Final
Interim Action Completion Report
Rod Mill Area Closed Landfill
Former Kaiser Aluminum Property
3400 Taylor Way
Tacoma, Washington

April 14, 2014

Prepared for

Port of Tacoma
Tacoma, Washington

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1.0 INTRODUCTION

This interim action construction completion report documents the successful implementation of an interim action at the Rod Mill Area Closed Landfill (Closed Landfill) at the former Kaiser Aluminum property (Site) by the Port of Tacoma (Port). The Site is located at 3400 Taylor Way in Tacoma, Washington, as shown on Figure 1. The interim action was implemented to remove Closed Landfill waste material and associated contaminated soil with concentrations of constituents greater than the cleanup levels developed and presented in the Final Remedial Investigation/Feasibility Study (RI/FS) report (Landau Associates 2012). Site plans from 2005 and 2010 showing the Closed Landfill are presented on Figures 2 and 3. A summary of background information on Site conditions and the design of the interim action is presented in the Rod Mill Area Closed Landfill Interim Action Work Plan (Interim Action Work Plan; Landau Associates 2013a).

The interim action was conducted in accordance with the Washington State Model Toxics Control Act (MTCA) under Agreed Order No. DE-5698 between the Port and the Washington State Department of Ecology (Ecology). The interim action was completed in advance of selection of the final cleanup action for the Site to improve the efficacy of the final cleanup in accordance with Article VII.D of the Agreed Order, and to support Port development plans in the vicinity of the Closed Landfill. The interim action was designed and executed in accordance with WAC 173-340-430.

1.1 SITE LOCATION AND HISTORY

The Site encompasses approximately 96 acres of the Blair Hylebos Peninsula in Tacoma, Washington. The Hylebos Waterway is located northeast of the Site and the Blair Waterway is located to the southwest (see Figure 1). From 1941 to 1947, the Department of Defense built and operated an aluminum smelter at the Site. In 1947, Kaiser Aluminum & Chemical Corporation (Kaiser Aluminum) purchased the Site and operated the aluminum production facility until 2001. In 2002, Kaiser Aluminum closed the plant and, in 2003, the Port purchased the smelter property from Kaiser Aluminum for redevelopment. Between 2003 and 2010, the Port demolished the smelter complex, shipped thousands of tons of waste to approved disposal or treatment facilities, and placed a 2- to 6-foot (ft)-thick layer of structural fill on approximately 80 of the 96 acres.

The Closed Landfill consists of the unlined landfill located in the southeastern portion of the Site, within the Rod Mill area, as shown on Figures 2 and 3. In about 1980, this area was used by Kaiser Aluminum as a borrow source of sand; the excavated area was subsequently used for disposal of miscellaneous smelter wastes. Based on a review of aerial photographs, it appears that the Closed Landfill was covered and closed by Kaiser Aluminum by the mid-1980s. The waste materials in the Closed Landfill reportedly included anode butts, pitch, green cathode, coke, dirty ore, brick, mortar, concrete rubble, rubber

and plastic products, gutter dust, and general trash (Kennedy Jenks 2003). According to Kaiser Aluminum (Leber, B., 2005, personal communication), spent pot lining (SPL) is not known to have been placed in the Closed Landfill. Prior to the interim action, the Closed Landfill was covered with a thin veneer of soil and gravel.

1.1.1 SITE PHYSICAL CONDITIONS

The geology and hydrogeology of the Site is summarized in Section 8.1 of the final RI/FS report and in Section 2.1 of the Interim Action Work Plan.

1.1.2 SITE ENVIRONMENTAL CONDITIONS

The results of the RI combined with the results from the 2008 supplemental investigation were used to evaluate the nature and extent of waste materials present in the Closed Landfill and to evaluate the nature and extent of impact to soil and groundwater by these waste materials. Environmental conditions at the Closed Landfill prior to implementation of the interim action are summarized in Section 2.2 of the Interim Action Work Plan.

1.2 PURPOSE AND DESCRIPTION OF THE INTERIM ACTION

The purpose of the interim action was to permanently remove (through excavation and offsite disposal) waste material and associated contaminated soil within the Closed Landfill with concentrations greater than the cleanup levels established in the final RI/FS. Based on the data collected during the RI/FS, the following interim action soil cleanup levels were established for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and petroleum hydrocarbons:

Constituent	Interim Action Soil Cleanup Level
CPAHs (µg/kg) Method SW8270D	
Benzo(a)anthracene	130
Chrysene	140
Benzo[a]pyrene	350
Indeno(1,2,3-c,d)pyrene	1,200
Dibenz(a,h)anthracene	640
Total Benzofluoranthenes	440
TEQ	2,000
TOTAL PETROLEUM HYDROCARBONS (mg/kg) NWTPH-Dx	
Diesel Range	2,000
Motor Oil Range	2,000

The interim action also removed the source of contamination to groundwater and will therefore limit the potential for groundwater with contaminant concentrations greater than the cleanup levels to migrate off site. In addition, it has substantially reduced the cost of the final remedy by removing the waste material and associated contaminated soil that would likely need to be addressed as part of the final cleanup action.

2.0 INTERIM ACTION CONSTRUCTION SUMMARY

Interim action construction activities were implemented during the summer and fall of 2013 by the Port's selected contractor, Clearcreek Contractors (Clearcreek) of Everett, Washington. Groundwater monitoring well decommissioning was conducted by Holocene Drilling Inc. (Holocene) of Puyallup, Washington under subcontract to Landau Associates.

As summarized in Table 1, a total of 13,991.29 tons of waste material and associated contaminated soil were removed from the Closed Landfill and disposed at the LRI Landfill facility in Graham, Washington. A summary of the interim action construction activities is presented in the following sections. Selected photographs of interim action construction activities are presented in Appendix A.

The Closed Landfill interim action construction activities were conducted along the following timeline:

- June 2013
  - Eight groundwater monitoring wells within and near the Closed Landfill are decommissioned.
- July 2013
  - Temporary construction facilities are set up and temporary erosion and sedimentation control (TESC) measures are installed.
- August 2013
  - Excavation of waste material and associated contaminated soil from the ground surface to variable depths below the bottom of the waste material.
  - Handling, stockpiling, size reduction, and disposal of excavated waste material and soil.
  - Confirmation sampling of excavation bottom and sidewalls.
- September 2013
  - Complete Closed Landfill waste material and soil excavation activities
  - Complete confirmation sampling of excavation bottom and sidewalls
  - Backfill the base of the excavation with quarry spalls to bring grade above groundwater level.
  - Continue disposal of excavated waste material and soil.
- October 2013
  - Complete disposal of stockpiled waste material and soil.
  - Backfill the excavation area with designated onsite fill materials, and grade the surface to promote stormwater drainage.

- November - December 2013
  - Complete final grading and hydroseeding activities.
  - Groundwater samples collected from the four shallow, downgradient monitoring wells.
- February 2014
  - The four shallow groundwater monitoring wells downgradient of the Closed Landfill are decommissioned.

2.1 PERMITTING AND REGULATORY REQUIREMENTS

The interim action was conducted in accordance with MTCA under Agreed Order No. DE-5698 between the Port and Ecology, and the Interim Action Work Plan that was approved by Ecology. Compliance with the State Environmental Policy Act (SEPA), Chapter 43.21C RCW, was achieved by conducting a SEPA review in accordance with applicable regulatory requirements, including WAC 197-11-268.

Permits and approvals obtained prior to implementing interim action activities included:

- Tacoma-Pierce County Health Department Waste Disposal Authorization (WDA) No. 1671.
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit No. WAR127225.

The interim action was determined to be procedurally exempt from the requirements of the City of Tacoma Grading Permit and the City of Tacoma Stormwater Management Requirements. Permits/approvals acquired and the SEPA Checklist and Determination of Non-Significance (DNS) for the interim action project are included in Appendix B.

2.2 MONITORING WELL DECOMMISSIONING

Eight groundwater monitoring wells (two shallow and six intermediate wells) in the Rod Mill Area were decommissioned on June 18, 2013 to facilitate completion of the interim action excavation activities. All groundwater monitoring wells were decommissioned by Holocene. These included monitoring wells MW-1(I), MW-2(I), MW-3(I), MW-4(I), MW-5(S), MW-5(I), MW-6(S), and MW-6(I), as shown on Figure 3. The details of the monitoring well decommissioning are discussed in the *Technical Memorandum: Former Kaiser Aluminum Property Well Decommissioning, Rod Mill Area Closed Landfill and SPL Area Interim Actions,* dated November 18, 2013 (Landau Associates 2013b).

As discussed in Section 2.7.3, the four shallow groundwater monitoring wells downgradient of the Closed Landfill, MW-3(S), MW-4(S), MW-7(S), and MW-8(S), were sampled in November 2013 following excavation backfilling, and were subsequently decommissioned by Holocene on February 28, 2014.

2.3 STORMWATER BEST MANAGEMENT PRACTICES

Prior to excavation activities, a stormwater pollution prevention plan (SWPPP) was prepared by the Port to document planned procedures designed to prevent stormwater pollution by controlling erosion of exposed soil. Best management practices (BMPs) were implemented by Clearcreek to prevent soil erosion and sediment transport during construction. BMPs included upgrading the existing construction entrance/exit; installing silt fencing to prevent sediment-laden water from leaving the Site; installing coir logs and high visibility fencing around the existing Rod Mill area drainage feature; installing/use of an automated wheel wash facility along the access road; covering soil stockpiles (as needed); and applying water and controlling vehicle operations to limit generation of fugitive dust.

2.4 EXCAVATION ACTIVITIES

Interim action excavation activities were conducted by Clearcreek in general accordance with the requirements of the Interim Action Work Plan and the project Contract Documents. The interim action construction drawings are included in Appendix C. Excavation of the Closed Landfill commenced on August 6, 2013 and was essentially completed by September 19, 2013.

Closed Landfill waste materials and associated contaminated soil were excavated within the approximately 0.9 acre area shown on Figure 4. Prior to excavation, the estimated extent of Closed Landfill waste materials was surveyed and staked in the field; however, Landau Associates' personnel and Clearcreek operators used visual observations during excavation, followed by confirmation soil sampling, to determine the actual lateral and vertical extent of the Closed Landfill excavation.

An initial attempt was made to remove and stockpile some of the surficial overburden soil for potential reuse as backfill material. However, sampling and analysis indicated that the stockpiled soil exceeded cPAH cleanup levels (see the results presented in Table 2). Thus, all the surficial overburden soil was removed and disposed along with the other excavated materials.

Excavation activities generally proceeded from south to north, and as anticipated, the base of the excavation typically extended slightly below groundwater level. It was initially planned to excavate up to 1 ft of soil underlying the Closed Landfill waste materials [except for the deeper soil excavation conducted in the vicinity of former groundwater monitoring wells MW-6(S) and (I)]. However, only up to about one-half foot of underlying soil was typically removed prior to conducting confirmation soil sampling, and only two sampling grids (grids 1 and 13) required additional excavation to achieve soil cleanup levels (see Section 2.7.2).

The estimated excavation volume presented in the Interim Action Work Plan was about 12,300 cubic yards (yd^3); however, the actual Closed Landfill excavation volume based on Clearcreek's construction survey data was approximately 9,067 yd^3 (see the as-built drawings in Appendix D). The reduced excavation

volume reflects the slightly smaller excavation area, the use of steeper temporary cut slopes, and removal of less soil underlying the Closed Landfill waste materials.

2.5 WASTE AND CONTAMINATED SOIL DISPOSAL

Closed Landfill waste material and contaminated soil was allowed to drain to remove free liquids, size-reduced as required for disposal, loaded into trucks, and transported for disposal at the LRI Landfill and Recycling facility in Graham, Washington. A copy of the Tacoma-Pierce County Health Department Waste Disposal Authorization was provided with each load transported to the LRI landfill.

A total of 13,991.29 tons of Closed Landfill waste material and associated contaminated soil was disposed at the LRI Landfill facility in Graham, Washington between August 6, 2013 and October 3, 2013 (see the waste disposal summary in Table 1). Additional trucking and disposal records are provided in Appendix E.

2.6 BACKFILLING, GRADING, AND SITE RESTORATION

As part of interim action design, provisions were made to have the contractor remove petroleum hydrocarbon product that might potentially be exposed during excavation and accumulate at groundwater level. However, no recoverable petroleum hydrocarbon sheen was observed on the exposed groundwater surface and thus no product removal was warranted prior to excavation backfilling.

Following receipt of Ecology's concurrence to proceed with backfilling excavation grids that met cleanup levels, the base of the excavation was backfilled with quarry spalls to bring the grade above the groundwater table and create a stable base prior to backfilling with soil. Approximately 3,000 tons of quarry spalls were placed within the excavation area.

In accordance with the project plans, the top several feet of soil from the adjacent "surficial sand removal area" (located just north of the Closed Landfill excavation and south of the Rod Mill area covered with crushed asphalt surfacing) was graded into the excavation. Prior to placement, three representative samples of this onsite fill material (BF-1 through BF-3) were collected and analyzed for cPAHs and total petroleum hydrocarbons. The locations of these soil `samples are shown on Figure 3, the sample results are presented in Table 3, and the analytical laboratory reports are included in Appendix G. The soil sample results demonstrated that the adjacent onsite soil was acceptable for use as excavation backfill material. Additional onsite fill material obtained from the Port's dredged soil stockpile (see Figure 3) was used to complete backfilling of the Closed Landfill excavation.

The excavation backfill material was placed to near final grades consistent with the Port's plans for future redevelopment, and graded to slope to the north to promote drainage of stormwater runoff toward the existing Rod Mill area drainage feature. A site plan showing final site grades following completion of excavation backfilling is presented on Figure 5, which is based on the Clearcreek/Beyler Consulting as-built

drawings provided in Appendix D. Note that the Port retained AHBL, Inc. to perform an independent survey of the final backfill grades in the Closed Landfill area, the results of which are provided on Figure D-1 in Appendix D.

Following final grading and placement of three quarry spall check dams across the central flow line, the Closed Landfill excavation backfill and adjacent disturbed areas were stabilized by hydroseeding the exposed soil surfaces.

2.7 COMPLIANCE MONITORING

Compliance monitoring included the following protection, performance, and confirmational monitoring activities to assure the effectiveness of the interim action.

2.7.1 PROTECTION MONITORING

Protection monitoring included worker health and safety activities related to interim action construction, as well as certain provisions for protection of the general public. Worker health and safety was addressed through implementation of project-specific health and safety plans prepared by Clearcreek and Landau Associates, worker protection provisions, dust suppression measures, air and dust monitoring, and use of an automated vehicle wheel wash facility near the Site entrance.

2.7.2 PERFORMANCE MONITORING

Performance monitoring consisted of collection and analysis of confirmation soil samples to demonstrate that the interim action soil cleanup levels were achieved, and construction quality assurance (CQA) monitoring to confirm that the interim action was conducted in conformance with the project construction drawings and specifications.

2.7.2.1 Confirmation Soil Sampling

Confirmation soil sampling was conducted in general accordance with the Interim Action Work Plan; however, minor adjustments were made to the sampling grid layout and the number of samples collected to better fit the pattern and constraints of the excavation activities.

The base of the Closed Landfill excavation was divided into 18 sampling grids as shown on Figure 4. Excavation base soil samples were collected using an excavator bucket to collect a representative base soil sample from each grid. Excavation sidewall sampling consisted of collecting one discrete soil sample from the top and bottom half of each of the four sidewalls at approximately equally spaced intervals, resulting in eight excavation sidewall samples as indicated on Figure 4.

All soil samples were delivered to the Analytical Resources Inc. (ARI) analytical laboratory in Tukwila, Washington under Chain of Custody procedures. The samples were analyzed for cPAHs (using

EPA Method SW8270D) and diesel- and motor oil-range petroleum hydrocarbons (using EPA Method NWTPH-DX). Quality assurance and data validation activities were conducted by Landau Associates on the data packages provided by the ARI laboratory and no data were rejected; the analytical laboratory reports are included in Appendix G.

The confirmation soil sampling results are presented in Table 4 and were compared directly to the interim action soil cleanup levels. Note that the initial sampling results for base grids 1 and 13 (samples RMLF-1 and RMLF-13) exceeded the soil cleanup levels for one or more cPAHs; additional soil removal was conducted within these two grids, and subsequent resampling and analysis confirmed that the soil cleanup levels were achieved. As shown in Table 4, the results of confirmation soil sampling along the base and sidewalls of the Closed Landfill excavation demonstrate compliance with the interim action soil cleanup levels.

2.7.2.2 Construction Quality Assurance

CQA monitoring included construction observations to confirm that the interim action was constructed consistent with the intent of the Interim Action Work Plan and the project construction drawings and specifications. Interim action construction activities were observed and documented by representatives of the Port and Landau Associates.

Physical testing conducted by Clearcreek's soil testing laboratory (Krazan and Associates) included a limited amount of grain size and compaction testing of the excavation backfill material. The associated test data are presented in Appendix F.

2.7.3 CONFIRMATION MONITORING

Confirmation monitoring was conducted to confirm the effectiveness of the interim action, and included post-construction groundwater monitoring of the four shallow downgradient groundwater monitoring wells [MW-3(S), MW-4(S), MW-7(S), and MW-8(S)], the locations of these wells are shown on Figures 3 and 5. Groundwater samples were collected on November 25, 2013 and were analyzed for cPAHs, PCBs, and arsenic. The laboratory results indicated that cPAHs and PCBs were not detected above laboratory reporting limits in any of the samples, and concentrations of arsenic were less than the cleanup level in all of the samples.

The results of this post-construction groundwater monitoring event are further documented and discussed in the *Technical Memorandum: Groundwater Monitoring Results and Recommendations, Former Kaiser Aluminum Property*, dated December 11, 2013 (Landau Associates 2013c).

Ecology approved decommissioning of the four downgradient groundwater monitoring wells on January 9, 2014 (Ecology 2014), and these monitoring wells were decommissioned by Holocene on February 28, 2014.

3.0 USE OF THIS REPORT

This Interim Action Completion Report has been prepared for the use of the Port of Tacoma and the Washington State Department of Ecology for specific application to the Rod Mill Area Closed Landfill Interim Action project at the Former Kaiser Aluminum Site. None of the information, conclusions, and recommendations included in this document can be used for any other project without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and written authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This report has been prepared under the supervision and direction of the following key staff. We hereby conclude that, to the best of our knowledge, the interim action construction activities summarized in this report have been satisfactorily completed in substantial compliance with the Interim Action Work Plan, the construction drawings and specifications, and other project related documents.

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4.0 REFERENCES

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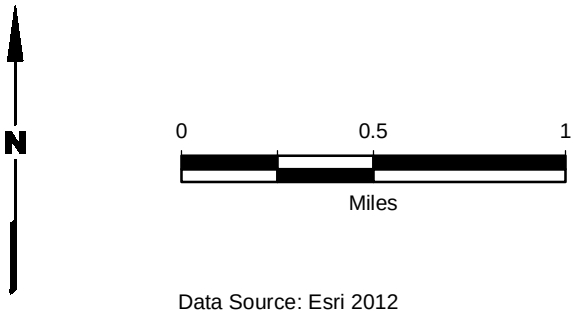

Data Source: Esri 2012

G:\Projects\118\033\100\111\Remedial Action Construction Report\Figure 1 Vicinity Map 2013.mxd 4/14/2014 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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Interim Action Completion Report Rod Mill Area Closed Landfill Tacoma, Washington	**Vicinity Map**	Figure 1

G:\Projects\118033\100\111\Remedial Action Construction Report\Figure 2 Kaiser Facility 2005.mxd 4/14/2014 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

Site Boundary

0 250 500

Scale in Feet

Data Source: Bing Aerials 2005; Pierce County Assesor

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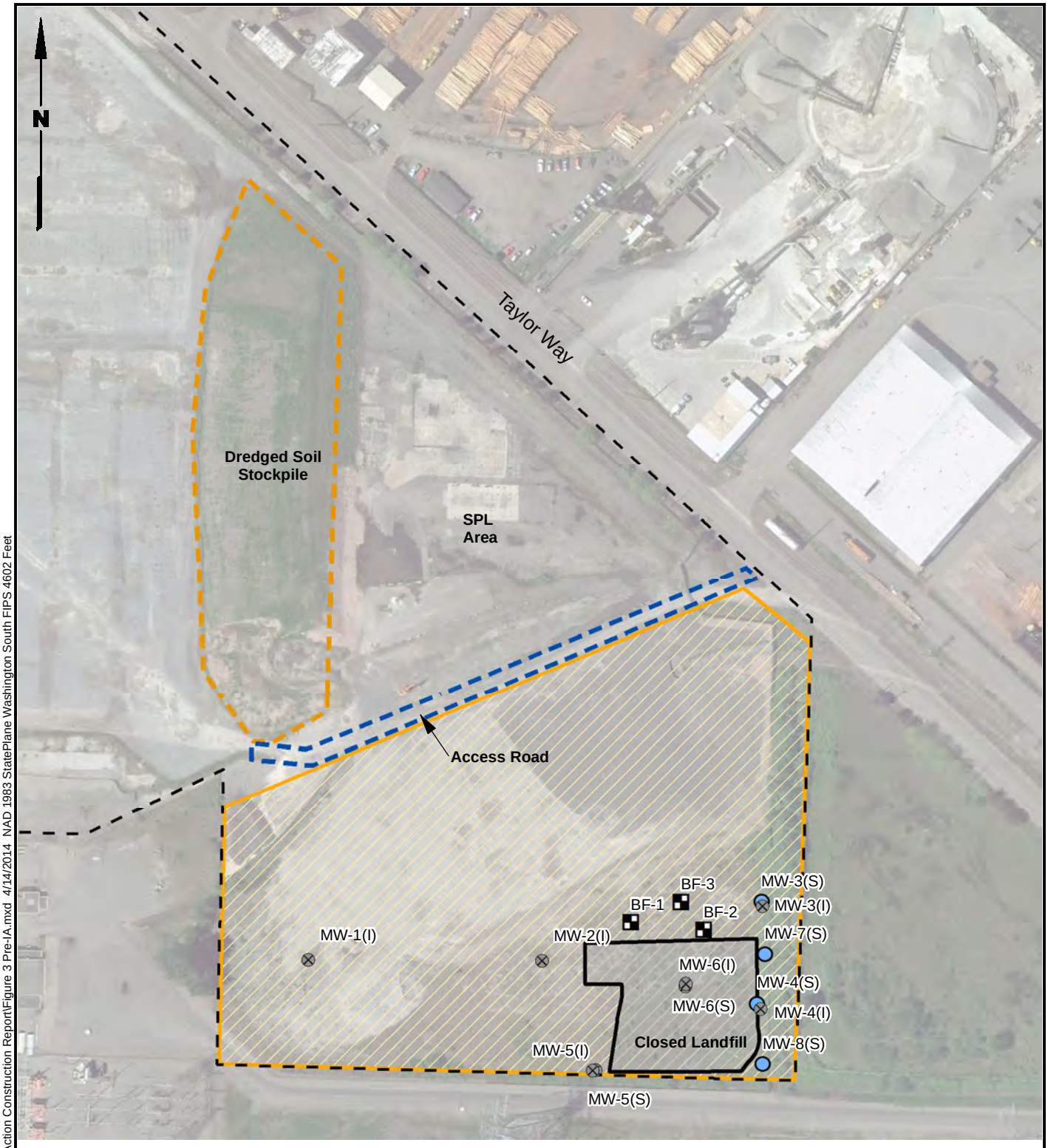
Interim Action Completion Report Rod Mill Area Closed Landfill Tacoma, Washington	**Site Plan with Historical Site Features**	Figure 2



