20.3	15.0	23.3	15.6	2.5	1596.3	198.2	0.6	1.6	1.2	0.9

Average (mg/kg)	**158**

Note: Individual VOC concentration data from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase A Waste Relocation, Appendix F.

I:\25221008.02\Deliverables\Changed Conditions Memo\E - VOC Calcs\[Mass removal calculation_v0.6.xlsx]Phase B DNR Excavation

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/11/2016																	
Sample	SS-1-1'	SS-1-5'	SS-1-10'	SS-1-15'	SS-1-19'	SS-2-1'	SS-2-5'	SS-2-10'	SS-2-15'	SS-2-20'	SS-3-1'	SS-3-6'	SS-3-11'	SS-3-16'	SS-4-1'	SS-4-5'	SS-4-10'	SS-5-1'
Detected VOC	707	0	79.9	97.8	51.7	701	50100	2120	3940	632	80.1	133	117	93	21200	31700	10300	43900
Concentrations	64.9					289	21200	36400	1460	260	36.1	54.4	53.6	40	159	188	73.8	372
(ug/kg)	49.3					1230	67900	15800	3280	1140	80.4	2890	447	172	352	441	196	303
						427	12800	4610	2900	618	902	122	113	552	548	692	206	
						30.1	123000	37500	405	38.9	109	161	128	128	211	256	46.5	
						102	2470000	2100	3210	69.3	194	52.7	171					
						28.8	70200	2750	52100	28.2	107	1830	1030					
						415	204000	2760	14800	825	70.2	452	377					
						242	40400	41200	10300	436	2220	101	87					
						278		137000	508	596	422							
						1450		144000	551	11100	95.7							
						136		131000	2140	2150								
						106		4140		73								
						327		6310		94.4								
						51.3		25700		476								
						46.8		2230		33.5								
								1990		28.1								
Total (ug/kg)	821	0	80	98	52	5,860	3,059,600	597,610	95,594	18,598	4,317	5,796	2,524	985	22,470	33,277	10,822	44,575
NR 720 Exceedance?	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y
Total for Avg (mg/kg)	0.8	--	--	--	--	5.9	3059.6	597.6	95.6	18.6	4.3	5.8	2.5	--	22.5	33.3	--	44.6

Average (mg/kg)	**141**

Average calculated for samples with at least one VOC result above an NR 720 standard, to represent excavated contaminated soil.

Percent NR 720 Exceedance 33%

Note: Individual VOC concentration data and NR 720 Exceedance Y/N from Construction Documentation Report, Glacier Ridge Landfill – LGRL Phase B Waste Relocation, Appendix F.

I:\25221008.02\Deliverables\Changed Conditions Memo\E - VOC Calcs\[Mass removal calculation_v0.5.xlsx]Phase C Subbase Excavation

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/11/2016								2/22/2016								
Sample	SS-5-6'	SS-5-11'	SS-5-16'	SS-6-1'	SS-6-6'	SS-6-11'	SS-6-15'	SS-7-1'	SS-7-5'	SS-7-10'	SS-7-14'	SS-7-17'	SS-8-1'	SS-8-5'	SS-8-10'	SS-8-15'	SS-8-19'
Detected VOC	42600	63900	60300	18400	808	29	48.3	38.7	963	53.5	275	392	27	652	53.9	0	0
Concentrations	216	439	459			51.9	128	47.4	57.5	128	32.4	35.2	82.5	108	168		
(ug/kg)						133	40.7	38.7	471	144	472	402	50.9	297			
						43		29.1	170	55.7	79.8	79.5		31.5			
								114	49.8		29.2						
								38.2									
Total (ug/kg)	42,816	64,339	60,759	18,400	808	257	217	306	1,711	381	888	909	160	1,089	222	0	0
NR 720 Exceedance?	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Total for Avg (mg/kg)	42.8	64.3	60.8	18.4	--	--	--	--	--	--	--	--	--	--	--	--	--

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/22/2016																	
Sample	SS-9-1'	SS-9-6'	SS-9-16'	SS-10-1'	SS-10-5'	SS-10-10'	SS-10-14'	SS-10-17'	SS-11-1'	SS-11-5'	SS-11-10'	SS-11-14'	SS-11-18'	SS-12-1'	SS-12-2.5'	SS-12-4.6'	SS-13-1'	SS-13-5'
Detected VOC	312	0	0	4040	13400	6530	12400	783	2860	6700	358	180	209	0	0	0	0	0
Concentrations	87.6			664	20700	7770	101	38	131	121	1130	49.8	32.7					
(ug/kg)				32.9	445	3660	473	651	28.2	441	118	561	107					
				75.7	514	181000	434	30.2	368	36.5	50.4	99.1	75.3					
				68.8	571	67600	221	29.8	200	1230	1070							
				94.3	435	3690	104	101	48.3	177	204							
					195	3450	2290	94.2	698	79.6								
					817	4600	1350		357	1380								
					1490	10500	232		116	347								
					302	5460			1250									
						33100			400									
						986												
						43700												
						66800												
						27500												
						3150												
						238000												
						40900												
Total (ug/kg)	400	0	0	4,976	38,869	748,396	17,605	1,727	6,457	10,512	2,930	890	424	0	0	0	0	0
NR 720 Exceedance?	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
Total for Avg (mg/kg)	--	--	--	5.0	38.9	748.4	17.6	1.7	6.5	10.5	2.9	--	--	--	--	--	--	--