Legend

- Groundwater Monitoring Well Decommissioned June 18, 2013
- Shallow Aquifer Groundwater Monitoring Well
- Backfill Sample Name and Location
- Rod Mill Area
- Former Landfill
- Site Boundary

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 200 400

Scale in Feet

Data Source: Jacobs Engineering; Pierce County Assesor; Google Earth Pro 2010

Interim Action Completion Report Rod Mill Area Closed Landfill Tacoma, Washington	**Rod Mill Area Closed Landfill with Site Features**	Figure 3

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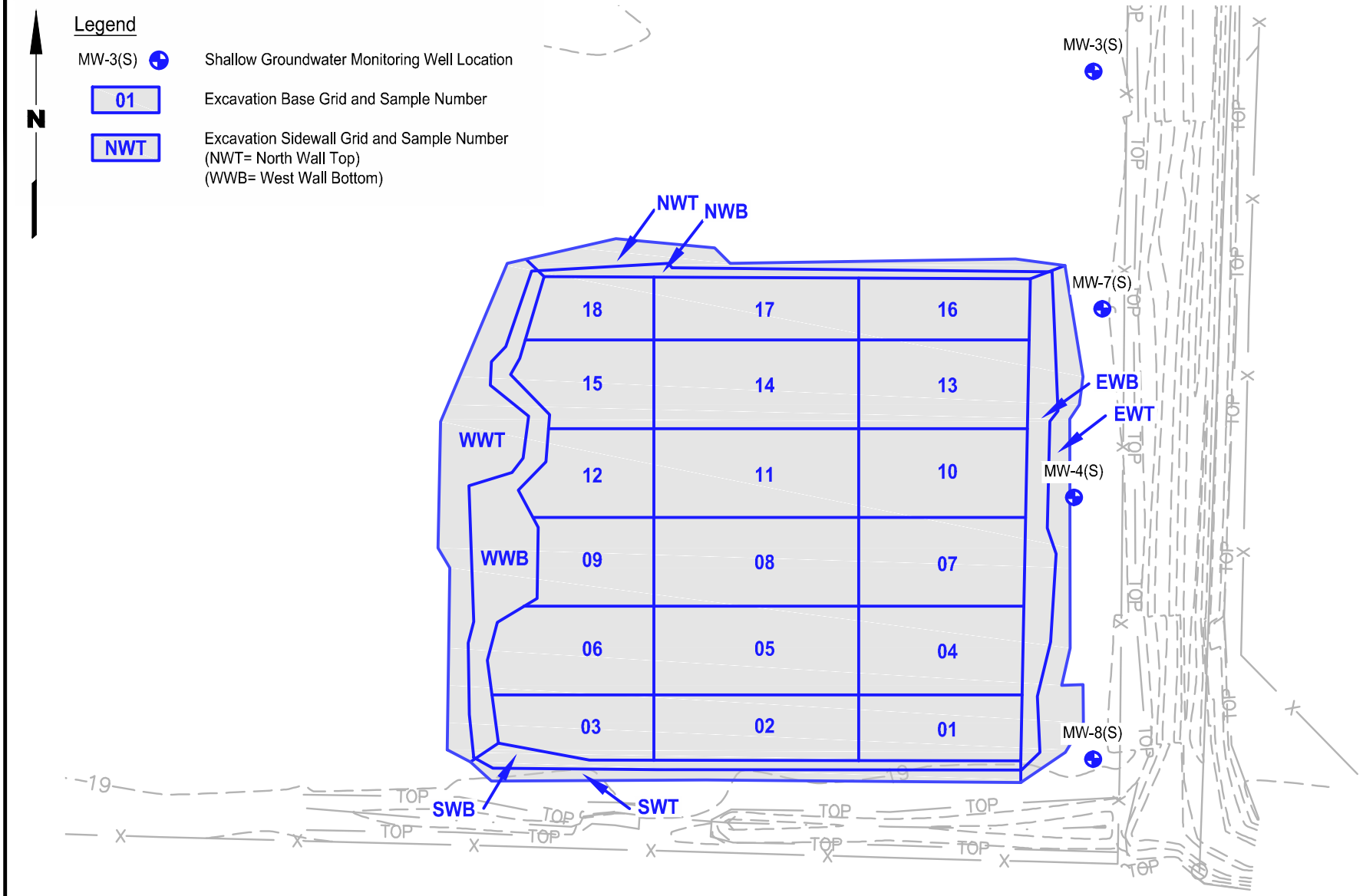
G:\Projects\118\033\100\111\Remedial Action Construction Report\Figure 3 Pre-IA.mxd 4/14/2014 NAD 1983 StatePlane Washington South FIPS 4602 Feet



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Scale in Feet

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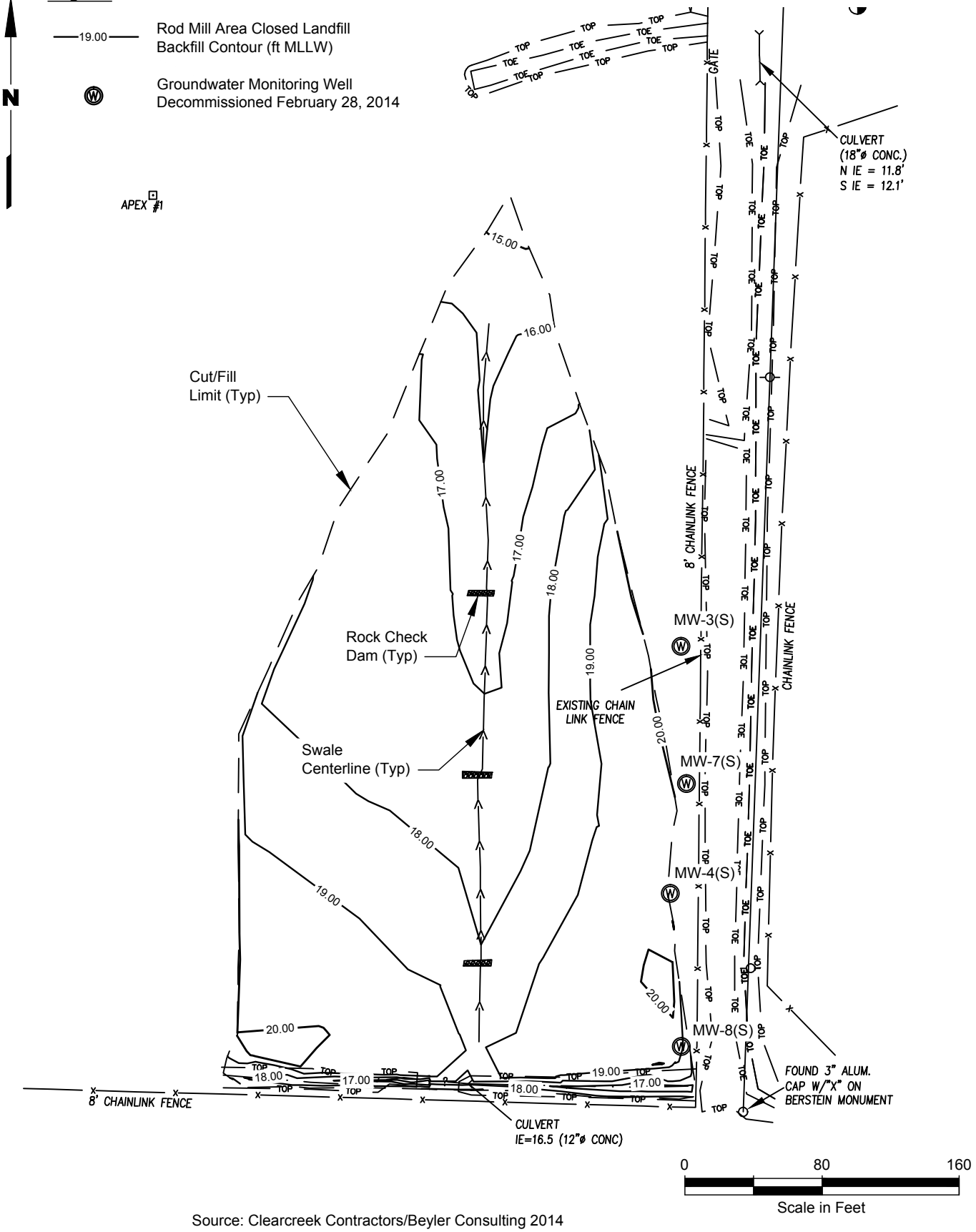
Interim Action Completion Report
Rod Mill Area Closed Landfill
Tacoma, Washington

Performance Monitoring Soil Sampling Grid Layout

Figure 4



Source: Clearcreek Contractors/Beyler Consulting 2014

LANDAU ASSOCIATES, INC. | G:\Projects\118\033\100\104\Soil Sampling Layout\F 05 FinalBackfillGrades.dwg (A) "Figure 5" 3/20/2014

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Interim Action Completion Report Rod Mill Area Closed Landfill Tacoma, Washington	**Site Plan with Final Backfill Grades**	Figure 5

TABLE 1
WASTE DISPOSAL SUMMARY
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at LRI Landfill	Number of Trucks	Total Weight (Tons)
8/6/2013	16	514.07
8/7/2013	18	538.56
8/8/3013	16	514.65
8/9/2013	21	642.59
8/10/2013	1	23.97
8/12/2013	34	1,073.00
8/13/2013	50	1,510.76
8/14/2013	48	1,531.60
8/15/2013	33	1,016.52
8/16/2013	28	897.63
8/19/2013	45	1,443.25
8/20/2013	38	1,181.63
8/21/2013	31	1,004.64
9/4/2013	32	1,036.85
9/5/2013	10	320.05
9/6/2013	6	195.19
10/2/2013	15	496.77
10/3/2013	2	49.56
	Total:	**13,991.29**

TABLE 2
SURFICIAL SOIL STOCKPILE ANALYTICAL DATA
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

	MTCA Method C Preliminary Cleanup Level	RMLF-SP1 XC06A 08/22/2013	RMLF-SP3 XC06B 08/22/2013	RMLF-SP5 XC06C 08/22/2013	RMLF-SP7 XC06D 08/22/2013	RMLF-SP9 XC06E 08/22/2013
CPAHs (µg/kg)						
Method SW8270D						
Benzo(a)anthracene	130	**890**	**4800**	65 U	**1100**	**530**
Chrysene	140	**1300**	**6200**	**160**	**1700**	**1,200**
Benzo[a]pyrene	350	**910**	**4400**	65 U	**1200**	**600**
Indeno(1,2,3-c,d)pyrene	1,200	**600**	**2400**	65 U	**810**	**330**
Dibenz(a,h)anthracene	640	**300**	**1300**	65 U	**400**	**150**
Total Benzofluoranthenes	440	**1700**	**6600**	**130**	**2200**	**1,200**
TEQ	2,000	**1272**	**5972**	**15**	**1668**	**833**
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
NWTPH-Dx						
Diesel Range	2,000	**150**	**31**	5.1 U	**19**	**9.9**
Motor Oil Range	2,000	**360**	**41**	10 U	**23**	10 U

U = Indicates the compound was not detected at the reported concentration.

Bold = Detected compound.

Box = Exceedance of cleanup level.

TABLE 3
BACKFILL SOIL ANALYTICAL DATA
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

	MTCA Method C Preliminary Cleanup Level	BF-1 XF45C 09/17/2013	BF-2 XF45D 09/17/2013	BF-3 XF45E 09/17/2013
CPAHs (µg/kg)				
Method SW8270D				
Benzo(a)anthracene	130	66 U	65 U	66 U
Chrysene	140	66 U	65 U	66 U
Benzo[a]pyrene	350	66 U	65 U	66 U
Indeno(1,2,3-c,d)pyrene	1,200	66 U	65 U	66 U
Dibenz(a,h)anthracene	640	66 U	65 U	66 U
Total Benzofluoranthenes	440	66 U	65 U	66 U
TEQ	2,000	NA	NA	NA
TOTAL PETROLEUM HYDROCARBONS (mg/kg)				
NWTPH-Dx				
Diesel Range	2,000	**340**	5.2 U	5.3 U
Motor Oil Range	2,000	**680**	10 U	11 U

These samples are depth composite of the soil from the surficial sand removal area used for backfill in the Closed Landfill excavation.

U = Indicates the compound was not detected at the reported concentration.
NA = Not applicable.
Bold = Detected compound.

TABLE 4
PERFORMANCE MONITORING SOIL ANALYTICAL DATA
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

	MTCA Method C Preliminary Cleanup Level	RMLF-1 XA16A 8/6/2013	RML-1 XF45A 09/17/2013	RMLF-2 XA16B 8/7/2013	RMLF-3 XA43A 8/9/2013	RMLF-4 XA43B 8/9/2013	RMLF-5 XA80A 8/12/2013	RMLF-6 XA80B 8/13/2013	RMLF-7 XA80C 8/13/2013	RMLF-8 XB44A 08/14/2013	RMLF-9 XB44B 08/14/2013
CPAHs (µg/kg)											
Method SW8270D											
Benzo(a)anthracene	130	**270**	66 U	63 U	66 U	65 U	62 U	64 U	66 U	62 U	63 U
Chrysene	140	**350**	66 U	63 U	66 U	65 U	**66**	64 U	**79**	62 U	63 U
Benzo[a]pyrene	350	**240**	66 U	63 U	66 U	65 U	62 U	64 U	66 U	62 U	63 U
Indeno(1,2,3-c,d)pyrene	1,200	**130**	66 U	63 U	66 U	65 U	62 U	64 U	66 U	62 U	63 U
Dibenz(a,h)anthracene	640	**69**	66 U	63 U	66 U	65 U	62 U	64 U	66 U	62 U	63 U
Total Benzofluoranthenes	440	**420**	66 U	63 U	66 U	65 U	**75**	64 U	**76**	62 U	63 U
TEQ	2,000	**332**	NA	NA	NA	NA	**8.2**	NA	**8.4**	NA	NA
TOTAL PETROLEUM HYDROCARBONS (mg/kg)											
NWTPH-Dx											
Diesel Range	2,000	**28**	7.9 U	**16**	**28**	**34**	**8.9**	**15**	**14**	**18**	**29**
Motor Oil Range	2,000	**71**	16 U	**47**	**76**	**56**	15 U	16 U	**20**	**68**	**92**

TABLE 4
PERFORMANCE MONITORING SOIL ANALYTICAL DATA
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

	MTCA Method C Preliminary Cleanup Level	RMLF-10 XB44C 08/16/2013	RMLF-11 XB44D 08/16/2013	RMLF-12 XB44E 08/16/2013	RMLF-13 XB85A 08/20/2013	RML-13 XF45B 09/17/2013	RMLF-14 XB85B 08/20/2013	RMLF-15 XB85C 08/20/2013	RMLF-16 XB85D 08/21/2013	RMLF-17 XB85E 08/21/2013	RMLF-18 XB85F 08/21/2013
CPAHs (µg/kg)											
Method SW8270D											
Benzo(a)anthracene	130	66 U	62 U	63 U	62 U	66 U	64 U	**72**	63 U	61 U	66 U
Chrysene	140	66 U	62 U	63 U	**150**	66 U	64 U	**110**	63 U	61 U	66 U
Benzo[a]pyrene	350	66 U	62 U	63 U	62 U	66 U	64 U	**74**	63 U	61 U	66 U
Indeno(1,2,3-c,d)pyrene	1,200	66 U	62 U	63 U	62 U	66 U	64 U	63 U	63 U	61 U	66 U
Dibenz(a,h)anthracene	640	66 U	62 U	63 U	62 U	66 U	64 U	63 U	63 U	61 U	66 U
Total Benzofluoranthenes	440	66 U	62 U	63 U	**160**	66 U	64 U	**140**	63 U	61 U	**76**
TEQ	2,000	ND	NA	NA	**17.5**	NA	NA	**96.3**	NA	NA	**7.6**
TOTAL PETROLEUM HYDROCARBONS (mg/kg)											
NWTPH-Dx											
Diesel Range	2,000	**38**	**26**	**57**	**65**	**34**	**53**	**36**	**33**	**46**	**57**
Motor Oil Range	2,000	**98**	**130**	**140**	**130**	16 U	**110**	**98**	**110**	**130**	**150**

TABLE 4
PERFORMANCE MONITORING SOIL ANALYTICAL DATA
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

	MTCA Method C Preliminary Cleanup Level	RMLF-EWB XC07A 08/22/2013	RMLF-EWT XC07B 08/22/2013	RMLF-NWB XC07D 08/22/2013	RMLF-NWT XC07C 08/22/2013	RMLF-WWB XC07F 08/22/2013	RMLF-WWT XC07E 08/22/2013	RMLF-SWT XF63A 09/18/2013	RMLF-SWB XF63B 09/18/2013
CPAHs (µg/kg)									
Method SW8270D									
Benzo(a)anthracene	130	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
Chrysene	140	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
Benzo[a]pyrene	350	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
Indeno(1,2,3-c,d)pyrene	1,200	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
Dibenz(a,h)anthracene	640	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
Total Benzofluoranthenes	440	66 U	66 U	65 U	64 U	65 U	60 U	66 U	66 U
TEQ	2,000	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel Range	2,000	**11**	5.3 U	**11**	**140**	5.1 U	5.3 U	5.2 U	5.2 U
Motor Oil Range	2,000	13 U	11 U	13 U	**390**	10 U	11 U	10 U	10 U

U = Indicates the compound was not detected at the reported concentration.
Bold = Detected compound.
Box = Exceedance of cleanup level.
NA = Not applicable.

APPENDIX A

Selected Site Photographs

1. Looking northeast from the southern side of the Closed Landfill excavation (in progress).

2. Looking east across the Closed Landfill area excavation (in progress).

3/19/14 P:\118\033\FileRm\R\RMLF Area Completion Report\App A Photos\A-1.docx

LANDAU ASSOCIATES

Interim Action Completion Report Rod Mill Area Closed Landfill Tacoma, Washington	**Selected Site Photographs**	Figure A-1

3. Representative waste material excavated from the Closed Landfill area, including bricks, concrete fragments, rebar, plastic sheeting, etc.

4. Closed Landfill waste and underlying native silty material.

LANDAU ASSOCIATES

Interim Action Completion Report
Rod Mill Area Closed Landfill
Tacoma, Washington

Selected Site Photographs

Figure
A-2

5. Looking southeast across the completed Closed Landfill excavation.

6. Looking southwest across the completed Closed Landfill excavation after a rise in groundwater level.

7. Looking north across the Closed Landfill area after placement of quarry spalls and during placement of surficial sand fill material.

8. Looking southwest across the Closed Landfill area after placement of quarry spalls and during placement of surficial sand fill material.

LANDAU ASSOCIATES

Interim Action Completion Report
Rod Mill Area Closed Landfill
Tacoma, Washington

Selected Site Photographs

Figure
A-4

9. Looking northwest at the quarry spall check dams placed across the central drainage swale after completion of excavation backfilling.

10. Looking southwest across the Closed Landfill area after completion of excavation backfilling and hydroseeding.

APPENDIX B

Permits/Approvals and SEPA Documentation

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

July 19, 2013

Jennifer Stebbings
Port of Tacoma
PO Box 1837
Tacoma, WA 98401-1837

RE: Coverage under the Construction Stormwater General Permit

Permit number:	**WAR127225**
Site Name:	**Kaiser Site Interim Action Cleanup**
Location:	**3400 Taylor Way**
	Tacoma, WA County: Pierce
Disturbed Acres:	**19.3**

Dear Ms. Stebbings:

The Washington State Department of Ecology (Ecology) received your Notice of Intent for coverage under Ecology's Construction Stormwater General Permit (permit). This is your permit coverage letter. Your permit coverage is effective on July 19, 2013. **Please retain this permit coverage letter with your permit (enclosed), stormwater pollution prevention plan (SWPPP), and site log book. These materials are the official record of permit coverage for your site.**

Please take time to read the entire permit and contact Ecology if you have any questions.

Appeal Process
You have a right to appeal coverage under the general permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this letter. This appeal is limited to the general permit's applicability or non-applicability to a specific discharger. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal, you must do the following within 30 days of the date of receipt of this letter:

- File your appeal and a copy of the permit cover page with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and the permit cover page on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

Address and Location Information:

Street Addresses:	**Mailing Addresses:**
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board (PCHB) 1111 Israel Road SW, Suite 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

Electronic Discharge Monitoring Reports (WQWebDMR)
This permit requires that Permittees submit monthly discharge monitoring reports (DMRs) electronically using Ecology's secure online system, WQWebDMR. To sign up for WQWebDMR go to: www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html. If you have questions, contact Tonya Wolfe at (360) 407-7097 (Olympia area), or (800) 633-6193/option 3, or email WQWebPortal@ecy.wa.gov.

Ecology Field Inspector Assistance
If you have questions regarding stormwater management at your construction site, please contact Sam Knox of Ecology's Southwest Regional Office in Lacey at sam.knox@ecy.wa.gov, or (360) 407-6294.

Questions or Additional Information
Ecology is committed to providing assistance. Please review our web page at: www.ecy.wa.gov/programs/wq/stormwater/construction/. If you have questions about the construction stormwater general permit, please contact Josh Klimek at josh.klimek@ecy.wa.gov, or (360) 407-7451.

Sincerely,

Bill Moore, P.E., Manager
Program Development Services Section
Water Quality Program

Enclosure

PORT OF TACOMA

ENVIRONMENTAL CHECKLIST

FORMER KAISER ALUMINUM FACILITY, REMEDIAL ACTIONS UNDER AGREED ORDER DE-5698

A. Background

1. **Name of proposed project, if applicable:** Former Kaiser Aluminum Facility, Interim Actions under Agreed Order DE-5698

2. **Name of applicant:** Port of Tacoma

3. **Address and phone number of applicant and contact person:**

   Port of Tacoma
   ATTN: Bill Evans
   PO Box 1837
   Tacoma, WA 98401-1837
   253-593-4563

4. **Date checklist prepared:**

   12/27/2012

5. **Agency requesting checklist:**

   Port of Tacoma

6. **Proposed timing or schedule (including phasing, if applicable):**

   The current project is expected to begin in about May 2013 and should be completed by October 2013.

7. **Do you have any plans for future actions, expansions, or further activity related to or connected with this proposal? If yes, explain.**

   The Port of Tacoma's long-term plan is to redevelop the entire 96 acre property for port maritime industrial uses. Specific future uses are unknown at this time and will be addressed separately via SEPA and other permitting actions as the Port develops plans to meet future tenant requirements.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

   Existing environmental information, reports, and documents related to the site are listed in the subject Agreed Order. Additional information is contained in a "Compilation Report" for the site dated November 30, 2011 and "Final Remedial Investigation/Feasiblity Study"

dated August 23, 2012. Both of these reports are available from Ecology or the Port of Tacoma.

This project is anticipated to prepare the following environmental information/reports for two of the six areas of interest at the property (listed below in 11a through 11f). A figure showing all six areas of interest described in the Agreed Order, including the two areas slated for interim actions as described herein, is attached to this Checklist as Exhibit A.

- Interim Action Work Plan(s) and Interim Action(s), including supporting documentation.

The Interim Action areas are currently operating under regulatory oversight, as described in the following legal instruments.