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/22/2016															
Sample	SS-14-1'	SS-14-3.5'	SS-15-1'	SS-15-3.5'	SS-16-1'	SS-16-5'	SS-16-10'	SS-16-14'	SS-17-1'	SS-17-5'	SS-17-9'	SS-18-1'	SS-18-5'	SS-18-10'	SS-18-15'	SS-18-19'
Detected VOC Concentrations (ug/kg)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (ug/kg)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR 720 Exceedance?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Total for Avg (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/22/2016										2/25/2016			
Sample	SS-19-1'	SS-19-5'	SS-19-10'	SS-19-15'	SS-19-20'	SS-20-1'	SS-20-6'	SS-20-11'	SS-20-16'	SS-20-21'	SS-21-1'	SS-21-5'	SS-21-10'	SS-21-13'
Detected VOC Concentrations (ug/kg)	0	0	0	0	0	0	0	0	0	0	2680 444 197 299 34.7	4580 629 137 139	3160 348	358
Total (ug/kg)	0	0	0	0	0	0	0	0	0	0	3,655	5,485	3,508	358
NR 720 Exceedance?	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N
Total for Avg (mg/kg)	--	--	--	--	--	--	--	--	--	--	3.7	5.5	3.5	--

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	2/25/2016											3/4/2016				
Sample	SS-22-1'	SS-22-5'	SS-22-10'	SS-22-12.5'	SS-23-1'	SS-23-5'	SS-23-10'	SS-23-14.5	SS-24-1'	SS-24-6'	SS-24-11'	SS-25-1'	SS-25-5'	SS-25-10'	SS-25-15'	SS-25-18'
Detected VOC	31.1	3900	204	0	5420	47200	1770	0	365	5490	8190	37	0	0	26	0
Concentrations	32.5	40.1	28.1						236	176	246					
(ug/kg)			40						86.7	59.9	91.1					
			216						93.3	3530	5090					
									220	4580	29.9					
									52.4	117	8350					
										50	186					
										87.1	80.7					
										269	330					
										259	418					
										106	57.6					
										2390	4620					
										1480	2090					
										480	704					
										50.2	190					
										11900	21000					
										3130	5250					
Total (ug/kg)	64	3,940	488	0	5,420	47,200	1,770	0	1,053	34,154	56,923	37	0	0	26	0
NR 720 Exceedance?	N	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
Total for Avg (mg/kg)	--	3.9	--	--	5.4	47.2	1.8	--	1.1	34.2	56.9	0.0	--	--	0.0	--

Average Total VOC Concentration Calculation - Phase C Subbase Excavation

Date	3/4/2016								
Sample	SS-26-1'	SS-26-5'	SS-26-10'	SS-26-15'	SS-26-18.(	SS-27-1'	SS-27-6'	SS-27-11'	SS-27-16'
Detected VOC Concentrations (ug/kg)	0	0	0	0	0	0	0	0	0
Total (ug/kg)	0	0	0	0	0	0	0	0	0
NR 720 Exceedance?	N	N	N	N	N	N	N	N	N
Total for Avg (mg/kg)	--	--	--	--	--	--	--	--	--

Average Total VOC Concentration Calculation - Phase C DNR Excavation

Date	3/9/2016								
Sample	SS-28	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	SS-35	SS-36
Detected VOC	26.1	125	3620	5520	2960	62.6	0	84.4	12300
Concentrations		243	92.4	267	27.5			80.1	453
(ug/kg)		67.3	27.1	86.9	119			54.2	27.5
		331	29.1	54.9	93.7			56.4	3030
		65.9	711	101	55.7			52.9	
			82.1	58.8	80.2			102	
				93.3	41			47.4	
				39.2	145			278	
				551	55.7			64.6	
				293	35.9				
				70.9	352				
					68.3				
Total (ug/kg)	26	832	4,562	7,136	4,034	63	0	820	15,811
Total (mg/kg)	0	0.8	4.6	7.1	4.0	0.1	0.0	0.8	15.8

Average (mg/kg)	**4**

Note: Individual VOC concentration data from laboratory report for SS-28 through SS-36, included in Attachment D. Samples from the original test pits at subbase elevations were not included in the average because it was not clear from the documentation report which subbase samples were in the additional targeted excavation area. Therefore, the actual average concentration for the targeted area is likely somewhat higher than the calculated average using only these samples from the base of the targeted excavation.

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Underdrain Operation VOC Mass Removal: 2016 - 2020
Former Land and Gas Reclamation Landfill Site

Data from GEMS			Calculated	
Reporting Period Date	Total VOCs (ppb)	Groundwater Volume Pumped (1000 gal)	Monthly Total VOCs (ppb)	Monthly VOC Mass (lb)
10/1/2015	670.17		670.2	
1/1/2016		707.561	384.8	2.27
2/1/2016		813.000	384.8	2.61
3/1/2016		982.520	384.8	3.15
4/1/2016	99.49	1,249.279	99.5	1.04
5/1/2016		1,123.353	82.3	0.77
6/1/2016		1,249.893	82.3	0.86
7/1/2016		1,020.240	82.3	0.70
8/1/2016		1,920.741	82.3	1.32
9/1/2016		1,872.947	82.3	1.29
10/1/2016	65.16	1,294.102	65.2	0.70
11/1/2016		1,057.770	38.5	0.34
12/1/2016		995.740	38.5	0.32
1/1/2017		1,670.673	38.5	0.54
2/1/2017		1,409.092	38.5	0.45
3/1/2017		1,426.489	38.5	0.46
4/1/2017	11.85	1,451.517	11.9	0.14
5/1/2017		1,474.873	15.6	0.19
6/1/2017		1,501.628	15.6	0.20
7/1/2017		1,202.514	15.6	0.16
8/1/2017		1,035.853	15.6	0.13
9/1/2017		578.647	15.6	0.08
10/1/2017	19.32	873.925	19.3	0.14
11/1/2017		771.206	20.1	0.13
12/1/2017		637.397	20.1	0.11
1/1/2018		826.785	20.1	0.14
2/1/2018		927.689	20.1	0.16
3/1/2018		958.554	20.1	0.16
4/1/2018	20.93	1,681.260	20.9	0.29
5/1/2018		3,868.636	15.7	0.51
6/1/2018		1,772.932	15.7	0.23
7/1/2018		1,553.153	15.7	0.20
8/1/2018		1,535.954	15.7	0.20
9/1/2018		1,749.433	15.7	0.23
10/1/2018	10.42	1,484.957	10.4	0.13
11/1/2018		1,354.917	11.0	0.12
12/1/2018		1,632.578	11.0	0.15
1/1/2019		1,380.288	11.0	0.13
2/1/2019		1,109.224	11.0	0.10
3/1/2019		1,220.215	11.0	0.11
4/1/2019	11.63	1,622.270	11.6	0.16
5/1/2019		1,736.708	19.3	0.28
6/1/2019		1,430.137	19.3	0.23
7/1/2019		1,651.669	19.3	0.27
8/1/2019		1,124.013	19.3	0.18
9/1/2019		1,194.654	19.3	0.19
10/1/2019	26.94	1,795.629	26.9	0.40

Underdrain Operation VOC Mass Removal: 2016 - 2020
Former Land and Gas Reclamation Landfill Site

Data from GEMS			Calculated	
Reporting Period Date	Total VOCs (ppb)	Groundwater Volume Pumped (1000 gal)	Monthly Total VOCs (ppb)	Monthly VOC Mass (lb)
11/1/2019		1,794.176	17.8	0.27
12/1/2019		1,083.322	17.8	0.16
1/1/2020		1,259.388	17.8	0.19
2/1/2020		1,252.635	17.8	0.19
3/1/2020		1,779.218	17.8	0.26
4/1/2020	8.57	1,691.642	8.6	0.12
5/1/2020		1,513.344	9.1	0.11
6/1/2020		1,642.865	9.1	0.12
7/1/2020		1,536.416	9.1	0.12
8/1/2020		1,023.242	9.1	0.08
9/1/2020		1,239.846	9.1	0.09
10/1/2020	9.61	1,350.482	9.6	0.11
11/1/2020		1,625.276	9.6	0.13
12/1/2020		1,916.460	9.6	0.15
Totals 2016-2020		**82,640.927**		**24.8**
Totals Gallons 2016-2020		**82,640,927**		

Notes:

1. Total VOCs is the sum of detected VOC concentrations for underdrain sampling results obtained from the WDNR's Groundwater Environmental Monitoring Systems (GEMS) online database.
2. Monthly flows obtained from GEMS online database.
3. For calculations, the monthly VOC concentrations was assumed equal to the sample result for for sampling months and equal to the average of the preceding and following samples for months between sampling events.
4. Mass VOCs (lbs) = Flow (gallons) x 8.34 lb/gal x Concentration (ppb) / 1,000,000,000

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