- Spent Potliner Management Area, EPA/Ecology ID No. WAD 001882984
- Former Kaiser Site Remedial Action, Ecology Agreed Order No. DE-5698

9. Do you know whether applications are pending for governmental approvals of other proposals affecting the property covered by your proposal? If yes, explain.

The Port is designing and will soon permit a stormwater bio-treatment facility on a small portion of the site that will treat stormwater from the log handling facility at 3401 Taylor Way. The planned bio-treatment facility is not within or near either of the two interim action construction areas.

10. List any government approvals or permits that will be needed for your proposal, if known.

The Port anticipates that one or more of the following will be required: Ecology NPDES and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity; Tacoma-Pierce County Health Department (TPCHD) Waste Disposal Authorization, and as necessary, City of Tacoma Grading Permit.

11. Give brief, complete description of your proposal, including the proposed use and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include specific information on project description).

Rod Mill Closed Landfill: The interim action excavation activities will be conducted within the footprint of the waste material, which covers approximately 0.9 acres. The waste material forms an irregular shape within the Closed Landfill footprint. Because the waste material is found relatively close to the surface in the Closed Landfill, it is assumed for conceptual design purposes that soil above the waste material will be excavated and will likely be disposed off site along with the underlying waste material. However, if there are areas identified where relatively thick zones of clean overlying soil can be feasibly

identified and separated from the underlying waste material, such overlying soil may be excavated and stockpiled for reuse as excavation backfill material.

The estimated excavation volume for the Closed Landfill, including the soil above and a 1-ft-thick zone of soil beneath the waste material, is approximately 12,300 cubic yards (yd^3). The estimated volume of waste material to be excavated was calculated by taking an average surface area from the lengths of waste in Profiles A-A' and B-B' (39,000 ft^2) and multiplying by the total depth of the waste material plus the 1-ft-thick zone of underlying soil (8.5 ft).

The interim action will consist of the following elements:

- Decommissioning of groundwater monitoring wells in or near the Closed Landfill
- Excavation of waste material and associated contaminated soil from the ground surface to approximately 1 ft below the bottom of the waste material
- Localized excavation of deeper soil in the vicinity of MW-6 where contaminants were detected at concentrations greater than the cleanup levels in the underlying fill and native soil materials
- Handling, size reduction (as needed), and disposal of excavated waste material and soil
- Handling and disposal of construction water (if any)
- Surveying of the final excavation extent and depth
- Backfilling the excavation area to final grade with clean, compacted fill, sloping the surface as needed to promote drainage of stormwater
- Final site grading and restoration
- Post-excavation groundwater monitoring.

Spent Potliner Area (SPL): In order to estimate the areas and volumes of SPL zone material and associated contaminated soil that exceed cleanup levels and require remedial action, the SPL Area was divided into three subareas (A, B, and C) based on different average thicknesses of SPL zone material found in those areas. Area A is approximately 55,800 ft^2 and has an average SPL zone thickness of 1.5 ft. Area B is approximately 22,300 ft^2 and has an average SPL zone thickness of 2.6 ft. Area C is approximately 7,600 ft^2 and has an average SPL zone thickness of 0.5 ft. The combined volume of SPL zone material in subareas A, B, and C, excluding soil directly above and below the SPL zone material, is approximately 5,390 cubic yards (yd^3).

Because the SPL zone material is typically found relatively close to the ground surface, it is assumed for design purposes that the volume of material excavated would need to include the overlying soil and up to an additional 0.5 ft of soil underlying the SPL zone material. Thus, the estimated total volume of SPL zone material and associated contaminated soil

that might need to be excavated for disposal is currently estimated to be 9,400 yd^3. However, if there are areas identified where relatively thick zones of clean overlying soil can be feasibly identified and separated from the SPL zone material, such overlying soil may be excavated and stockpiled for reuse as excavation backfill material.

There are localized areas of soil contamination located more than 0.5 ft beneath the SPL zone material. The extent of such underlying contaminated soil appears to be limited to three locations, and it is currently assumed that up to about 30 yd^3 of additional contaminated soil might potentially need to be excavated in addition to the estimated 9,400 yd^3 of material noted above.

Based on the available data, it is not anticipated that excavations in the SPL area will typically extend below the groundwater table. Additionally, interim action construction activities are planned to be conducted during late summer/early fall when the groundwater level is at or near its seasonal low. Therefore, handling of wet, excavated material and construction water are not anticipated to be a significant component of interim action construction activities.

Additional supporting information for both interim action areas, such as figures showing the locations of subareas and cross sections, can be found in the Compilation and RI/FS reports.

12. **Location of the proposal. Give sufficient information to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps and detailed plans submitted with any specific applications related to this checklist.**

The Project site is located on property formerly owned by Kaiser Aluminum at 3400 Taylor Way, Tacoma, WA, 98421. The Project site is located within Section 36, Township 21 North, Range 3 East of the Willamette Meridian, County of Pierce, State of Washington.

B. Environmental Elements

1. Earth

a. General description of the site (underline one): Flat, rolling, hilly, mountainous, other.

Flat.

b. What is the steepest slope on the site (approximate percent slope)?

The site is generally flat with less than a 1% slope. Perimeter areas where fill has been placed typically have 2:1 to 3:1 (H to V) side slopes, up to about 5ft high.

c. **What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

Generally, the site was raised to existing grades by filling, using predominantly silt, sand and gravel. The underlying native soil consists of interbedded silt, sand, and peat. There is no prime farmland on the property or in the immediate vicinity.

d. **Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.**

None known.

e. **Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

Removing contaminated materials is straight forward and involves excavating and disposing of waste material and geotechnically unsuitable soil at an approved landfill. This is the preferred approach at both remediation areas. Cleanup actions involving excavation are expected to generate less than 25,000 cubic yards of soil and waste, with approximately the same volume of soil used as "clean" backfill. If weather condition allow, existing stockpiled soil and crushed concrete/asphalt materials will be used as backfill, otherwise fill material will be imported from a suitable source.

Capping the contaminated materials onsite would involve installation of an impervious cover, and while not the preferred remedy, would be implemented if required by unanticipated site conditions and after approval by Ecology. Typical environmental caps are constructed out of concrete, asphalt, geosynthetics, or a combination thereof. At this site, the use of geosynthetics with a soil cover would be the most likely choice. The cap(s) could be placed over existing contaminated materials that remain in place or the contaminated materials could be consolidated into a smaller footprint and capped. Earthwork necessary for environmental cap construction would be substantially less than cited above for the removal and backfilling options.

Any stockpiles of soil or wastes will be protected from erosion by using BMP's.

f. **Could erosion occur as a result of grading, filling, construction, or use? If so, generally describe.**

Protective measures will be in place to control erosion during the life of the Project. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared in accordance with the Port's *NPDES and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity* prior to waste removal, site grading and stockpiling activities, and will describe actions to reduce and control the potential for erosion.

g. **About what percent of the site will be covered with impervious surfaces after project completion (for example, asphalt or buildings)?**

No impervious pavements or buildings will be added during this project. In the SPL Area, several concrete and asphalt surfaces will be removed thereby decreasing the amount of impervious surfaces. If capping of site contaminants increases the amount of impervious

surfacing, engineered systems will be designed and installed to prevent uncontrolled runoff from those areas consistent with Ecology's Surface Water Management Manual.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Control measures (e.g. silt fences, mulching, etc.) will be used as appropriate to minimize erosion during project implementation. Best management practices (BMPs) for the temporary construction activities will meet Ecology's stormwater management manual.

2. Air

a. What type of emissions to the air would result from the proposal (i.e. dust, automobile, odors, industrial, wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.

During the project, there will be an increase in air emissions associated with remedial action construction equipment. The Port requires the use of ultra low sulfur diesel in construction equipment on its projects and has an enforced anti-idling policy. Based on previous experience with this type of work on other projects, it is expected that the $PM_{2.5}$ emissions from this project, as compared to the General Conformity de minimis levels for $PM_{2.5}$ (100 tons per year), are insignificant and will not affect regional air quality.

There is also the possibility of fugitive dust (which will be controlled through BMPs) associated with the construction activity. These potential emissions are compatible with the surrounding heavy industrial land uses.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No sources which could affect this project have been identified.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The Port requires the use of ultra-low sulfur diesel in construction equipment and has an enforced anti-idling policy for both operational and construction equipment. Fugitive dust will be controlled through the use of BMPs.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The Project site is located on the "East Blair peninsula" which is located between the Hylebos and Blair waterways of Commencement Bay. The site does not abut either of these waterways. Two industrial process water /stormwater detention ponds constructed by Kaiser Aluminum are located on the former Kaiser property, but outside of areas identified

for interim actions. Stormwater from most of the Project site will continue to be directed into these ponds. There are no jurisdictional wetlands on the site, although there are ditches and one pond along the margins of the property which may contain juridiction features. The City of Tacoma's govME geographic information system (GIS) identifies a wetland (high probability) and a critical area (habitat zone) on the adjacent Bonneville Power Administration (BPA) property to the south-southwest of the site. In addition, a small wetland/critical area is located on an adjacent parcel owned by the Port (near the southwest corner of the site) but outside of any potential work area. The City of Tacoma has determined that the buffer for the offsite wetland is interupted and is not anywhere near the two work areas.

2) **Will the project require any work over, in, or adjacent to (within 200') the described waters? If yes, please describe and attach available plans.**

Yes, some work will be implemented near the ditch which is located east of the Rod Mill Landfill area. No work is planned within the ditch itself, and no permits are required.

3) **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

None.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.**

No.

5) **Does the proposal lie within a 100-year floodplain? If so, note the location on the site plan.**

No. [Note: FEMA identifies some old Kaiser process water settling ponds (no longer in existence) as being within the floodplain. This is an incorrect representation of these constructed industrial facilities.]

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No waste materials will be discharged to surface waters.

b. Ground:

1) **Will groundwater be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

Possibly. In the event oil is found floating on groundwater within the Rod Mill Closed Landfill waste excavation footprint, it is likely that several tanker loads of oily water would be pumped out to remove source material and address groundwater contamination

concerns. Removed water would be tested and disposed of properly. For planning purposes, the estimated quantity of water that could be removed from the excavation is 10,000 to 30,000 gallons.

2) **Describe waste materials that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

None.

c. **Water Runoff (including storm water):**

1) **Describe the source of runoff (including storm water) and the method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

The site has previously been graded to allow some stormwater to infiltrate into the ground, some to flow into two existing stormwater ponds located on the property, part to flow into the municipal drainage systems along Taylor Way and Alexander Avenue, and some to flow toward the SR 590/Taylor Way intersection via a series of ditches. Surface water runoff within the Spent Pot Liner area flows to an existing inlet structure, then to the municipal system along Taylor Way and eventually into the Hylebos Waterway via the Kaiser Ditch. Rainfall within the Rod Mill Landfill area infiltrates into the sandy soil (hydraulic fill placed in the mid 1960's) present within this portion of the site.

2) **Could waste materials enter ground or surface waters? If so, generally describe.**

For the proposed interim actions, wastes will be properly characterized, handled and disposed of in an approved manner. This will eliminate a potential source of contamination to ground and surface waters. Materials from accidental spills associated with construction activities could potentially occur. The Port will prepare a Stormwater Pollution Prevention Plan (SWPPP) for the project area and work. In addition, the Port will require the contractors to develop a spill prevention, control and countermeasure plan for any excavation, grading, and stockpiling activities. Implementation of BMP's as outlined in these plans will minimize the potential for releases to groundwater or surface water and will detail response actions to be undertaken should a spill occur.

d. **Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

Temporary measures will be taken during excavation, grading and stockpiling to control erosion and the transport of sediment from the work area. The Project will be managed under an Ecology NPDES General Permit for Construction Activity. Prior to the start of interim actions, the Port will develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Ecology's Surface Water Management Manual and the NPDES General Permit for Construction Activity.

4. **Plants**

a. Check or circle types of vegetation found on site:
_X_ deciduous tree: alder, maple, aspen, other: small cottonwoods
_____ evergreen tree: fir, cedar, pine, other
_____ shrubs
_X_ grass
_____ pasture
_____ crop or grain
_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage,
_____ water plants: water lily, eelgrass, milfoil, other: cattails along margins of two ponds
_X_ other types of vegetation: minor amounts of opportunistic weeds and blackberry vines

b. What kind and amount of vegetation will be removed or altered?

No significant amount of vegetation will be removed or altered as a result of the proposed Project.

c. List any threatened or endangered species known to be on or near the site.

None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

None.

5. **Animals**

a. Underline any birds or animals which have been observed on or near the site or are known to be on or near the site:
birds: hawk, heron, eagle, songbirds, other: canada geese
mammals: deer, bear, elk, beaver, other: transient coyotes
fish: salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

There are no known endangered species on the site. With respect to near the site, the following is known:

On May 24, 1999, the National Marine Fisheries Service (NMFS) formalized listing of Puget Sound Chinook salmon as threatened under the Endangered Species Act (ESA). This species occurs in the Puyallup River drainage and Commencement Bay.

The U.S. Fish and Wildlife Service (USFWS) announced the listing of Coastal-Puget Sound bull trout (*Salvelinus confluentus*) as threatened on October 28, 1999. Bull trout occur in the Puyallup River drainage and Commencement Bay.

On November 15, 2005 the National Marine Fisheries Service (NMFS) formalized listing of Southern Resident Orcas as endangered under the Endangered Species Act. The pods listed may transit Commencement Bay during summer months.

Other listed species that could occur in the Project area include the humpback whale (*Megaptera novaeangliae*), Steller sea lion (*Eumetopias jubatus*), leatherback sea turtle (*Dermochelys coriacea*) and bald eagle (*Haliaeetus leucocephalus*). This list of species is based on information provided by NMFS and USFWS with respect to another Port project in Commencement Bay (Blair Waterway Infrastructure Improvements Project).

On May 11, 2007, the National Marine Fisheries Service (NMFS) formalized listing of Puget Sound Steelhead (*Oncorhynchus mykiss*) as threatened under the Endangered Species Act, to take effect June 11, 2007. Steelhead may occur in the Puyallup River drainage and Commencement Bay.

On April 28, 2010 the National Marine Fisheries Service (NMFS) formalized listing of three species of rockfish. The Puget Sound/Georgia Basin Distinct Population Segments of yelloweye (*Sebastes ruberrimus*) and canary rockfish (*Sebastes penniger*) are listed as threatened, and bocacio (*Sebastes paucispinis*) are listed as endangered.

The project will not impact existing habitat nor will it have an adverse impact on water quality or fish life.

c. Is the site part of a migration route? If so, explain.

The Tacoma tideflats is part of the Pacific flyway for migrating birds. The Project site consists of upland areas that do not abut marine waters. Adult salmon migrate from Commencement Bay into the Puyallup River, Hylebos Creek, or Wapato Creek systems to spawn, and juveniles migrate downstream into Commencement Bay as smolts.

d. Proposed measures to preserve or enhance wildlife, if any:

None planned.

6. <u>Energy and Natural Resource</u>

a. What kinds of energy (electrical, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

No energy will be required as part of the completed Project.

b. Would your project affect the potential use of solar power by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans for this proposal? List other proposed measures to reduce or control energy impacts, if any

None.

7. **Environmental Health**

a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, generally describe.**

Spent pot liner contains cyanide and PAH compounds; both are regulated contaminants. Solid wastes buried at the Rod Mill Landfill also contain regulated contaminants. These materials will be handled, removed, and disposed of in an approved manner. In addition, some construction equipment will use fuels or petroleum products that have an inherent potential risk of fire, explosion or spill. Contractors working onsite will be required to have approved health and safety, spill prevention, and erosion control plans to protect workers, the public and the environment.

1) **Describe special emergency services that might be required.**

During work activities there is the potential for an accident which could require medical attention and emergency services. Routine fire protection, police and medical aid provided by and/or within the City of Tacoma are available. Contractors will establish and follow appropriate health and safety plans. No special emergency service needs are anticipated.

2) **Proposed measures to reduce or control environmental health hazards, if any:**

All applicable state and federal safety guidelines will be adhered to in the implementation of the proposed Project. Contractors will follow appropriate health and safety plans and shall have United States Department of Labor, Occupational Safety & Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training, as necessary. The need for additional measures is not anticipated.

b. **Noise**

1) **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

The site is located in an industrial area. Noise is not expected to affect the project.

2) **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Noise will be generated during implementation of the Project; however, that noise will be consistent with the surrounding industrial areas.

3) **Proposed measures to reduce or control impacts, if any:**

Restrict construction activities to approved work hours.

8. **Land and Shoreline Use**

a. **What is the current use of the site and adjacent properties?**

The Project site currently is vacant land. The site is occasionally used for automobile storage, recycling of constructon materials and contractor laydown area.

Properties adjacent to the Project site are owned by the Puyallup Tribe of Indians, BPA, City of Tacoma and Port of Tacoma. A portion of the Tribe property to the north is developed and has recently been used as a lumber transloading facility. The remaining portions of the Tribe property to the west and southeast are vacant. Property to the south is owned by BPA, and is used for a power substation. The City of Tacoma owns the adjacent Taylor Way and Alexander Avenue. The abutting Port property is part of the Port's industrial land inventory. Several small office buildings are present at the southwest corner of the 96 acre site.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structure on the site.

Five small office buildings are located at the southwest corner of the site and have been used as field offices; however, they are currently vacant. One small sampling shed is present along Taylor Way, at the outlet to one of the two ponds.

d. Will any structures be demolished?

No. Concrete slabs and asphalt pavement will be removed at the Spent Pot Liner area.

e. What is the current zoning?

The Project site is zoned "PMI" Port Maritime Industrial District.

f. What is the current comprehensive plan designation of the site?

High Intensity

g. If applicable, what is the current shoreline master program designation of the site?

NA.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

None known

i. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None needed.

l. Proposed measures to insure the proposal is compatible with existing and projected land uses and plans, if any:

The site use proposed is compatible and consistent with the surrounding uses and with current zoning and comprehensive plan designations for this site. Remedial actions planned during the project will restore contaminated portions of the site to productive use.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principle exterior building material(s) proposed?

No structures are proposed.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None.

11. Light and Glare

a. What type of light and glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site source of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Recreational fishing and boating occur in Commencement Bay and the nearby waterways.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None needed, as the project does not interfere with any access to recreational opportunities.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, general describe.

There are no places or objects on or next to the sites known to be listed or proposed for national, state, or local preservation registers.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None known.

c. Proposed measures to reduce or control impacts, if any:

None needed.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The site has two existing entrances along Taylor Way and two existing entrances along Alexander Avenue. The majority of the project traffic is expected to enter and exit the site via the southern Taylor Way entrance. This entrance has been in continual use since 1968.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The site is no longer served by public transit. The nearest bus stop is in Fife.

c. How many parking spaces would the completed project have? How many would the project eliminate?

The project will neither create nor eliminate any parking spaces. Contractor temporary parking will be provided on the Project site.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Yes; the project is located on parcels in the vicinity of water and rail transportation given the proximity of the locations to the Port of Tacoma. There will be no impact on either.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

The Project will not generate vehicular trips when it is completed, therefore, peak volumes or times will not be effected.

g. Proposed measures to reduce or control transportation impacts, if any:

None.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts to public services, if any.

Not applicable.

16. Utilities

a. Underline utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

The above identified utilities are available on the property, but not within close proximity to any planned construction.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No new utility services will be required as a result of the completion of the proposed project.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date Submitted: 1/15/2013

WAC 197-11-970 Determination of nonsignificance (DNS).

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: The project involves the following elements pursuant to Agreed Order No. DE – 5698, or as deemed necessary by Ecology:

- Interim Action Work Plan(s) and Interim Action(s), including supporting documentation. These may include the removal of contaminated materials or capping, as appropriate.

Proponent: Port of Tacoma

Location of proposal, including street address, if any: Generally described as 3400 Taylor Way, Tacoma, WA 98421

Lead agency: Washington State Department of Ecology

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

X This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by February 11, 2013.

Responsible official: Rebecca Lawson P.E., LHG

Position/title: Regional Section Manager, Toxics Cleanup Program, Phone: (360) 407-6241

Address: Southwest Regional Office, P.O. Box 47775, Olympia, WA 98504-7775

Date 1/15/2013 Signature Rebecca S. Lawson

(OPTIONAL)

☐ You may appeal this determination to (name) _____
at (location) _____
no later than (date) _____
by method .....

You should be prepared to make specific factual objections.
Contact _____ to read or ask about the procedures for SEPA appeals.

X There is no agency appeal.

Tacoma - Pierce County
Health Department
Healthy People in Healthy Communities
www.tpchd.org

No. 1671

WASTE DISPOSAL AUTHORIZATION

Tacoma Pierce County
Health Department

5/10/2013 11:07:13 AM
Clerk 6-T1
Waste Disposal Authorization
$145.00
Receipt #300097
cash WDA 1671 Landau & Assoc

(**XX**) Non-Asbestos **(XX) New**

( ) Asbestos (PSCAA Case # _____) ( ) Renewal

A. Generator Name: Port of Tacoma – Former Kaiser Aluminum Rod Mill Area Closed Landfill

B. Generator Address: 3400 Taylor Way, Tacoma WA

C. Transporter Name: Contract Hauler

D. Technical Contact: Stacey Lane, Landau Associates Phone: 425 778 0907

E. Waste Description: Industrial Waste – Excavated Waste From Closed Rod Mill Area Landfill
( ) Sludge (**XX**) Solid ( ) PCS (**XX**) Other

F. Authorized Quantity: 25,000 Tons

G. **Actual Quantity (Filled in upon disposal):** _____

H. Multiple Loads: (XX) Yes ( ) No

I. Dates of Disposal: May 9, 2013 through May 8, 2014

J. Testing: NWTPH-Dx, cPAH's, PCB's, Cyanide, Vinyl Chloride, Total Metals (As, Cr, Cu, Pb, Hg, Zn)

K. Reviewed by Department of Ecology: (**XX**) Yes ( ) No

L. Disposal/Transportation Requirements: **A copy of this WDA must be transported with EACH load of waste and presented to the LRI Landfill Scalehouse Operator.** This waste stream must be dewatered so that it contains no free liquids (verified as necessary by Paint Filter Test) prior to transport. Loads must be covered during transport to the landfill to prevent fugitive emissions of contaminated soils. Load sizes shall comply with conditional-use and solid waste permit criteria. This industrial waste is NOT suitable for use as an Alternative Daily Cover (ADC) therefore must be directly disposed within the landfill. Waste shall either be co-mingled with MSW or, if segregated, covered with suitable daily cover at the end of each day.

M. Facility: **(X X) LRI Landfill (304th Street LF), 30919 Meridian Street, Eatonville, WA**

CERTIFICATION

I hereby certify that I have personally examined and am familiar with the information submitted in this document and any supporting material. Based on my inquiry of those individuals immediately responsible for obtaining the information, the information submitted is true, accurate and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. I agree that the generator and/or transporter will abide by all conditions specified in line (L) or any attachments thereto.

5/10/13	Senior Staff Geologist	Kristin Hooper
Date	Title	Signature

APPROVED

MAY 09 2013

TACOMA-PIERCE COUNTY HEALTH DEPT.
ENVIRONMENTAL HEALTH DIV.

AUTHORIZED BY:

Andy Comstock, TPCHD 253-798-6538

For Official Use Only

Cc: LRI LF Scalehouse via Fax – 253 875 7205

APPENDIX C

Interim Action Construction Drawings

PORT OF TACOMA

FORMER KAISER FACILITY INTERIM ACTION
SPL AREA AND ROD MILL AREA CLOSED LANDFILL
PROJECT NO. 092837
CONTRACT NO. 069646

PORT COMMISSIONERS:

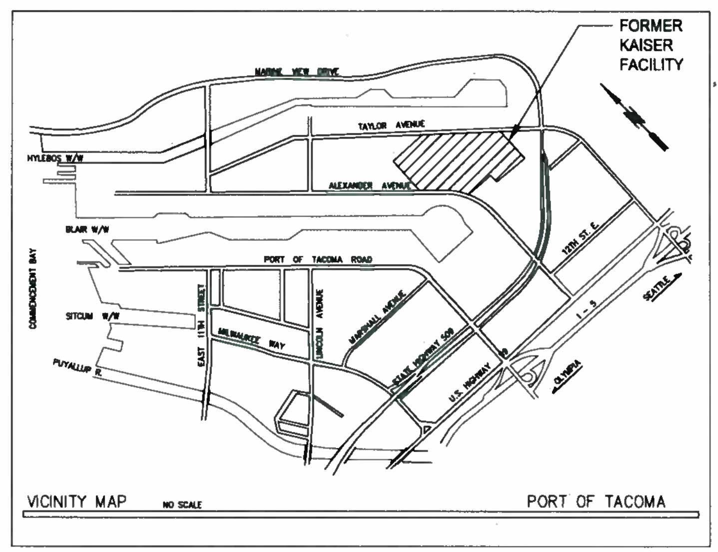
CONSTANCE T. BACON
DONALD C. JOHNSON
RICHARD P. MARZANO
DON MEYER
CLARE PETRICH

PORT STAFF:

JOHN WOLFE
Chief Executive Officer

SUE MAUERMANN
Director of Facilities Development

DAKOTA CHAMBERLAIN, PE
Director of Engineering



ENVIRONMENTAL/GEOTECHNICAL ENGINEER:
LANDAU ASSOCIATES
CONTACT: DAVE PISCHER, P.E.
130 2ND AVENUE SOUTH
EDMONDS, WA 98020
(425) 778-0907

BASE SURVEY:
APEX ENGINEERING PLLC
CONTACT: MEL GARLAND, P.L.S.
2601 SOUTH 35TH STREET, SUITE 200
TACOMA, WA 98409
(253) 473-4494

DRAWING LIST		
SHEET DESIGNATION	SHEET #	SHEET TITLE
G1.0	1	COVER SHEET
G2.0	2	LEGEND, SYMBOLS, AND ABBREVIATIONS
G3.0	3	DATUM AND GENERAL NOTES
C1.0	4	SITE ACCESS, HAUL ROUTES, AND STAGING AREA
C2.0	5	TESC PLAN, NOTES, AND DETAILS
C3.0	6	SPL AREA DEMOLITION PLAN
C3.1	7	SPL AREA EXCAVATION PLAN
C3.2	8	SPL AREA EXCAVATION SECTIONS
C3.3	9	SPL AREA BACKFILL AND GRADING PLAN
C3.4	10	SPL AREA STORM DRAINAGE PLAN
C4.0	11	ROD MILL CLOSED LANDFILL AREA EXCAVATION PLAN
C4.1	12	ROD MILL CLOSED LANDFILL AREA EXCAVATION SECTIONS
C4.2	13	ROD MILL CLOSED LANDFILL AREA BACKFILL AND GRADING PLAN
C5.0	14	RECTIFIER YARD AREA BACKFILL AND GRADING PLAN
---	15	TOPOGRAPHIC SURVEY

Port of Tacoma
LANDAU ASSOCIATES
130 2nd AVENUE S.
EDMONDS, WA 98020
(425) 778-0907, FAX (425) 778-6409

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED DAKOTA CHAMBERLAIN MAY 22, 2013 DIRECTOR ENG. DATE
CHECKED BY DATE
PROJ. ENGR DATE
PRINTED BY: rludwig May 17, 2013
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

FORMER KAISER FACILITY INTERIM ACTION
COVER SHEET

TOWNSHIP: 21 NORTH RANGE: 3 EAST SECTION: SW 1/4-36
DAT-HRZ: WA83-SF VERT: MLLW 19.39 @ Tide 22 1933
PARCEL: 77 DRAWING SCALE: AS NOTED

G1.0
SHEET 1 OF 15
CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

BINDING EDGE
PORT OF TACOMA FILE: V:\118\033\010.040\Bid Set\092837-G1.0

ABBREVIATIONS

A/C	ASPHALT CONCRETE
ASPH	ASPHALT
APPROX	APPROXIMATE
BGS	BELOW GROUND SURFACE
BOT	BOTTOM
BMP	BEST MANAGEMENT PRACTICE
CAMU	CORRECTIVE ACTION MANAGEMENT UNIT
CDF	CONTROLLED DENSITY FILL
CITY	CITY OF TACOMA
CONC	CONCRETE
CPAHS	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS
CPE	CORRUGATED POLYETHYLENE
ECOLOGY	WASHINGTON STATE DEPARTMENT OF ECOLOGY
ELEV	ELEVATION
FT	FEET
HORZ	HORIZONTAL
HASP	HEALTH AND SAFETY PLAN
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
MLLW	MEAN LOWER LOW WATER
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
MW	MONITORING WELL
MTCA	MODEL TOXICS CONTROL ACT
NTS	NOT TO SCALE
PORT	PORT OF TACOMA
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RMLF	ROD MILL LANDFILL
SD	STORM DRAINAGE
SF	SQUARE FEET
SPL	SPENT POT LINING
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TYP	TYPICAL
VERT	VERTICAL

SYMBOLS

- BOLLARD/ GAURD POST
- GATE — FENCE GATE
- FIRE HYDRANT – 2 PORT
- FIRE HYDRANT – 3 PORT
- LANDSCAPE LIGHT
- LIGHT J–BOX
- LIGHT STANDARD
- LIGHT VAULT
- POWER GUY ANCHOR
- POWER GUY POLE
- POWER POLE
- POWER PULL BOX
- POWER RISER POWER
- POWER TRANSFORMER
- POWER VAULT
- SIGN
- STORM DRAIN CULVERT
- STORM MAN HOLE
- WATER METER
- WATER VALVE
- WATER VAULT

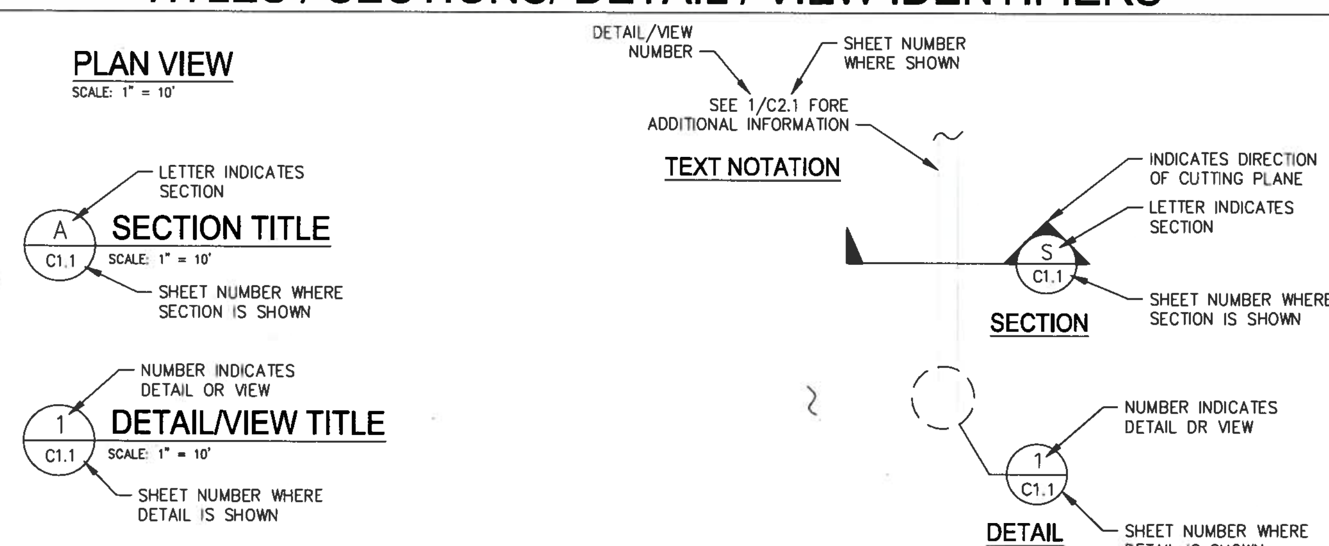
SURVEY LEGEND

- EXISTING SURVEY MONUMENT
- EXISTING SURVEY MONUMENT – SECONDARY
- SURVEY CONTROL POINT
- STORMWATER CATCH BASIN
- STORMWATER CULVERT
- MONITORING WELL
- SIGN
- ASPHALT
- CONCRETE
- GRAVEL
- STORM DRAIN LINE
- CHAIN LINK FENCE
- TOP OF SLOPE
- TOE OF SLOPE
- MAJOR CONTOUR
- MINOR CONTOUR

GENERAL

- SEE SHEET NO. X.XX — MATCHLINE
- [+15'] — ELEVATION POINT (TOP OF ELEMENT INDICATED)
- X1 X2 — POINT
- R X.XX — RADIUS
- SLOPE
- PAVEMENT SAWCUT LINE
- TEMPORARY CONSTRUCTION ROUTE
- FORMER BUILDING FOOTPRINT
- SILT FENCE
- TEMPORARY ORANGE CONSTRUCTION EXCLUSION FENCE
- DRAINAGE DIVERSION
- COIR LOG
- CHAINLINK FENCE
- FLOW LINE
- ASPHALT
- CONCRETE
- GRAVEL
- SOIL
- SOIL STABILIZATION (EROSION CONTROL BLANKET & HYDROSEEDING)
- HYDROSEEDING
- QUARRY SPALLS

TITLES / SECTIONS/ DETAIL / VIEW IDENTIFIERS



DEMOLITION

- ASPHALT
- CONCRETE
- PIPE REMOVED

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

LANDAU ASSOCIATES
130 2nd AVENUE S.
EDMONDS, WA 98020
(425) 778-0907, FAX (425) 778-6409

MARK:	REVISION:	BY:	APPR:	DATE:

DAVID A. PISCHER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 5/16/2013

APPROVED: DAKOTA CHAMBERLAIN MAY 22, 2013 DIRECTOR ENG. DATE
CHECKED BY DATE
PROJ. ENGR DATE
PRINTED BY: rludwig May 17, 2013
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

FORMER KAISER FACILITY
INTERIM ACTION
LEGEND, SYMBOLS, AND ABBREVIATIONS

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36
DAT-HRZ: WA83-SF | VERT: MLLW 19.39' ● Tide 22 1933
PARCEL: 77 | DRAWING SCALE: AS NOTED

G2.0
SHEET 2 OF 15

CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

ROBERT C. LUDWIG, STATE OF WASHINGTON, 40847, REGISTERED PROFESSIONAL ENGINEER 5/16/2013

BINDING EDGE

BINDING EDGE

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES:

1. APPROVAL OF THE TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD AND/OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION BMPS, UTILITIES, ETC.) BUT IS AN APPROVAL OF TESC MEASURES ONLY.
2. IMPLEMENTATION OF THE TESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE TESC BEST MANAGEMENT PRACTICES (BMPS) IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL SUBSTANTIAL COMPLETION, UNLESS OTHERWISE DIRECTED BY THE PORT.
3. CONTRACTOR SHALL MARKUP AND RESUBMIT FOR PORT APPROVAL THE UPDATED TESC PLANS INDICATING LOCATIONS AND SEQUENCING OF MEASURES (FACILITIES AND BMPS) TO BE INSTALLED.
4. BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THE TESC PLAN SHALL BE CLEARLY MARKED (WITH SURVEY TAPE, HIGH VISIBILITY FENCING, HIGH VISIBILITY SILT FENCING, HIGH VISIBILITY PAINT, LATH WITH SURVEY TAPE, OR TEMPORARY FENCING AS APPROPRIATE AND AS SHOWN ON THE PLANS) PRIOR TO EXCAVATION OF SOILS.
5. TESC MEASURES (FACILITIES AND BMPS) SHOWN ON THE TESC PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THE TESC FACILITIES SHALL BE UPGRADED (E.G., ADDITIONAL SUMPS, PUMPS, STORAGE TANKS, RELOCATION OF DITCHES AND SILT FENCING, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS. THEREFORE, DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL ADDRESS ANY CHANGED OR NEW CONDITIONS THAT MAY BE CREATED BY THE CONTRACTOR'S ACTIVITIES AND PROVIDE ADDITIONAL TESC MEASURES THAT MAY BE NEEDED TO PROTECT ADJACENT PROPERTIES AT NO ADDITIONAL COST TO THE PORT.
6. TESC MEASURES SHALL BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND EXCAVATION ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER SURFACE WATERS, DRAINAGE SYSTEMS, ADJACENT PROPERTIES, AND/OR VIOLATE APPLICABLE WATER STANDARDS.
7. STABILIZED CONSTRUCTION ENTRANCES, WHEEL WASH FACILITIES, AND EQUIPMENT DECONTAMINATION FACILITIES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES SHALL BE IMPLEMENTED AS REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
8. TESC MEASURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR DURING ACTIVE WORK AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY SITE INSPECTIONS AND SUBMITTED TO THE PORT ON A WEEKLY BASIS.
9. THE CONTRACTOR SHALL MAINTAIN A FULLY STOCKED SPILL KIT ON SITE AT ALL TIMES.
10. ANY AREA NEEDING ADDITIONAL TESC MEASURES, BUT NOT REQUIRING IMMEDIATE ATTENTION, SHALL BE ADDRESSED WITHIN 5 DAYS.
11. TESC MEASURES ON INACTIVE SITE AREAS SHALL BE MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME II, CONSTRUCTION STORMWATER POLLUTION PREVENTION, BY THE WASHINGTON STATE DEPARTMENT OF ECOLOGY.
12. AT NO TIME SHALL SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES WITHIN AND NEAR AREAS OF CONTAMINATED SOIL REMOVAL SHALL BE BLOCKED OR PLUGGED.
13. POLYETHYLENE SHEETING OR AN EROSION CONTROL BLANKET SHALL BE APPLIED TO STABILIZE SOIL BERMS.
14. THE CONTRACTOR SHALL DESIGNATE A PERSON TO BE TESC SUPERVISOR. THE TESC SUPERVISOR SHALL HAVE THEIR CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL) CERTIFICATION AND BE RESPONSIBLE FOR MAINTENANCE AND REVIEW OF TESC MEASURES AND FOR COMPLIANCE WITH ALL PERMIT CONDITIONS RELATING TO TESC. THE TESC SUPERVISOR MUST BE AVAILABLE FOR RAPID RESPONSE TO TESC PROBLEMS. THE CONTRACTOR SHALL PROVIDE THE NAME AND PHONE NUMBERS TO REACH THE TESC SUPERVISOR, AT ALL TIMES, TO THE PORT AND ENGINEER.
15. SHOULD TESC MEASURES NOT BE PROPERLY INSTALLED AND MAINTAINED, THE PORT MAY STOP ALL WORK NOT PERTAINING TO THE CORRECTION OF TESC PROBLEMS UNTIL TESC MEASURES ARE RETURNED TO THE PROPER OPERATION, AT NO ADDITIONAL COST TO THE PORT.

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES (CONT):

16. ALL TESC BMPS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS PASSED.
17. AT A MINIMUM, EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE MAINTAINED MONTHLY, OR FOLLOWING EACH RUNOFF PRODUCING STORM, TO ENSURE PROPER OPERATION OF ALL EROSION AND SEDIMENT CONTROL MEASURES.
18. THE PUBLIC RIGHT-OF-WAY SHALL BE KEPT CLEAN. TRACKING OF MUD AND DEBRIS FROM THE SITE WILL NOT BE ALLOWED. FAILURE TO COMPLY WITH THIS CONDITION WILL RESULT IN ALL WORK ON THE SITE BEING STOPPED UNTIL THE ISSUE IS CORRECTED, AT NO COST TO THE PORT.
19. WHEN NECESSARY, SCRAPING AND SWEEPING OF STREETS, SIDEWALKS, AND FLOWLINES SHALL BE CONDUCTED WITH A VACUUM SWEEPER OR OTHER APPROVED MEANS.
20. VACUUM/CLEAN UP SLURRY CREATED FROM SAW-CUTTING OF SLABS AND PAVEMENTS IMMEDIATELY AFTER OR CONCURRENT WITH CUTTING.
21. THE WASHINGTON STATE CLEAN AIR ACT REQUIRES THE USE OF ALL KNOWN, AVAILABLE, AND REASONABLE MEANS OF CONTROLLING AIR POLLUTION, INCLUDING DUST. DUST CAN BE CONTROLLED BY WETTING EXPOSED SOILS, WASHING TRUCK WHEELS BEFORE THEY LEAVE THE SITE, AND INSTALLING AND MAINTAINING ROCK CONSTRUCTION ENTRANCES. CONSTRUCTION VEHICLE TRACK-OUT IS A MAJOR SOURCE OF DUST AND ANY EVIDENCE OF TRACK-OUT CAN TRIGGER FINES FROM THE DEPARTMENT OF ECOLOGY OR THE PUGET SOUND AIR POLLUTION CONTROL AGENCY THAT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
22. CATCH BASIN INSERTS SHALL BE PROVIDED AND PROPERLY MAINTAINED IN ALL EXISTING AND NEW CATCH BASINS WITHIN THE CONSTRUCTION LIMITS. AT NO TIME SHALL MORE THAN 6 INCHES OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN INSERT.
23. THE CONTRACTOR SHALL IMPLEMENT LINEAR RUN-ON CONTROLS TO PREVENT WATER FROM ENTERING THE EXCAVATED AREAS.
24. PORTABLE SANITARY FACILITIES SHALL BE LOCATED AT LEAST 25 FEET FROM ANY STORM WATER INLET OR WATER BODY AND SHALL BE SERVICED REGULARLY AS NEEDED.
25. STATIONARY EQUIPMENT (E.G., GENERATORS, LIGHT STANDS) CONTAINING ANY AMOUNT OF FUELS AND OR OILS SHALL BE EQUIPPED WITH SECONDARY CONTAINMENT.
26. TESC BMPS SHALL BE REMOVED PRIOR TO FINAL COMPLETION UNLESS OTHERWISE DIRECTED BY THE PORT.

PERMANENT EROSION CONTROL:

1. CONTRACTOR SHALL MAINTAIN BMPS THROUGH PERMIT TERMINATION OR WARRANTED PERIOD, WHICHEVER IS FIRST.

GENERAL CONSTRUCTION NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE PORT OF TACOMA STANDARDS, THE CITY OF TACOMA STANDARDS, AND AS SPECIFIED IN THE SPECIFICATIONS FOR THIS CONTRACT.
2. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL CALL 811 NUMBER PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR VERIFICATION OF LOCATIONS AND AVOIDING DAMAGE TO ALL UTILITIES. CONTRACTOR SHALL NOT COMMENCE CLEARING AND/OR GRADING ACTIVITIES UNTIL ALL KNOWN UTILITIES ARE MARKED AND ALL UTILITY PURVEYORS HAVE BEEN NOTIFIED AND HAVE PROVIDED INFORMATION ON UNKNOWN FACILITIES.
3. IF CONFLICTS WITH EXISTING UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE PORT AND THE ENGINEER. ANY CHANGES REQUIRED SHALL BE APPROVED BY THE PORT PRIOR TO COMMENCEMENT OF RELATED CONSTRUCTION ON THE PROJECT.
4. A COPY OF THE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY SHALL CONFORM WITH THE CITY OF TACOMA TRAFFIC CONTROL HANDBOOK AND PART SIX (6) OF THE MUTCD FOR GENERAL REQUIREMENTS.
6. EQUIPMENT AND VEHICLES THAT HAVE BEEN IN CONTACT WITH POTENTIALLY CONTAMINATED SITE MATERIALS MUST PASS THROUGH THE DECONTAMINATION WORK PAD FACILITY PRIOR TO LEAVING THE SITE.
7. WORK PERFORMED SHALL BE IN ACCORDANCE TO THE SPL AREA AND ROD MILL AREA CLOSED LANDFILL INTERIM ACTION WORK PLANS.

GENERAL EXCAVATION NOTES:

1. CONTRACTOR SHALL USE A SMOOTH BLADE BUCKET TO CAREFULLY EXCAVATE SOILS IN THE SPENT POT LINING AREA UNDER THE OBSERVATION OF THE PORT'S REPRESENTATIVE. EXCAVATION AT THE SPENT POT LINING AREA SHALL START ALONG THE NORTHERN BOUNDARY AND WORK TOWARDS THE SOUTH.
2. CONTRACTOR SHALL USE A SMOOTH BLADE BUCKET DURING THE FINAL PASS TO CAREFULLY EXCAVATE SOILS IN THE ROD MILL LANDFILL AREA UNDER THE OBSERVATION OF THE PORT'S REPRESENTATIVE. EXCAVATION AT THE ROD MILL LANDFILL AREA SHALL START ALONG THE SOUTHERN BOUNDARY AND WORK TOWARDS THE NORTH.
3. CONTRACTOR SHALL USE SOIL MATERIAL FROM THE STOCKPILE AREA STARTING AT THE NORTHERN EDGE/END OF THE STOCKPILE AND WORKING TOWARDS THE SOUTH.

GENERAL FILL NOTES:

1. CONTRACTOR SHALL OBTAIN CONFIRMATION FROM THE PORT THAT CONTAMINATED MATERIALS HAVE BEEN ADEQUATELY REMOVED IN EACH AREA PRIOR TO START OF BACKFILLING.

SUGGESTED CONSTRUCTION SEQUENCE:

1. HOLD THE PRE-CONSTRUCTION MEETING WITH THE PORT AND THE ENGINEER.
2. MARK CLEARING EXCAVATION LIMITS AS NOTED ON THE DRAWINGS.
3. INSTALL T.E.S.C. MEASURES (FACILITIES AND BMPS) ON AND ADJACENT TO THE SITE AS SHOWN ON THESE PLANS AS APPLICABLE.
4. CONDUCT EXCAVATION AND BACKFILLING WORK IN THE FOLLOWING ORDER UNLESS OTHERWISE APPROVED BY THE PORT.
   A. SPENT POT LINING (SPL) AREA
   B. ROD MILL CLOSED LANDFILL AREA
   C. RECTIFIER YARD AREA
5. DEMOLISH AND REMOVE SPL AREA CONCRETE SLABS/FOUNDATIONS AND ASPHALT PAVEMENTS AS CALLED OUT ON SHEET C3.0.
6. EXCAVATE AND REMOVE CONTAMINATED SOIL IN THE SPL AREA. UPON APPROVAL FROM THE PORT, BACKFILL TO SPECIFIED FINISHED GRADES.
7. EXCAVATE AND REMOVE SOIL AND DEBRIS IN THE ROD MILL LANDFILL AREA. UPON APPROVAL FROM THE PORT, BACKFILL TO SPECIFIED FINISHED GRADES.
8. PLACE FILL IN THE RECTIFIER YARD AREA.
9. CONDUCT SITE RESTORATION ACTIVITIES AND SUBMIT RECORD DRAWINGS TO THE PORT IN ACCORDANCE WITH SPECIFICATION SECTIONS 01 71 23 AND 01 77 00.

HORIZONTAL DATUM:

WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83/07.

AS DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) TIES TO PORT OF TACOMA SURVEY CONTROL MONUMENTS AS SHOWN ON PORT OF TACOMA (POT) 2007 SURVEY CONTROL MAP TITLED "BLAIR-HYLEBOS PENINSULA SURVEY CONTROL MAP", PREPARED BY PARAMETRIX, DATED JANUARY 7, 2008.

POT MONUMENT #135 N 706689.81, E 1178944.75
POT MONUMENT #175 N 708849.50, E 1176475.70
HELD INVERSE BEARING BETWEEN #175 AND #135, BEING SOUTH 48°49'26" EAST.

NOTE:
1. ALL DISTANCES SHOWN ARE GROUND VALUES.

VERTICAL DATUM:

PORT OF TACOMA – MLLW
BENCHMARK: POT MONUMENT #175
2" BRASS DISK ON THE SW SIDE OF TAYLOR WAY
ELEV: 16.15'

VERTICAL DATUM CONVERSION:

SUBTRACT 6.17' TO COVERT MLLW TO CITY OF TACOMA (NGVD '29) VERTICAL DATUM.

MMLW ELEV. – 6.17' = NGVD 29 ELEV.

Port of Tacoma
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DAVID A. PISCHER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 5/16/2013

APPROVED DAKOTA CHAMBERLAIN MAY 22 2013 DIRECTOR ENG. DATE | CHECKED BY DATE | PROJ. ENGR DATE

PRINTED BY: rludwig May 17, 2013
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

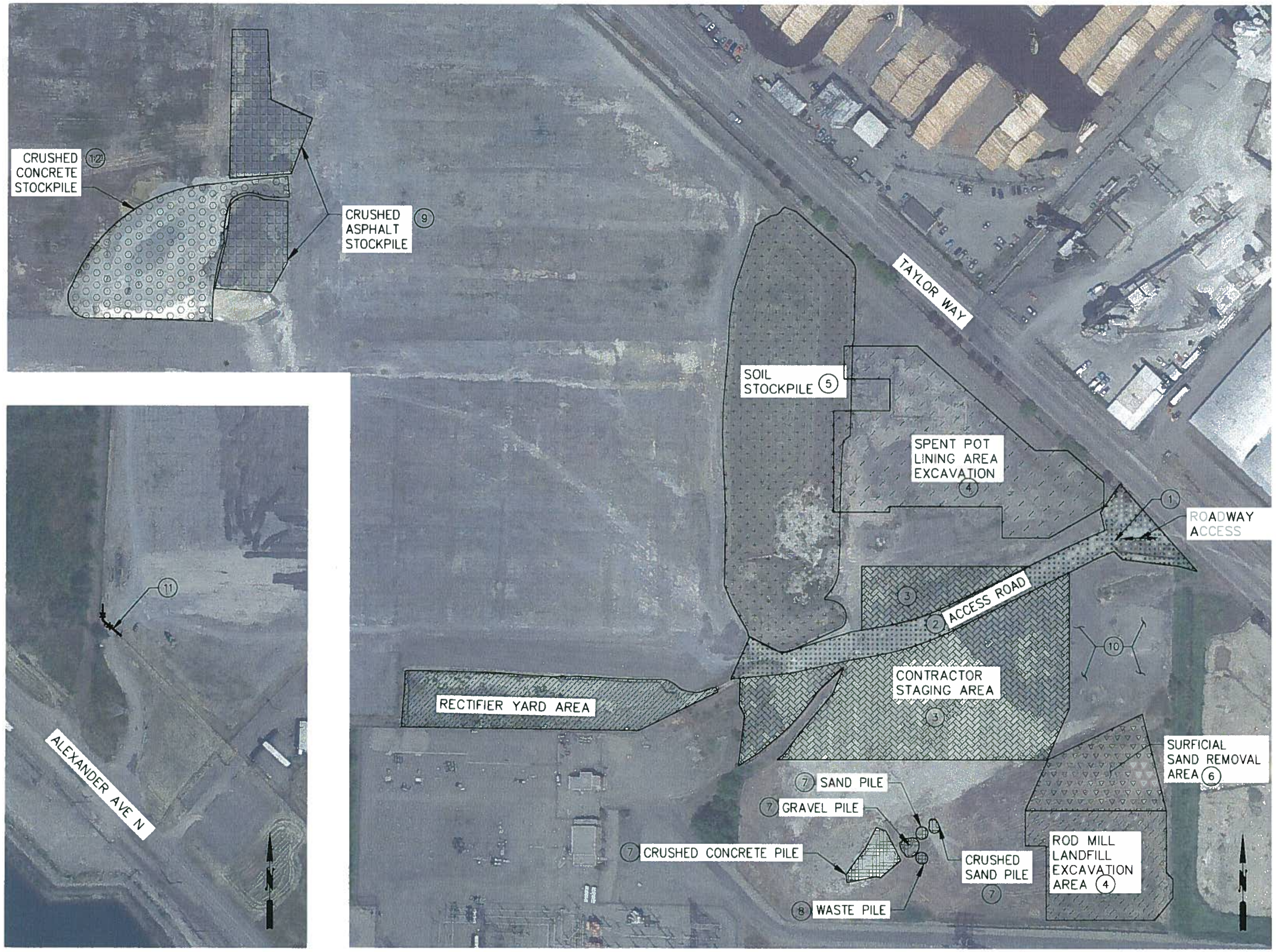
FORMER KAISER FACILITY
INTERIM ACTION
DATUM AND GENERAL NOTES

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36
DAT-HRZ: WA83-SF | VERT: MLLW 19.39' @ Tide 22 1933
PARCEL: 77 | DRAWING SCALE: AS NOTED

G3.0
SHEET 3 OF 15
CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

ROBERT C. LUDWIG, STATE OF WASHINGTON, 40847, REGISTERED PROFESSIONAL ENGINEER 5/16/2013

PORT OF TACOMA FILE: V:\1160031010.040\Bid Set\092837-G3.0



NOTES:

1. AERIAL MAP OBTAINED FROM GOOGLE EARTH PRO 2010.

(X) NOTES:

1. THE ONLY SITE ACCESS AVAILABLE TD THE CONTRACTOR IS LOCATED AT THIS GATED ENTRANCE ALONG TAYLOR WAY. CDNTRACTOR TO PROVIDE FLAGGER FOR TRUCKS TURNING ONTO AND OFF TAYLOR WAY AS NECESSARY. CONTRACTOR SHALL SHUT AND LOCK THE SITE ACCESS GATE AT THE END OF EACH WORKDAY.
2. THE ACCESS RDAD IS THE MAIN HAUL ROUTE AND ACCESS INTO THE SITE. CONTRACTOR SHALL COORDINATE USE AND MAINTENANCE OF THE ACCESS ROAD WITH THE PORT.
3. CONTRACTOR STAGING AREAS ARE AVAILABLE FDR TEMPORARY FACILITIES.
4. EQUIPMENT LEAVING CONTAMINATED SOIL EXCAVATION AREAS SHALL BE DECONTAMINATED AS SPECIFIED IN SPECIFICATION 01 35 45.
5. MATERIAL FROM THE SOIL STOCKPILE SHALL BE THE PRIMARY SOURCE OF ONSITE FILL MATERIAL, STARTING AT THE NORTH END OF THE STOCKPILE AND WORKING TOWARDS THE SOUTH.
6. SURFICIAL SAND IN THIS AREA TD BE REMOVED AND USED TO BACKFILL THE ROD MILL LANDFILL EXCAVATION AREA. DISTURBED AREAS TO BE REGRADED AND RECOMPACTED TO PROMOTE DRAINAGE.
7. STOCKPILES OF MATERIAL TO BE USED AS BACKFILL IN THE RECTIFIER YARD AND ROD MILL LANDFILL AREAS.
8. WASTE/DEBRIS PILE TD REMAIN OR BE REMOVED BY OTHERS.
9. EXISTING CRUSHED ASPHALT STOCKPILES SHALL BE USED AS SURFACING MATERIAL IN THE SPL AREA, RECTIFIER YARD AREA, AND PORTIONS OF THE ROD MILL AREA.
10. SURFICIAL CRUSHED ASPHALT SURFACING IN THIS AREA SHALL BE SCRAPED AND STOCKPILED FOR USE AS SURFACING MATERIAL IN OTHER PROJECT AREAS. DISTURBED AREAS TO BE REGRADED AND RECOMPACTED TO PROMOTE DRAINAGE.
11. CONTRACTOR SHALL PROVIDE APPROXIMATELY 70 LF OF TEMPORARY FENCING AT THE SOUTHWEST ACCESS ROAD OFF OF ALEXANDER AVENUE NORTH. FENCING SHALL BE REMOVED PRIOR TO FINAL COMPLETION.
12. EXISTING CRUSHED CONCRETE STOCKPILES TO BE USED AS FILL ONLY IN THE AREAS APPROVED BY THE PDRT.

0 100 200
Scale in Feet

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FORMER KAISER FACILITY INTERIM ACTION

SITE ACCESS, HAUL ROUTES, AND STAGING AREA

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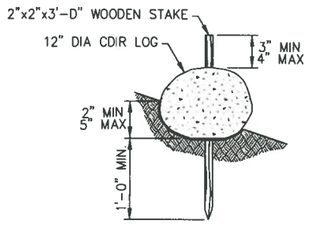
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837		
TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36
DAT-HRZ: WA83-SF	VERT: MLLW 19.39' ● Tide 22 1933	
PARCEL: 77	DRAWING SCALE: AS NOTED	

C1.0

SHEET 4 OF 15

CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

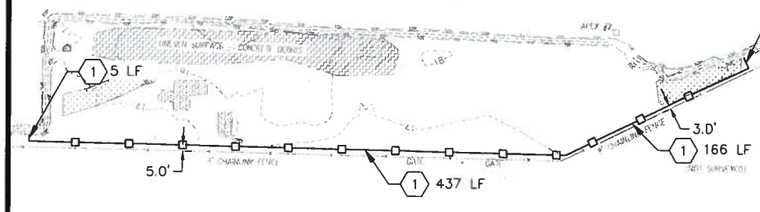
BINDING EDGE

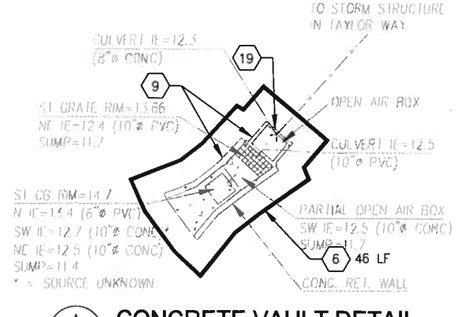


NOTES:

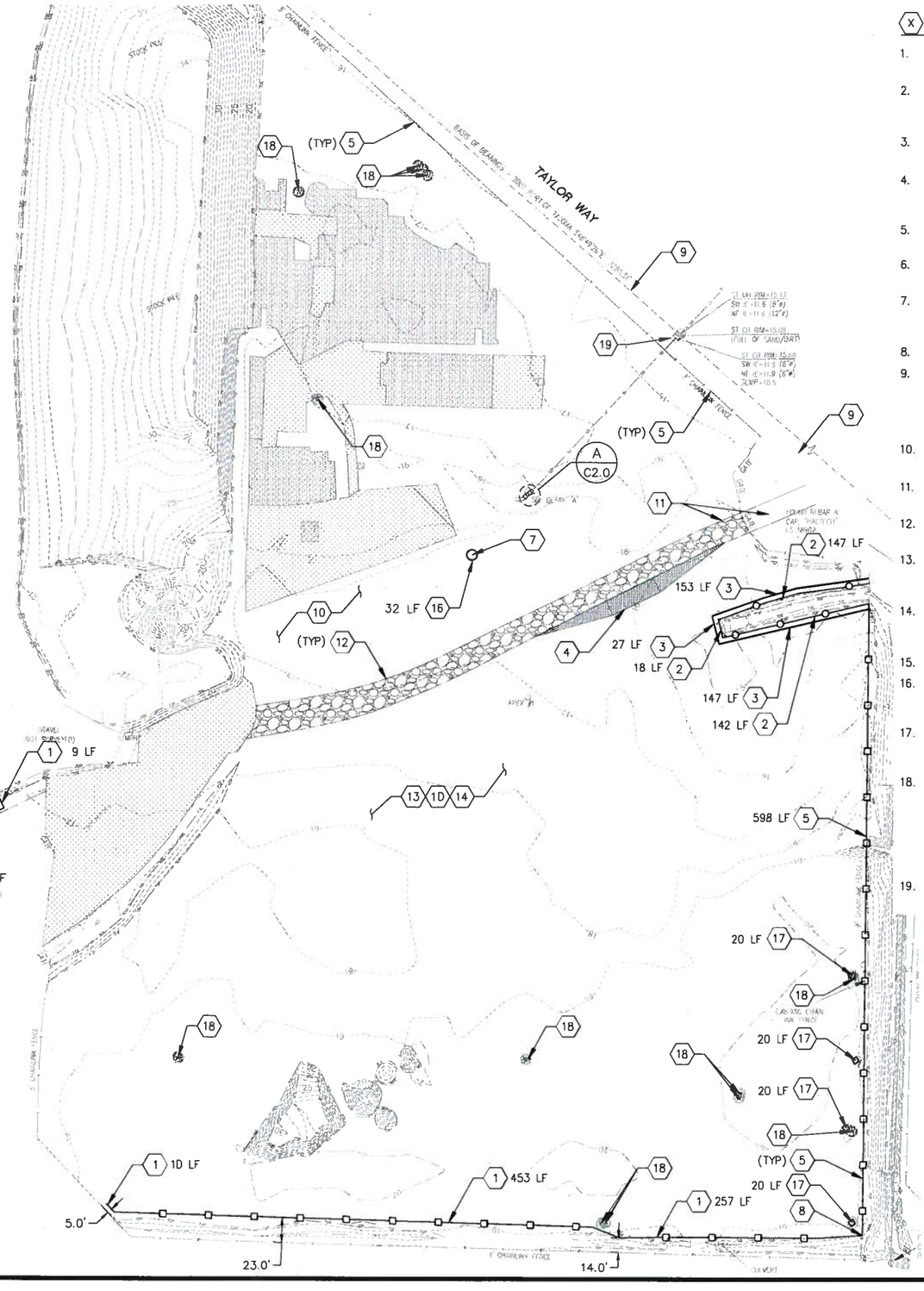
1. COIR LOGS SHALL BE IN ACCORDANCE WITH THE WSDOT STANDARD SPECIFICATIDN SECTION 9-14.5(7). PRDVIDE AND INSTALL AS SHOWN DN THE PLANS.
2. SECURELY KNOT EACH END OF COIR LOG. ABUT ADJACENT COIR LOGS TIGHTLY, END TO END, WITHOUT OVERLAPPING THE ENDS.
3. PILOT HOLES MAY BE DRIVEN THROUGH THE COIR LOGS AND INTO THE SOIL WHEN SOIL CONDITIONS REQUIRE.

1 C2.0 **COIR LOGS**
SCALE: N.T.S.





A C2.0 **CONCRETE VAULT DETAIL**
SCALE: 1" = 6'



TESC NOTES:

1. SILT FENCING TO BE PROVIDED AND INSTALLED IN ACCORDANCE WITH ECOLOGY'S BMP C233.
2. HIGH VISIBILITY (SAFETY) FENCING TO BE PROVIDED NEAR THE TOP OF SLOPE AND INSTALLED IN ACCORDANCE WITH ECOLOGY'S BMP C1D3.
3. CDIR LOGS TO BE PRDVIDED 5' FRDM HIGH VISIBILITY FENCING AND INSTALLED PER DETAIL 1/C2.D.
4. PRDVIDE WHEEL WASH IN ACCORDANCE WITH ECOLOGY'S BMP C106. LOCATION TO BE REVIEWED AND APPROVED BY THE PORT.
5. PRDVIDE OR REPAIR (AS NEEDED) AND MAINTAIN SILT FENCING ATTACHED TD CHAINLINK FENCE.
6. COIR LOGS TO BE PRDVIDED AROUND EXISTING CONCRETE VAULT AND INSTALLED PER DETAIL 1/C2.D.
7. CATCH BASIN INLET PROTECTION SHALL BE PROVIDED IN NEW CATCH BASIN AND INSTALLED IN ACCDRDANCE WITH ECOLOGY'S BMP C220.
8. CONNECT/TIE SILT FENCING TO EXISTING CHAINLINK FENCE.
9. PRDVIDE STORM DRAIN INLET PRDTECTION FOR THE EXISTING CONCRETE VAULT IN THE SPL AREA AND ALONG TAYLOR WAY IN THE FIRST TWO GRATED DOWNSTREAM CATCH BASINS FROM THE ENTRANCE AND INSTALLED IN ACCORDANCE WITH ECOLOGY'S BMP C22D.
10. PRDVIDE CONSTRUCTION ROADS AND PARKING AREA STABILIZATION IN ACCORDANCE WITH ECOLOGY'S BMP C1D7.
11. PROVIDE/UPGRADE CONSTRUCTION ENTRANCE/EXIT IN ACCORDANCE WITH ECOLOGY'S BMP C105.
12. PRDVIDE DUST CONTROL AS APPLICABLE IN ACCORDANCE WITH ECOLOGY'S BMP C14D.
13. HAVE APPROPRIATE EROSION CONTROL MATERIALS ON HAND AND LOCATED IN THE CDNTRACTOR'S AREA IN ACCORDANCE WITH ECOLOGY'S BMP C150.
14. PROVIDE MATERIAL DELIVERY, STDRAGE, AND CONTAINMENT IN THE CDNTRACTOR'S AREA IN ACCORDANCE WITH ECOLOGY'S BMP C153.
15. NOT USED.
16. CDIR LOGS SHALL BE PROVIDED 5 FT AWAY AND AROUND THE NEW CATCH BASIN AND INSTALLED PER DETAIL 1/C2.0.
17. PROTECT EXISTING GROUNDWATER MONITORING WELLS AND PROVIDE HIGH VISIBILITY FENCING AROUND THE WELLS IN ACCORDANCE WITH ECOLDGY'S BMP C1D3.
18. VERIFY WITH THE PORT THAT THE GROUNDWATER MONITORING WELLS ARE DECOMMISSIONED (BY OTHERS) PRIOR TO DEMOLITION OF ANY REMAINING WELL MONUMENTS, BOLLARDS, AND CONCRETE SEALS. CDNTRACTDR SHALL DEMOLISH REMAINING WELL MONUMENTS, BOLLARDS, AND CONCRETE SEALS AS DIRECTED BY THE PORT.
19. CLEAN STORM CATCH BASIN/STRUCTURES AND REMOVE SEDIMENTS PRIOR TO ANY EARTH DISTURBING ACTIVITIES.

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APPROVED:
DAKOTA CHAMBERLAIN
MAY 22 2013
DIRECTOR ENG. DATE

CHECKED BY DATE

PROJ. ENGR DATE
PRINTED BY: rludwig May 17, 2013
PORT ADDRESS:ONE SITCUM PLAZA
TACOMA, WA 98401-1837
DRAWING SCALE: AS NOTED

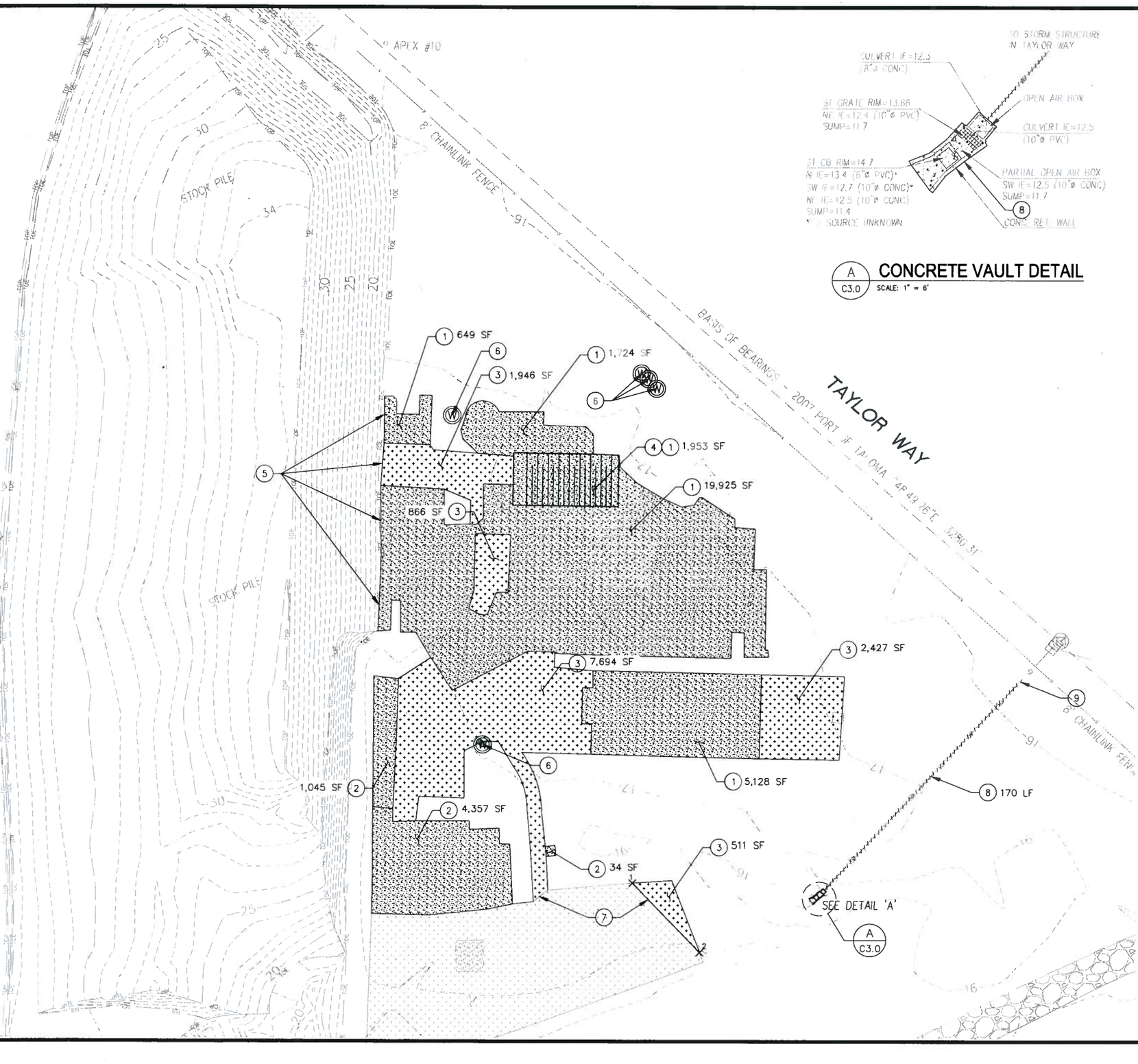
FORMER KAISER FACILITY
INTERIM ACTION
TESC PLAN, NOTES, AND DETAILS

C2.0
SHEET 5 OF 15

CONT/CONS: 069646	TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36
PROJECT NO: 092837	DAT-HRZ: WA83-SF	VERT: MLLW 19.39' ● Tide 22 1933	
PHASE: BID SET	PARCEL: 77		

PORT OF TACOMA FILE: V:\118033\010.040\Bid Set\092837-C2.0

BINDING EDGE



A C3.0 **CONCRETE VAULT DETAIL**
SCALE: 1" = 6'

POINT TABLE		
POINT #	NORTHING	EASTING
1	707894.99	1177149.07
2	707853.93	1177188.89

(X) DEMOLITION NOTES:

1. REMOVE REINFORCED CONCRETE SLABS IN SECTIONS. THE REINFORCED CONCRETE SLAB THICKNESS VARIES BUT IS ESTIMATED TO BE MAX 16 INCHES. CONCRETE SECTIONS SHALL BE RUBBLIZED TO APPROX 8 TO 1D INCH SIZE AT A PORT APPROVED PROCESSING LOCATION AND STOCKPILED FOR REUSE AS BACKFILL IN THE ROD MILL LANDFILL AND RECTIFIER YARD AREAS.
2. REMOVE REINFORCED CONCRETE SLABS IN SECTIONS. THE REINFORCED CONCRETE SLAB THICKNESS VARIES BUT IS ESTIMATED TO BE APPRDX 1D INCHES. CONCRETE SECTIONS SHALL BE RUBBLIZED TO MAX 8 TO 1D INCH SIZE AT A PORT APPROVED PROCESSING LOCATION AND STOCKPILED FOR REUSE AS BACKFILL IN THE ROD MILL LANDFILL AND RECTIFIER YARD AREAS.
3. REMOVE ASPHALT PAVEMENT IN SECTIONS. THE ASPHALT THICKNESS IS APPROX 4 INCHES. ASPHALT SECTIONS SHALL BE RUBBLIZED TO MAX 8 TO 1D INCHES AT A PORT APPROVED PROCESSING LOCATION AND STOCKPILED FOR REUSE AS BACKFILL IN THE ROD MILL LANDFILL AND RECTIFIER YARD AREAS.
4. REMOVE REINFORCED CONCRETE SLAB CONTAINING METAL RAILS. THERE ARE 16 RAILS IN WHICH HALF OF THEM ARE ABOUT 24 FT LDNG AND THE REMAINDER ARE ABOUT 31 FT LONG. THE REINFDRCED CONCRETE SLAB THICKNESS IS ESTIMATED TO BE APPROX 16 INCHES.
5. SLABS AND PAVEMENT MAY EXTEND UNDER CLEAN SOIL STOCKPILE AREA. REMOVE PORTIDNS OF SOIL STOCKPILE AS REQUIRED TO EXPOSE SLABS AND PAVEMENT FOR DEMOLITION.
6. VERIFY WITH THE PORT THAT THE GROUNDWATER MONITORING WELLS ARE DECOMMISSIONED (BY OTHERS) PRIOR TD DEMOLITION OF THE REMAINING WELL MONUMENTS, BOLLARDS, AND CONCRETE SEALS.
7. REMOVE ASPHALT PAVEMENT UP TO THIS EDGE.
8. AS PART OF SPL AREA SOIL EXCAVATION, EXISTING REINFORCED CONCRETE VAULT STRUCTURE AND CONCRETE PIPE TO BE DEMOLISHED, REMOVED, CLEANED, AND RUBBLIZED TO MAX 8 TO 10 INCH SIZE AT A PORT APPROVED PROCESSING LOCATION AND STOCKPILED FOR REUSE AS BACKFILL IN THE ROD MILL LANDFILL AND RECTIFIER YARD AREAS.
9. AFTER COMPLETION OF SPL AREA SOIL EXCAVATION, PROVIDE FOR CONNECTION OF NEW STORM DRAIN PIPE. SEE SHEET C3.4 FOR NEW STORM DRAIN PIPE INFORMATION.

GENERAL DEMOLITION NOTES:

1. RECYCLE MATERIALS TO THE EXTENT POSSIBLE.
2. ABANDONED PIPES AND CONDUITS SHALL BE PLUGGED WITH CDF AT THE EDGE OF THE EXCAVATION AREAS.
3. THE CONTRACTOR SHALL SUBMIT THE LOCATION OF ITS PROPOSED ASPHALT AND CONCRETE PROCESSING AREA FOR PORT APPROVAL.
4. REMDVE/CLEAN ALL SOIL AND/OR WASTE MATERIALS OFF OF CONCRETE AND ASPHALT SURFACES PRIOR TO RUBBLIZATION AND STOCKPILING.
5. RUBBLIZED CONCRETE AND ASPHALT SHALL BE STOCKPILED FOR LATER REUSE AS EXCAVATION BACKFILL MATERIAL IN THE ROD MILL LANDFILL AND RECTIFIER YARD AREAS.

0 30 60
Scale in Feet

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DAVID A. FISCHER — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — 5/16/2013

APPROVED
CAROLA CHAMBERLAIN
DIRECTOR ENG. DATE
MAY 22 2013

CHECKED BY DATE
PROJ. ENGR May 17, 2013
PRINTED BY: rludwig
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401-1837

FORMER KAISER FACILITY
INTERIM ACTION
SPL AREA
DEMOLITION PLAN

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36
DAT-HRZ: WA83-SF | VERT: MLLW 19.39' ● Tide 22 1933
PARCEL: 77 | DRAWING SCALE: AS NOTED

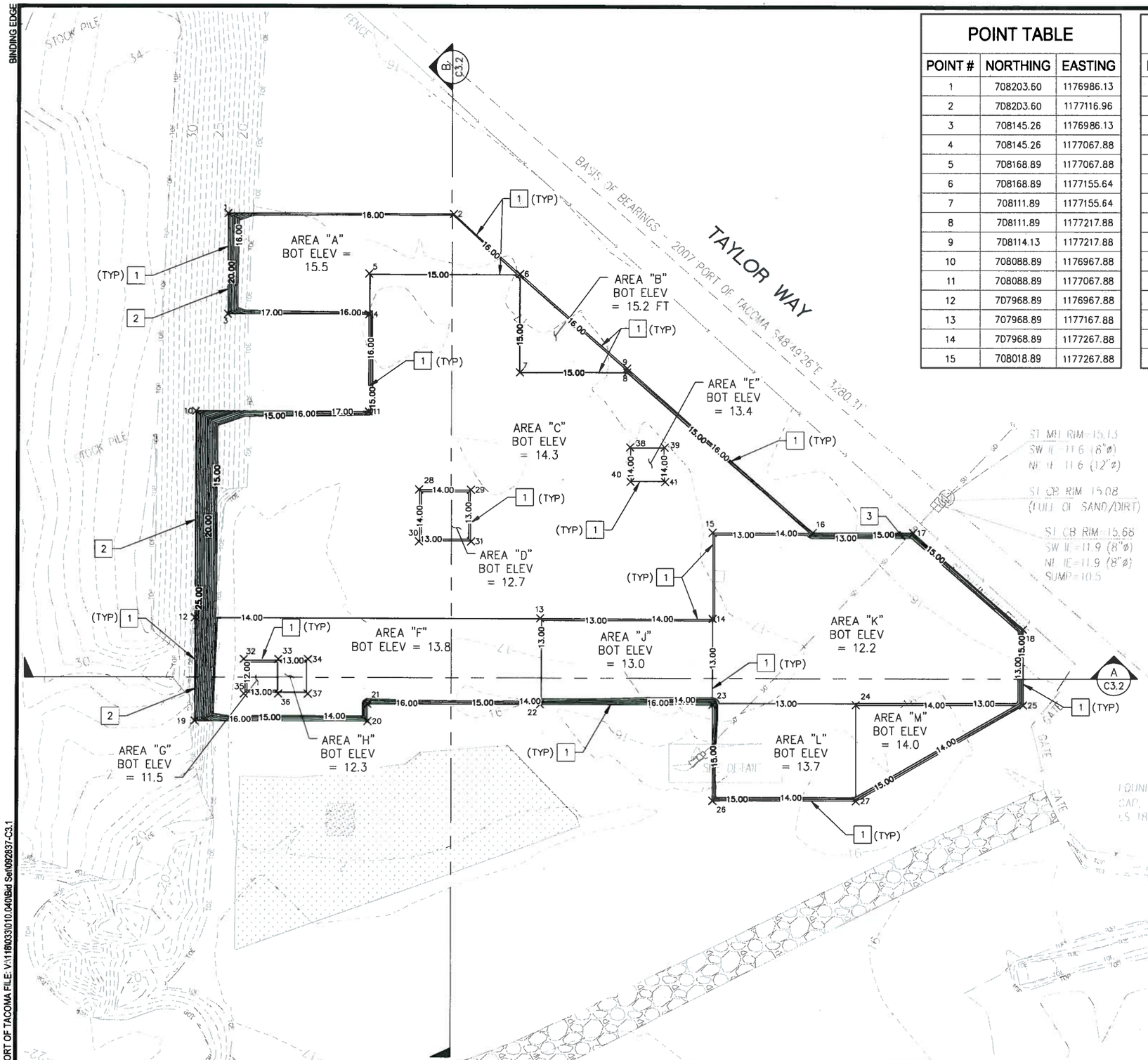
CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

C3.0
SHEET 6 OF 15

ROBERT C. LUDWIG — STATE OF WASHINGTON — 40847 — REGISTERED PROFESSIONAL ENGINEER — 5/16/2013

PORT OF TACOMA FILE: V:\116\033\010.040\Bid Set\092837-C3.0

BINDING EDGE



POINT TABLE		
POINT #	NORTHING	EASTING
1	708203.60	1176986.13
2	7D82D3.60	1177116.96
3	708145.26	1176986.13
4	708145.26	1177067.88
5	7D8168.89	1177067.88
6	7D8168.89	1177155.64
7	708111.89	1177155.64
8	7D8111.89	1177217.88
9	7D8114.13	1177217.88
10	708088.89	1176967.88
11	708088.89	1177067.88
12	7D7968.89	1176967.88
13	707968.89	1177167.88
14	7D7968.89	1177267.88
15	708018.89	1177267.88

POINT TABLE		
POINT #	NORTHING	EASTING
16	708018.89	1177326.12
17	7D8018.89	1177384.33
18	707963.01	1177448.36
19	7D7908.89	1176967.88
20	7D79D8.89	1177067.88
21	7D7918.89	1177D67.88
22	707918.89	1177167.88
23	7D7918.89	1177267.88
24	7D7918.89	1177351.06
25	707918.89	1177448.36
26	707863.20	1177267.88
27	7D7863.2D	1177351.06
28	708043.50	1177097.44
29	708043.50	1177127.44
30	708013.5D	1177D97.44

POINT TABLE		
POINT #	NORTHING	EASTING
31	7D8D13.5D	1177127.44
32	7D7944.68	1176996.17
33	707944.68	1177D16.17
34	7D7944.68	1177033.32
35	7D7924.68	1176996.17
36	7D7924.68	1177D16.17
37	7D7924.68	1177D33.32
38	7D8D68.35	1177219.67
39	7D8D68.35	1177239.67
40	708048.35	1177219.67
41	7D8D48.35	1177239.67

X SPL AREA SOIL EXCAVATION NOTES:

1. ASSUMED BOUNDARY OF EXCAVATION WITH 1H:1V SIDE SLOPES AND UP TO 6 INCHES OF SOIL REMOVED BELOW CURRENTLY IDENTIFIED SPL ZONE MATERIAL. ACTUAL EXTENT AND DEPTH OF SPL ZONE MATERIAL AND ASSOCIATED CONTAMINATED SOIL TO BE REMOVED FOR DISPOSAL SHALL BE BASED ON DETERMINATIONS BY THE PORT'S REPRESENTATIVE AND LABORATORY RESULTS OBTAINED DURING CONTRACTOR'S SOIL EXCAVATION ACTIVITIES.
2. REMOVE PORTIONS OF THE CLEAN SOIL STOCKPILE AS REQUIRED TO ACCESS SPL ZONE MATERIAL AND ASSOCIATED CONTAMINATED SOIL THAT EXTENDS UNDER THE TOE OF THE SOIL STOCKPILE.
3. POTHOLE, STAKE, AND FLAG SEGMENT OF EXISTING STORM DRAIN PIPE TO REMAIN. CAREFULLY EXCAVATE AND EXPOSE EXISTING STORM DRAIN PIPE AT CONNECTION OF NEW STORM DRAIN PIPE IN A MANNER THAT PREVENTS DAMAGE TO PIPE. REPAIR ANY DAMAGE TO PIPE CAUSED BY EXCAVATION AND BACKFILLING ACTIVITIES. SEE SHEET C3.4 FOR NEW STORM DRAIN PIPE INFORMATION.

GENERAL SPL AREA SOIL EXCAVATION NOTES:

1. CAREFULLY SCRAPE OFF AND STOCKPILE CLEAN SURFICIAL FILL MATERIAL PRESENT OVER CERTAIN SPL EXCAVATION AREAS, TO THE EXTENT AND DEPTH DIRECTED BY THE PORT'S REPRESENTATIVE BASED ON DETERMINATIONS DURING SHALLOW SOIL POTHOLING AND SCRAPING CONDUCTED BY CONTRACTOR.
2. USE A SMOOTH BLADE BUCKET TO CAREFULLY EXCAVATE SPL AREA SOILS UNDER THE OBSERVATION OF THE PORT'S REPRESENTATIVE.
3. IF REQUIRED BY THE WASTE DISPOSAL AUTHORIZATION, CONTRACTOR TO CONDUCT ANY ADDITIONAL ANALYTICAL TESTING REQUIRED FOR MATERIAL DISPOSAL AT THE SUBTITLE C HAZARDOUS WASTE LANDFILL AT NO ADDITIONAL COST TO THE PORT.
4. IF ANY DEEPER EXCAVATIONS EXTEND BELOW GROUND WATER LEVEL, SATURATED MATERIALS SHALL BE EXCAVATED AND PLACED IN TEMPORARY SOIL STOCKPILES WITHIN THE EXCAVATION AREA WHERE EXCESS WATER IS ALLOWED TO DRAIN PRIOR TO LOADING FOR OFFSITE DISPOSAL.
5. UNLESS OTHERWISE DIRECTED BY THE PORT, CONSTRUCTION STORMWATER SHALL BE MANAGED BY EVAPORATION AND/OR INFILTRATION AT LOCATIONS APPROVED BY THE PORT.
6. OBTAIN CONFIRMATION FROM THE PORT THAT CONTAMINATED MATERIALS HAVE BEEN ADEQUATELY REMOVED IN EACH AREA PRIOR TO START OF BACKFILLING IN THAT AREA.
7. ABANDONED PIPES AND CONDUITS SHALL BE PLUGGED WITH CDF AT THE EDGE OF THE EXCAVATION AREAS.

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DAVID A. FISCHER — STATE OF WASHINGTON — 22400 — REGISTERED PROFESSIONAL ENGINEER — 5/16/2013

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PROJ. ENGR	DATE
ludwig	May 17, 2013

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TACOMA, WA 98401-1837

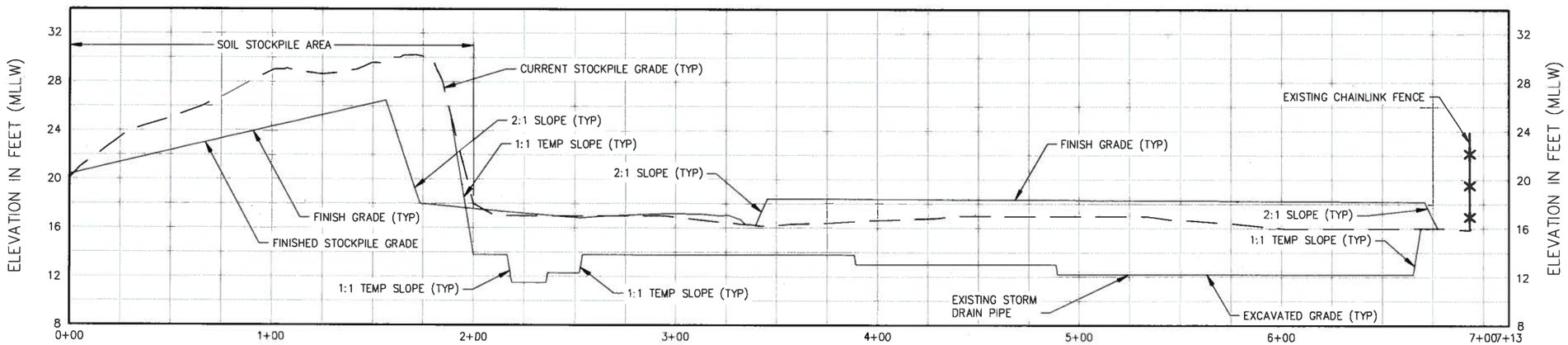
FORMER KAISER FACILITY
INTERIM ACTION
SPL AREA EXCAVATION PLAN

TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36	
DAT-HRZ: WA83-SF	VERT: MLLW 19.39' ● Tide 22 1933		
PARCEL: 77	DRAWING SCALE: AS NOTED		

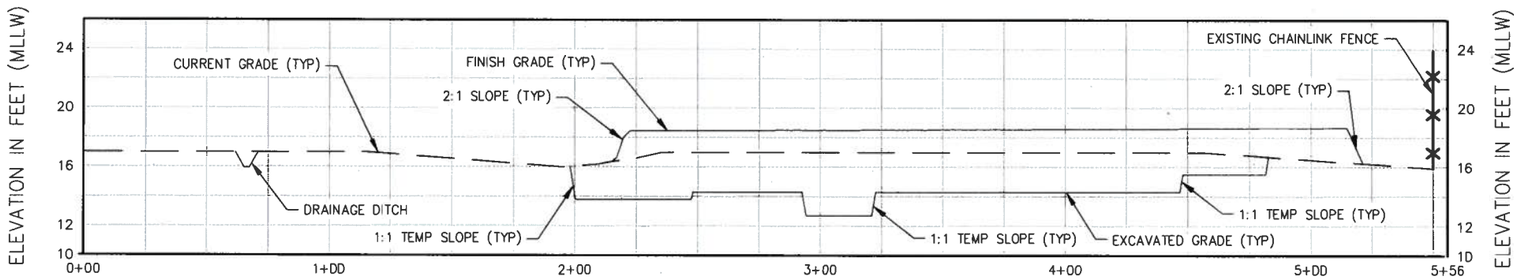
C3.1
SHEET 7 OF 15

CONT/CONS:	069646
PROJECT NO:	092837
PHASE:	BID SET

PORT OF TACOMA FILE: V:\1186033\010.040\Bid Set\092837-C3.1



A CROSS SECTION
C3.1, C3.3 SCALE: HORZ- 1" = 30'
VERT- 1" = 5'



B CROSS SECTION
C3.1, C3.3 SCALE: HORZ- 1" = 30'
VERT- 1" = 5'

0 30 60
Scale in Feet

PORT OF TACOMA FILE: V:\1180\33\010.040\Bid Set\092837-C3.2

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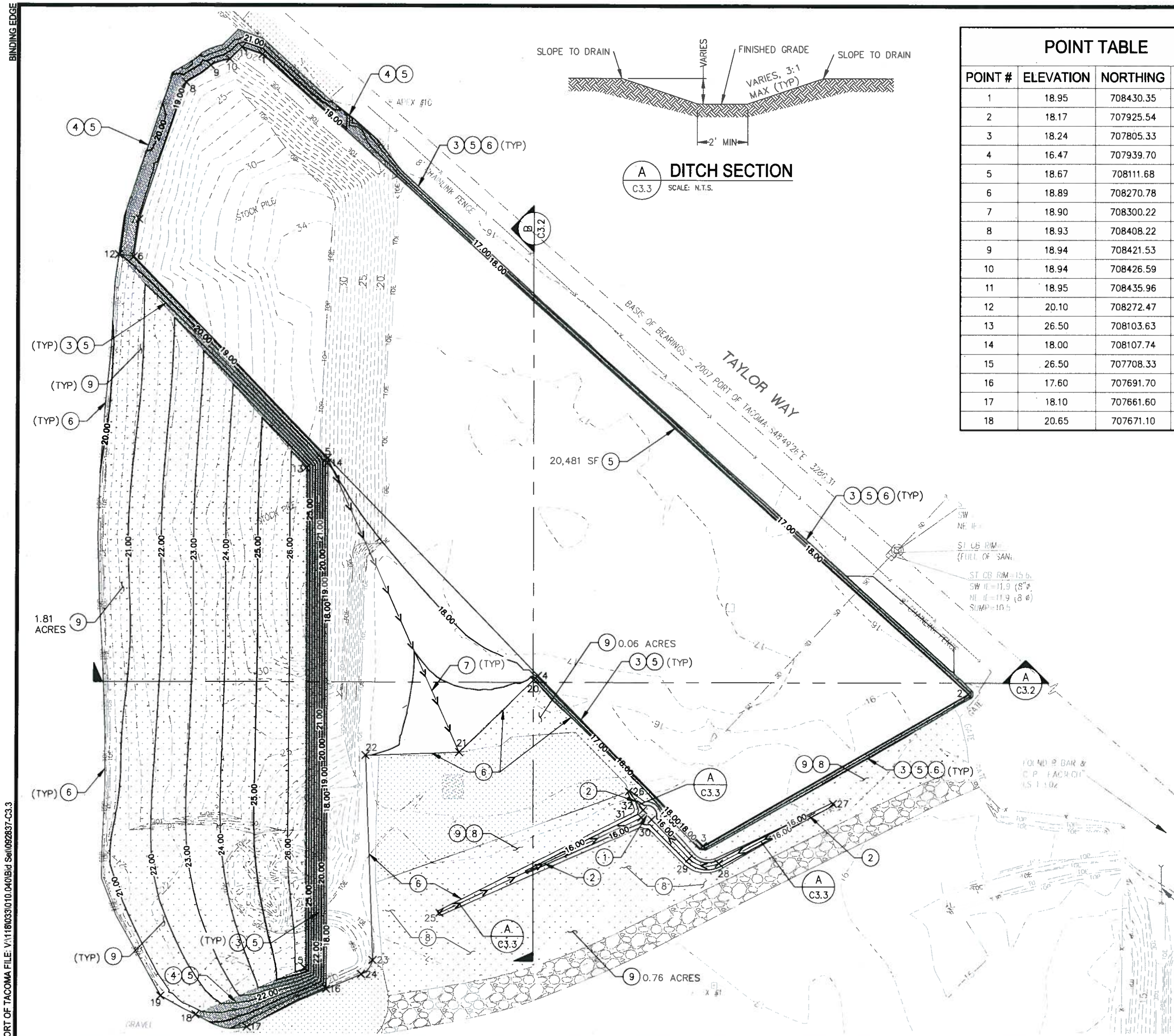
	TACOMA, WA 98401-1837
PRINTED BY:	rludwig
DRAWING SCALE:	AS NOTED

FORMER KAISER FACILITY
INTERIM ACTION
SPL AREA
EXCAVATION SECTIONS

TOWNSHIP:	21 NORTH
RANGE:	3 EAST
SECTION:	SW 1/4-36
VERT:	MLLW 19.39' @ Tide 22 1933
DAT-HRZ:	WA83-SF
PARCEL:	77
CONT/CONS:	069646
PROJECT NO:	092837
PHASE:	BID SET

C3.2
SHEET 8 OF 15

ROBERT C. LUDWIG — STATE OF WASHINGTON — 40847 — REGISTERED PROFESSIONAL ENGINEER
5/16/2013



A DITCH SECTION (C3.3)
SCALE: N.T.S.

POINT TABLE

POINT #	ELEVATION	NORTHING	EASTING
1	18.95	708430.35	1176900.20
2	18.17	707925.54	1177459.82
3	18.24	707805.33	1177249.95
4	16.47	707939.70	1177119.65
5	18.67	708111.68	1176952.88
6	18.89	708270.78	1176798.61
7	18.90	708300.22	1176802.80
8	18.93	708408.22	1176839.50
9	18.94	708421.53	1176858.91
10	18.94	708426.59	1176874.11
11	18.95	708435.96	1176883.79
12	20.10	708272.47	1176786.73
13	26.50	708103.63	1176935.88
14	18.00	708107.74	1176952.88
15	26.50	707708.33	1176935.88
16	17.60	707691.70	1176952.88
17	18.10	707661.60	1176890.49
18	20.65	707671.10	1176849.88

POINT TABLE

POINT #	ELEVATION	NORTHING	EASTING
19	20.87	707685.97	1176822.10
20	16.48	707936.51	1177116.38
21	16.79	707878.99	1177057.05
22	17.34	707876.37	1176983.37
23	17.27	707714.57	1176989.29
24	17.40	707703.29	1176980.41
25	16.68	707751.86	1177041.78
26	17.15	707848.25	1177191.07
27	15.95	707838.71	1177352.64
28	15.44	707791.57	1177262.39
29	15.31	707795.35	1177238.73
30	15.10	707826.01	1177209.00
31	15.10	707827.46	1177200.99
32	15.10	707833.56	1177202.45

(X) BACKFILL AND GRADING NOTES:

1. NEW CATCH BASIN LOCATION. SEE SHEET C3.4 FOR INFORMATION.
2. PRDVIDE DRAINAGE DITCH.
3. 2:1 SLOPE.
4. 2:1 MAX SLOPE.
5. PRDVIDE SOIL STABILIZATION (EROSION CONTROL BLANKET AND HYDROSEEDING).
6. MATCH EXISTING GRADE.
7. FLOW LINE
8. GRADE FINAL SURFACE TO DRAIN TO DITCH.
9. PROVIDE HYDROSEEDING.

GENERAL BACKFILL AND GRADING NOTES:

1. USE MATERIAL FROM EXISTING SOIL STOCKPILE TO BACKFILL SPL AREA. PLACE BACKFILL IN MAXIMUM 6 TO 8 INCH LIFTS COMPACTED TO AT LEAST 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 TEST PROCEDURE.
2. PLACE AND GRADE 3 INCH LAYER OF COMPACTED CRUSHED ASPHALT FROM ONSITE STOCKPILES AS FINAL SURFACING MATERIAL IN THE SPL AREA, EXCEPT FOR SOIL AREAS TO BE HYDROSEEDED.
3. GRADE FINAL SURFACES TO PROMOTE STORMWATER DRAINAGE TO DESIGNATED AREAS.

Scale in Feet: 0 40 80

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FORMER KAISER FACILITY INTERIM ACTION
SPL AREA
BACKFILL AND GRADING PLAN

TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36
DAT-HRZ: WA83-SF	VERT: MLLW 19.39' @ Tide 22 1933	
PARCEL: 77	DRAWING SCALE: AS NOTED	

C3.3
SHEET 9 OF 15

CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

ROBERT C. LUDWIG, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 40847 5/16/2013

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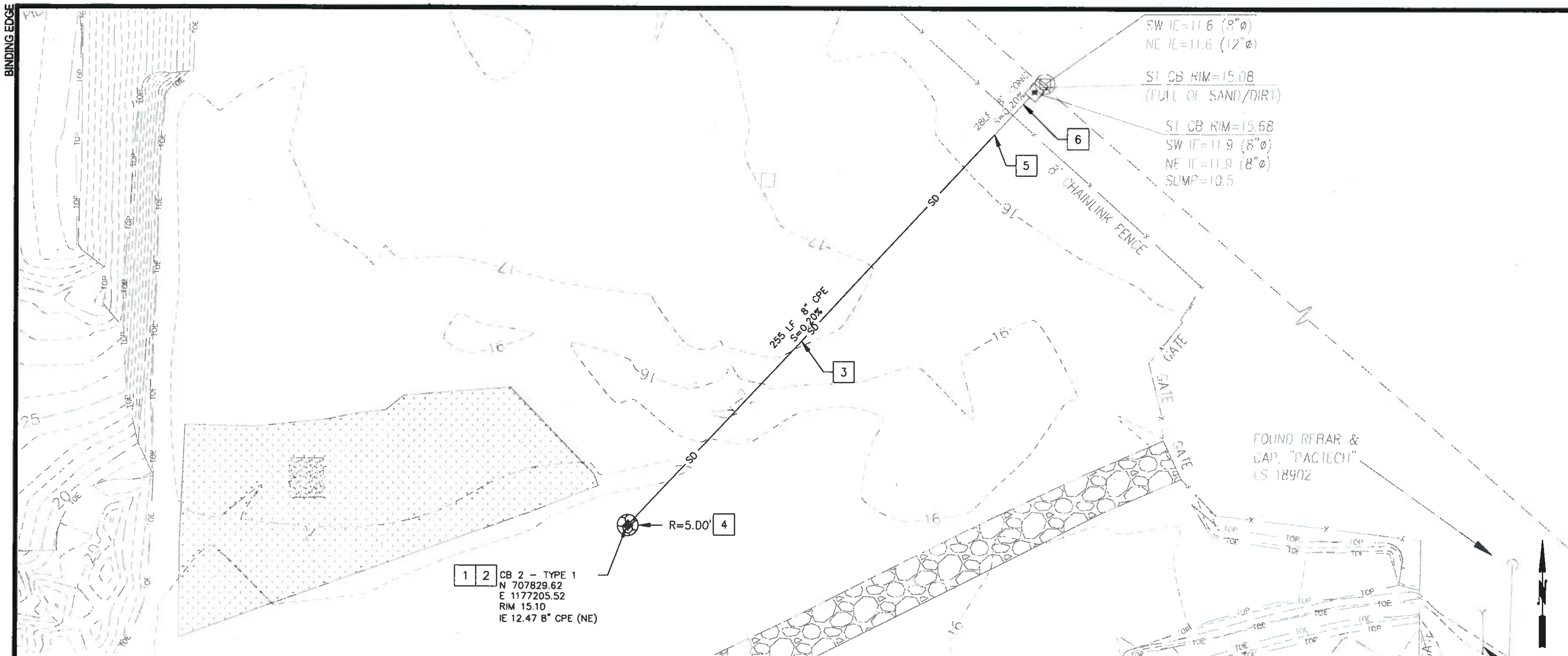
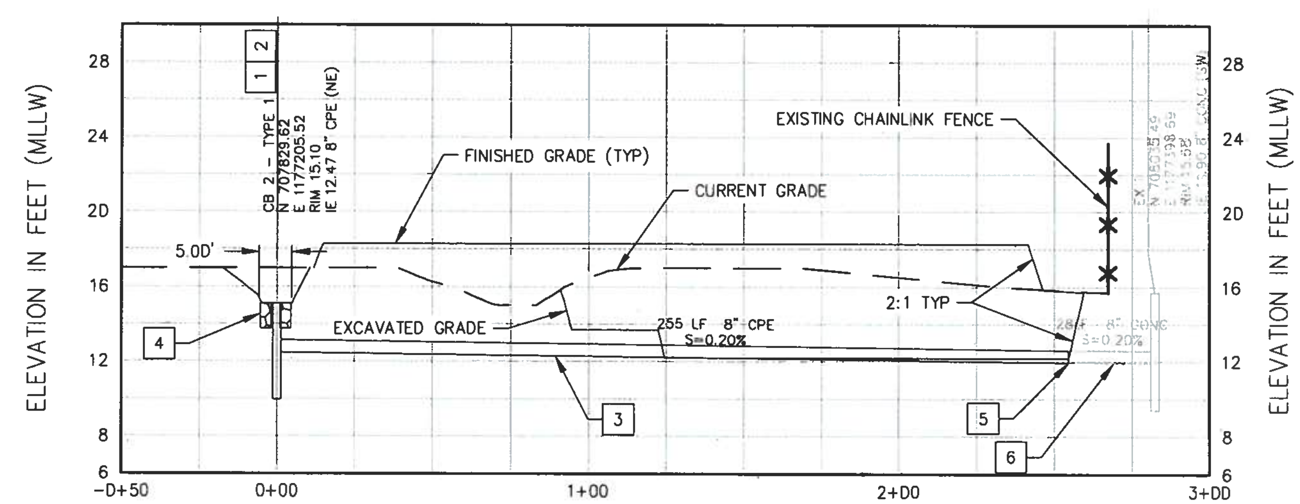


PLAN VIEW

SCALE: 1" = 30'

X STORM DRAINAGE NOTES:

1. PROVIDE CATCH BASIN INLET PROTECTION. SEE SHEET C2.0 FOR MORE INFORMATION.
2. PROVIDE CATCH BASIN WITH GRATED LID.
3. PROVIDE CPE STORM DRAINAGE PIPE.
4. PROVIDE 1 FT THICK PAD OF QUARRY SPALLS AROUND CATCH BASIN.
5. CONNECT TO EXISTING STORM DRAIN PIPE.
6. EXISTING STORM DRAINAGE PIPE.



PROFILE VIEW

SCALE- H: 1" = 30'
V: 1" = 5'

0 30 60
Scale in Feet

FORMER KAISER FACILITY
INTERIM ACTION
SPL AREA
STORM DRAINAGE PLAN

C3.4
SHEET 10 OF 15

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CONT/CONS: 069646	TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36
PROJECT NO: 092837	DAT-HRZ: WA83-SF	VERT: MLLW 19.39' @ Tide 22 1933	
PHASE: BID SET	PARCEL: 77	DRAWING SCALE: AS NOTED	

DAVID A. PISCHER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 5/16/2013
ROBERT C. LUDWIG, STATE OF WASHINGTON, 40847, REGISTERED PROFESSIONAL ENGINEER 5/16/2013

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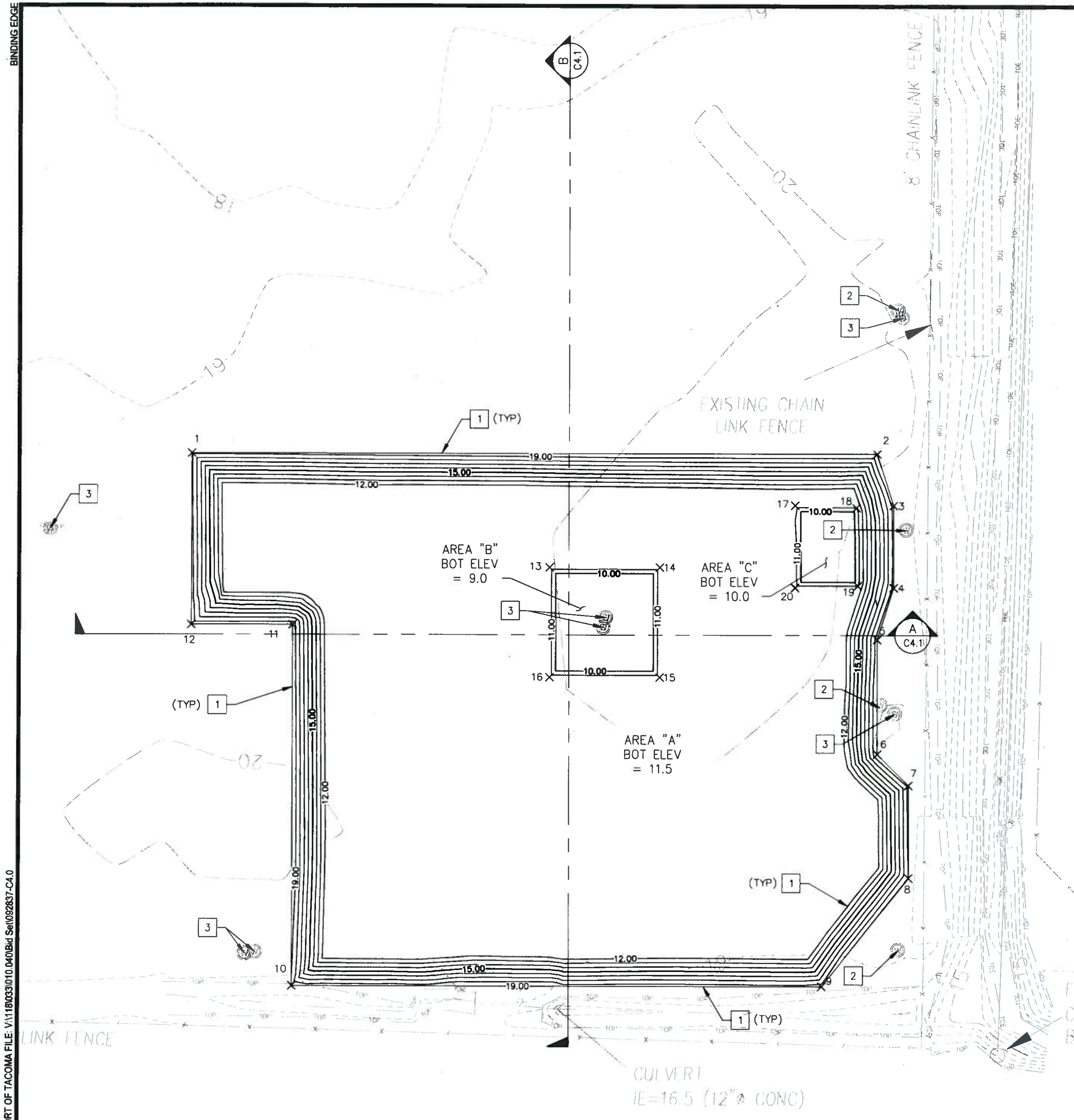

POINT TABLE

POINT #	NORTHING	EASTING
1	707379.81	1177308.75
2	707379.81	1177558.75
3	707361.00	1177564.77
4	707331.00	1177564.77
5	707312.19	1177558.75
6	707270.37	1177558.75
7	707258.99	1177570.13
8	707225.27	1177570.13
9	707185.79	1177538.43
10	707185.79	1177345.77
11	707317.32	1177345.77
12	707317.32	1177308.75
13	707338.33	1177439.36
14	707338.33	1177479.36
15	707298.33	1177479.36
16	707298.33	1177439.36
17	707361.00	1177528.75
18	707360.25	1177551.22
19	707331.75	1177551.71
20	707331.00	1177528.75

☒ ROD MILL CLOSED LANDFILL EXCAVATION NOTES:

1. ASSUMED BOUNDARY OF EXCAVATION WITH 1.5H:1V SIDE SLOPES AND UP TO 1 FOOT OF SOIL REMOVED BELOW CURRENTLY IDENTIFIED ROD MILL LANDFILL SOIL AND DEBRIS MATERIAL. ACTUAL EXTENT AND DEPTH OF LANDFILL SOIL AND DEBRIS TO BE REMOVED FOR DISPOSAL TO BE BASED ON DETERMINATIONS BY THE PORT'S REPRESENTATIVE AND LABORATORY RESULTS OBTAINED DURING CONTRACTOR'S EXCAVATION ACTIVITIES.
2. PROTECT EXISTING GROUNDWATER MONITORING WELLS FROM DAMAGE DURING ROD MILL LANDFILL EXCAVATION AND BACKFILLING ACTIVITIES. DAMAGED/DESTROYED WELLS TO BE REPAIRED OR REPLACED AT CONTRACTORS EXPENSE.
3. VERIFY WITH THE PORT THAT THE GROUNDWATER MONITORING WELLS ARE DECOMMISSIONED (BY OTHERS) PRIOR TO DEMOLITION OF ANY REMAINING WELL MONUMENTS, BOLLARDS, AND CONCRETE SEALS.

GENERAL ROD MILL CLOSED LANDFILL EXCAVATION NOTES:

1. ANTICIPATE THAT OVERSIZED DEBRIS IS PRESENT THAT WILL NEED TO BE EXCAVATED AND SIZE REDUCED AS REQUIRED FOR LOADING AND OFFSITE DISPOSAL.
2. PORTIONS OF THE LANDFILL EXCAVATION ARE ANTICIPATED TO EXTEND BELOW GROUNDWATER LEVEL. UNLESS OTHERWISE APPROVED BY THE PORT, CONTRACTOR SHALL FIRST EXCAVATE SURFICIAL MATERIALS TO A DEPTH THAT LEAVES SUFFICIENT MATERIAL ABOVE GROUNDWATER LEVEL TO SUPPORT CONSTRUCTION EQUIPMENT BEFORE EXTENDING FINAL EXCAVATIONS BELOW GROUNDWATER.
3. SATURATED SOIL AND DEBRIS EXCAVATED BELOW GROUNDWATER LEVEL SHALL BE PLACED IN TEMPORARY STOCKPILES WITHIN THE LANDFILL EXCAVATION AREA WHERE EXCESS WATER IS ALLOWED TO DRAIN AND WETTER MATERIAL CAN BE MIXED WITH DRIER MATERIALS PRIOR TO LOADING FOR OFFSITE DISPOSAL.
4. ANTICIPATE THAT PETROLEUM HYDROCARBON PRODUCT AND/OR SHEEN WILL BE PRESENT AT GROUNDWATER LEVEL, AND SKIM/VACUUM OFF FLOATING PETROLEUM HYDROCARBON MATERIAL PRIOR TO PLACING EXCAVATION BACKFILL MATERIALS.
5. UNLESS OTHERWISE DIRECTED BY THE PORT, CONSTRUCTION STORMWATER SHALL BE MANAGED BY EVAPORATION AND/OR INFILTRATION AT LOCATIONS APPROVED BY THE PORT.
6. OBTAIN CONFIRMATION FROM THE PORT THAT CONTAMINATED MATERIALS HAVE BEEN ADEQUATELY REMOVED IN EACH AREA PRIOR TO START OF BACKFILLING IN THAT AREA.

0 20 40
Scale in Feet

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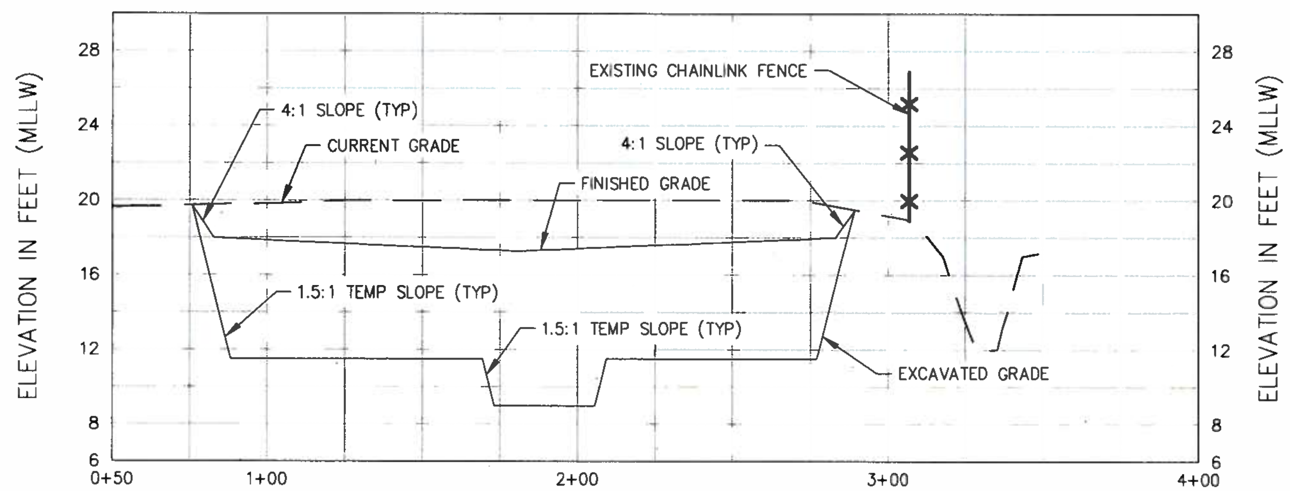
FORMER KAISER FACILITY INTERIM ACTION
ROD MILL CLOSED LANDFILL AREA EXCAVATION PLAN

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36
DAT-HRZ: WA83-SF | VERT: MLLW 19.39 @ Tide 22 1933
PARCEL: 77 | DRAWING SCALE: AS NOTED

C4.0
SHEET 11 OF 15

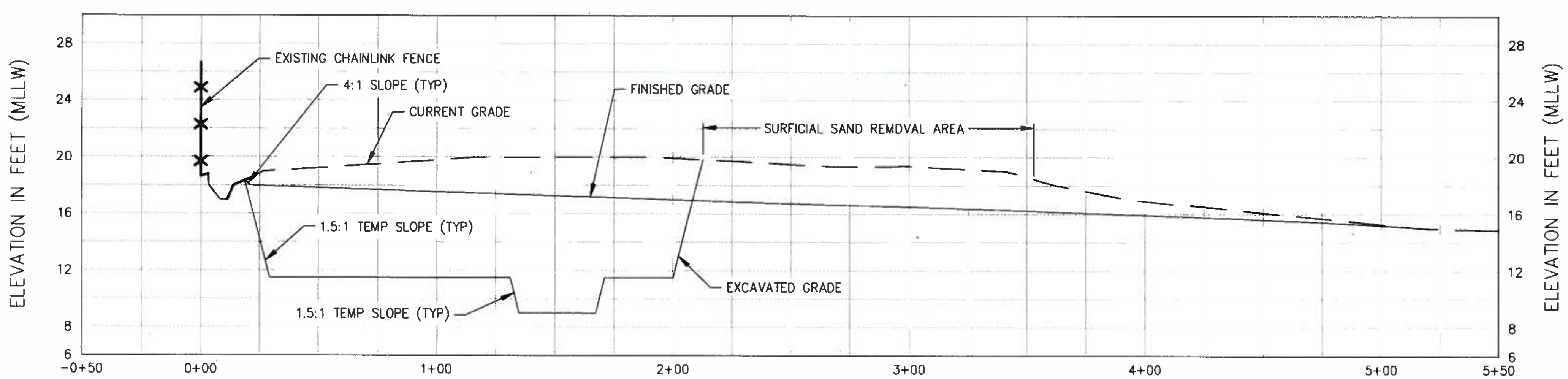
CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET



A — C4.0; C4.2

ROD MILL CROSS SECTION

SCALE– H: 1" = 30'
V: 1" = 5'



B — C4.0; C4.2

ROD MILL CROSS SECTION

SCALE– H: 1" = 30'
V: 1" = 5'

0 30 60
Scale in Feet

FORMER KAISER FACILITY
INTERIM ACTION
ROD MILL CLOSED LANDFILL AREA
EXCAVATION SECTIONS

C4.1

SHEET 12 OF 15

CONT/CONS: 069646	TOWNSHIP: 21 NORTH / RANGE: 3 EAST / SECTION: SW 1/4-36
PROJECT NO: 092837	DAT-HRZ: WA83-SF / VERT: MLLW 19.39' @ Tide 22 1933
PHASE: BID SET	PARCEL: 77 / DRAWING SCALE: AS NOTED

APPROVED: CHAMBERLAIN, MAY 2013 — CHECKED BY / DATE
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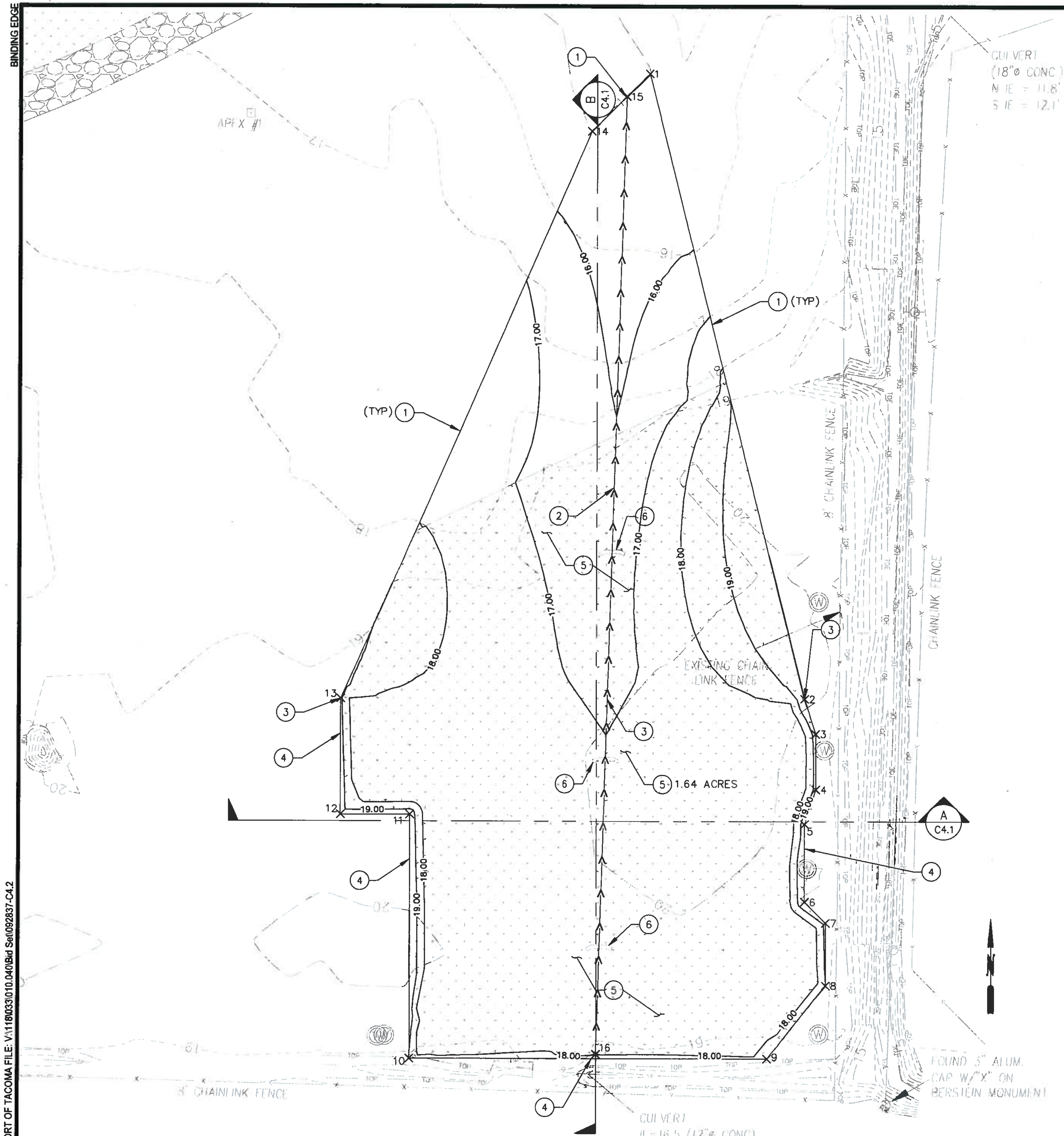

POINT TABLE

POINT #	ELEV	NORTHING	EASTING
1	15.00	707717.02	1177474.90
2	20.11	707379.81	1177558.75
3	19.69	707361.00	1177564.77
4	19.42	707331.00	1177564.77
5	19.55	707312.19	1177558.75
6	19.92	707270.37	1177558.75
7	19.51	707258.99	1177570.13
8	19.17	707225.27	1177570.13
9	18.62	707185.79	1177538.43
10	18.59	707185.79	1177345.77
11	19.73	707317.32	1177345.77
12	19.74	707317.32	1177308.75
13	19.23	707379.81	1177308.75
14	15.00	707685.92	1177443.55
15	15.00	707704.64	1177462.41
16	18.00	707188.12	1177446.27

(X) BACKFILL AND GRADING NOTES:

1. MATCH INTO EXISTING AND/OR MODIFIED GRADES.
2. FLOW LINE SLOPE 0.50% MINIMUM.
3. NORTHERN EDGE OF LANDFILL EXCAVATION AREA AND SOUTHERN EDGE OF SURFICIAL SAND REMOVAL AREA. SURFICIAL SAND TO BE REMOVED AND USED AS LANDFILL EXCAVATION BACKFILL MATERIAL.
4. 4:1 SIDE SLOPES AROUND PERIMETER OF ROD MILL LANDFILL EXCAVATION AREA.
5. PROVIDE HYDROSEEDING.
6. PROVIDE QUARRY SPALL CHECK DAMS ACROSS FLOW LINE, MIN 15 FT WIDE AND 1 FT HIGH

GENERAL BACKFILL AND GRADING NOTES:

1. SKIM/VACUUM OFF ANY FLOATING PETROLEUM HYDROCARBON PRODUCT/SHEEN ON GROUNDWATER EXPOSED IN DEEPER LANDFILL EXCAVATIONS PRIOR TO PLACING QUARRY SPALLS TO RAISE THE BACKFILL SURFACE UP ABOVE GROUNDWATER LEVEL AND CREATE A STABLE BASE FOR OVERLYING FILL MATERIALS.
2. USE SURFICIAL SAND REMOVED FROM ADJACENT CUT AREA TO THE NORTH, MATERIAL FROM THE EXISTING SOIL STOCKPILE, AND RUBBLIZED CONCRETE/ASPHALT TO BACKFILL THE ROD MILL LANDFILL EXCAVATION. PLACE BACKFILL IN MAXIMUM 6 TO 8 INCH LIFTS COMPACTED TO AT LEAST 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE ASTM D1557 TEST PROCEDURE. RUBBLIZED CONCRETE/ASPHALT SHALL BE PLACED AT LEAST 3 FEET ABOVE GROUNDWATER LEVEL AND INTERMIXED WITH ONSITE SOIL BACKFILL.
3. GRADE FINAL SURFACES TO PROMOTE STORMWATER DRAINAGE.

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DIRECTOR ENG. DATE
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FORMER KAISER FACILITY
INTERIM ACTION
ROD MILL CLOSED LANDFILL AREA
BACKFILL AND GRADING PLAN

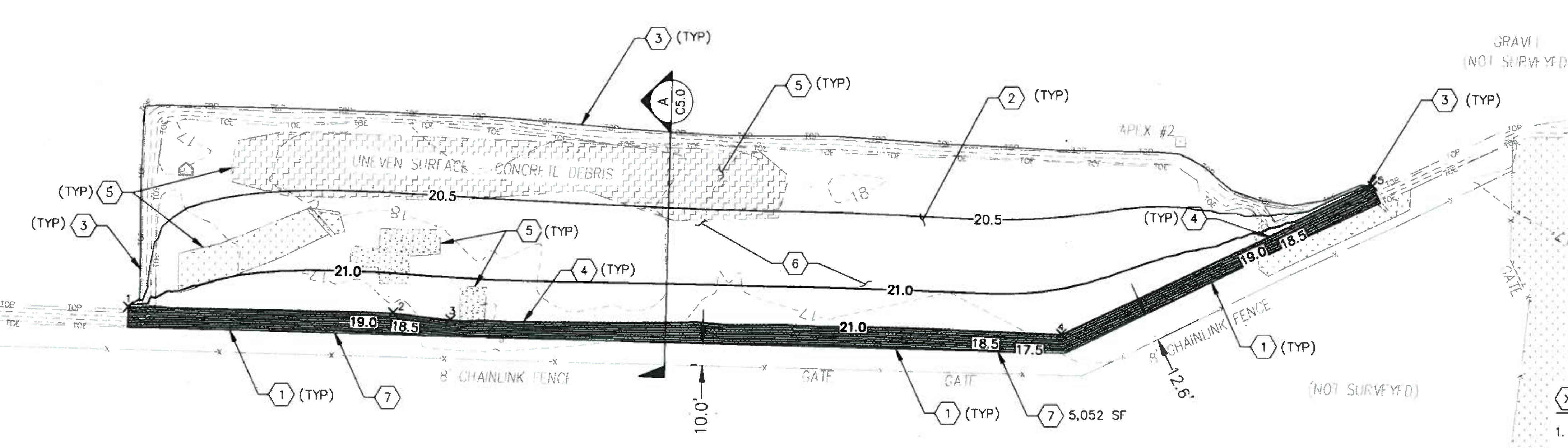
C4.2
SHEET 13 OF 15

CONT/CONS: 069646	TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4-36
PROJECT NO: 092837	DAT-HRZ: WA83-SF	VERT: MLLW 19.39' @ Tide 22 1933	
PHASE: BID SET	PARCEL: 77	DRAWING SCALE: AS NOTED	

PRINTED BY: rludwig May 17, 2013
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

BINDING EDGE

PORT OF TACOMA FILE: V:\116\033\010.040\Bid Set\092837-C4.2



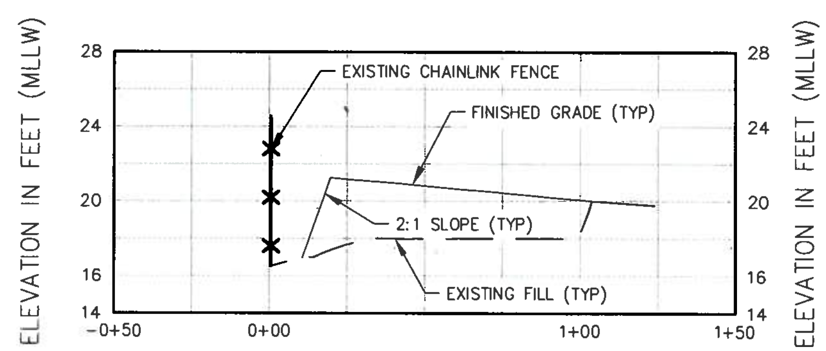
PLAN VIEW

SCALE: 1" = 30'

POINT TABLE			
POINT #	ELEV	NORTHING	EASTING
1	21.25	707542.50	1176182.07
2	21.25	707540.35	1176300.75
3	21.25	707537.19	1176326.63
4	21.25	707531.71	1176600.81
5	21.25	707598.39	1176740.29

(X) BACKFILL AND GRADING NOTES:

1. FILL SLOPE IS 2:1.
2. SLOPE FINAL FILL TO MATCH EXISTING SLOPE TO WEST.
3. TIE INTO EXISTING EDGE OF FILL.
4. TOP ELEVATION ALONG EDGE OF FILL IS 21.25 FT.
5. EXISTING CONCRETE, ASPHALT, AND OTHER DEBRIS TO BE BURIED.
6. EXISTING VEGETATION SHALL BE KNOCKED DOWN AND BURIED BELOW FILL.
7. PROVIDE SOIL STABILIZATION (EROSION CONTROL BLANKET AND HYDROSEEDING).



A C5.0 RECTIFIER YARD SECTION

SCALE: H: 1" = 30'
V: 1" = 5'

GENERAL BACKFILL AND GRADING NOTES:

1. USE MATERIAL FROM EXISTING SOIL STOCKPILES AND RUBBLIZED CONCRETE AND ASPHALT TO BACKFILL THE FORMER RECTIFIER YARD AREA. PLACE BACKFILL IN MAXIMUM 6 TO 8 INCH LIFTS COMPACTED TO AT LEAST 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE ASTM D1557 TEST PROCEDURE.
2. PLACE A 3 INCH LAYER OF COMPACTED CRUSHED ASPHALT FROM ONSITE STOCKPILES AS FINAL SURFACING MATERIAL IN THE RECTIFIER YARD FILL AREA.
3. GRADE FINAL SURFACES TO PROMOTE STORMWATER DRAINAGE NORTH TO EXISTING FILLED AREAS.

0 30 60 Scale in Feet

Port of Tacoma
LANDAU ASSOCIATES
130 2nd AVENUE S.
EDMONDS, WA 98020
(425) 778-0907, FAX (425) 778-6409

MARK: | REVISION: | BY: | APPR: | DATE:

APPROVED: DAKOTA CHAMBERLAIN, MAY 22 2013 — DIRECTOR ENG. DATE

CHECKED BY DATE — PROJ. ENGR DATE

PRINTED BY: rludwig May 17, 2013

PORT ADDRESS: ONE SITCUM PLAZA, TACOMA, WA 98401-1837

FORMER KAISER FACILITY INTERIM ACTION
RECTIFIER YARD AREA
BACKFILL AND GRADING PLAN

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36

DAT-HRZ: WA83-SF | VERT: MLLW 19.39 @ Tide 22 1933

PARCEL: 77 | DRAWING SCALE: AS NOTED

C5.0
SHEET 14 OF 15

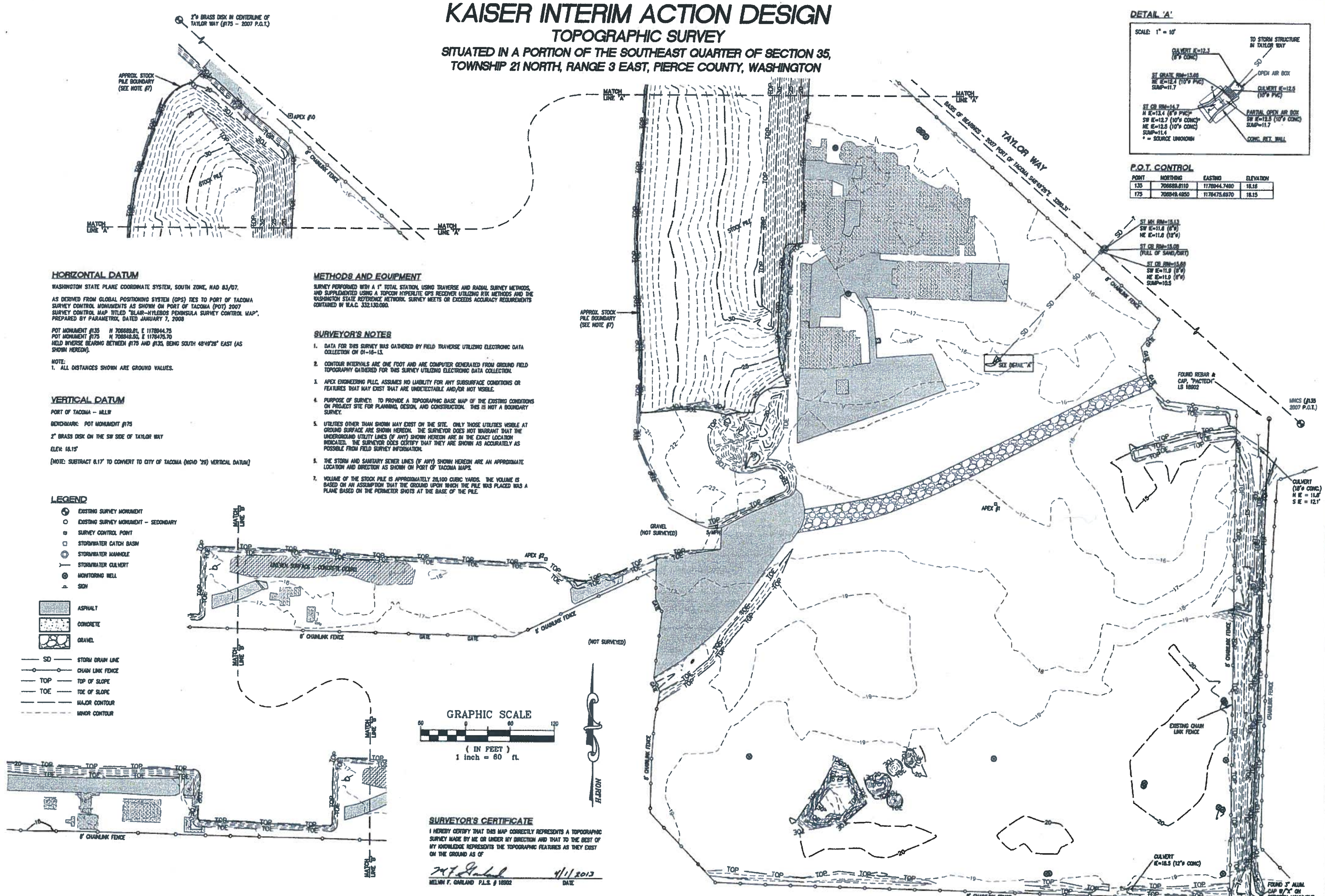
CONT/CONS: 069646
PROJECT NO: 092837
PHASE: BID SET

BINDING EDGE

KAISER INTERIM ACTION DESIGN

TOPOGRAPHIC SURVEY

SITUATED IN A PORTION OF THE SOUTHEAST QUARTER OF SECTION 35, TOWNSHIP 21 NORTH, RANGE 3 EAST, PIERCE COUNTY, WASHINGTON



HORIZONTAL DATUM

WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83/07.

AS DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) TIES TO PORT OF TACOMA SURVEY CONTROL MONUMENTS AS SHOWN ON PORT OF TACOMA (POT) 2007 SURVEY CONTROL MAP TITLED "BLAIR-HYLEBOS PENINSULA SURVEY CONTROL MAP", PREPARED BY PARAMETRIX, DATED JANUARY 7, 2008

POT MONUMENT #135 N 706689.81, E 1178944.75
POT MONUMENT #175 N 708849.50, E 1178475.70
HELD INVERSE BEARING BETWEEN #175 AND #135, BEING SOUTH 48°49'28" EAST (AS SHOWN HEREON).

NOTE:
1. ALL DISTANCES SHOWN ARE GROUND VALUES.

VERTICAL DATUM

PORT OF TACOMA – MLLW

BENCHMARK: POT MONUMENT #175

2" BRASS DISK ON THE SW SIDE OF TAYLOR WAY

ELEV: 18.15'

[NOTE: SUBTRACT 8.17' TO CONVERT TO CITY OF TACOMA (NGVD '29) VERTICAL DATUM]

METHODS AND EQUIPMENT

SURVEY PERFORMED WITH A 1" TOTAL STATION, USING TRAVERSE AND RADIAL SURVEY METHODS, AND SUPPLEMENTED USING A TOPCON HYPERLITE GPS RECEIVER UTILIZING RTK METHODS AND THE WASHINGTON STATE REFERENCE NETWORK. SURVEY MEETS OR EXCEEDS ACCURACY REQUIREMENTS CONTAINED IN W.A.C. 332.130.090.

SURVEYOR'S NOTES

1. DATA FOR THIS SURVEY WAS GATHERED BY FIELD TRAVERSE UTILIZING ELECTRONIC DATA COLLECTION ON 01-16-13.
2. CONTOUR INTERVALS ARE ONE FOOT AND ARE COMPUTER GENERATED FROM GROUND FIELD TOPOGRAPHY GATHERED FOR THIS SURVEY UTILIZING ELECTRONIC DATA COLLECTION.
3. APEX ENGINEERING PLLC, ASSUMES NO LIABILITY FOR ANY SUBSURFACE CONDITIONS OR FEATURES THAT MAY EXIST THAT ARE UNDETECTABLE AND/OR NOT VISIBLE.
4. PURPOSE OF SURVEY: TO PROVIDE A TOPOGRAPHIC BASE MAP OF THE EXISTING CONDITIONS ON PROJECT SITE FOR PLANNING, DESIGN, AND CONSTRUCTION. THIS IS NOT A BOUNDARY SURVEY.
5. UTILITIES OTHER THAN SHOWN MAY EXIST ON THE SITE. ONLY THOSE UTILITIES VISIBLE AT GROUND SURFACE ARE SHOWN HEREON. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITY LINES (IF ANY) SHOWN HEREON ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR DOES CERTIFY THAT THEY ARE SHOWN AS ACCURATELY AS POSSIBLE FROM FIELD SURVEY INFORMATION.
6. THE STORM AND SANITARY SEWER LINES (IF ANY) SHOWN HEREON ARE AN APPROXIMATE LOCATION AND DIRECTION AS SHOWN ON PORT OF TACOMA MAPS.
7. VOLUME OF THE STOCK PILE IS APPROXIMATELY 28,100 CUBIC YARDS. THE VOLUME IS BASED ON AN ASSUMPTION THAT THE GROUND UPON WHICH THE PILE WAS PLACED WAS A PLANE BASED ON THE PERIMETER SHOTS AT THE BASE OF THE PILE.

P.O.T. CONTROL

POINT	NORTHING	EASTING	ELEVATION
135	706689.8110	1178944.7480	18.16
175	708849.4950	1178475.6970	18.15

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THIS MAP CORRECTLY REPRESENTS A TOPOGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECTION AND THAT TO THE BEST OF MY KNOWLEDGE REPRESENTS THE TOPOGRAPHIC FEATURES AS THEY EXIST ON THE GROUND AS OF

[signature] 4/1/2013

MELVIN F. GARLAND P.L.S. # 18902 DATE

KAISER INTERIM ACTION DESIGN
TOPOGRAPHIC SURVEY
3400 TAYLOR WAY
TACOMA, WA

CONTRACT 069411
PROJECT NO. 092837
SHEET 1 OF 1

TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: 35
DAT-HRZ: WA83-SF | VERT: MLLW (SEE NOTES)
PARCEL: | DRAWING SCALE: 1" = 60'
PHASE: SURVEY SET
PRINTED BY: snovak Apr 01, 2013
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837

Port of Tacoma
Apex Engineering

PORT OF TACOMA FILE: I:\323641\Survey\Plot Sheets\32364-EG_2

APPENDIX D

As-Built Drawings

A PORTION OF THE SW 1/4 OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 3 EAST, W.M.

PORT OF TACOMA
FORMER KAISER FACILITY INTERIM ACTION
BEYLER CONSULTING SURVEY CONTROL MAP

HORIZONTAL DATUM

WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83/07.

POT MONUMENT #135 N 706689.81, E 1178944.75
POT MONUMENT #175 N 708849.50, E 1176475.70

BASIS OF BEARING: SOUTH 48°49'26" EAST; THE MONUMENT LINE OF TAYLOR WAY FROM POT MONUMENT #175 TO POT MONUMENT #135

VERTICAL DATUM

PORT OF TACOMA - MLLW
BENCHMARK: POT MONUMENT #175
2" BRASS DISK, 13.5' WEST OF WEST CURB LINE OF TAYLOR WAY

ELEV: 16.15'

[NOTE: SUBTRACT 6.17' TO CONVERT TO CITY OF TACOMA (NGVD '29) VERTICAL DATUM]

METHODS AND EQUIPMENT

NIKON DTM 410 TOTAL STATION. STANDARD FIELD TRAVERSE METHODS FOR CONTROL AND STAKING.

CONTROL POINT TABLE

BC CP#10: FOUND HUB & TACK; APEX#10
N: 708393.94
E: 1177001043
ELV: 16.15

BC CP#13: FOUND HUB & TACK; APEX#1
N: 707695.06
E: 1177258.71
ELV: 17.10

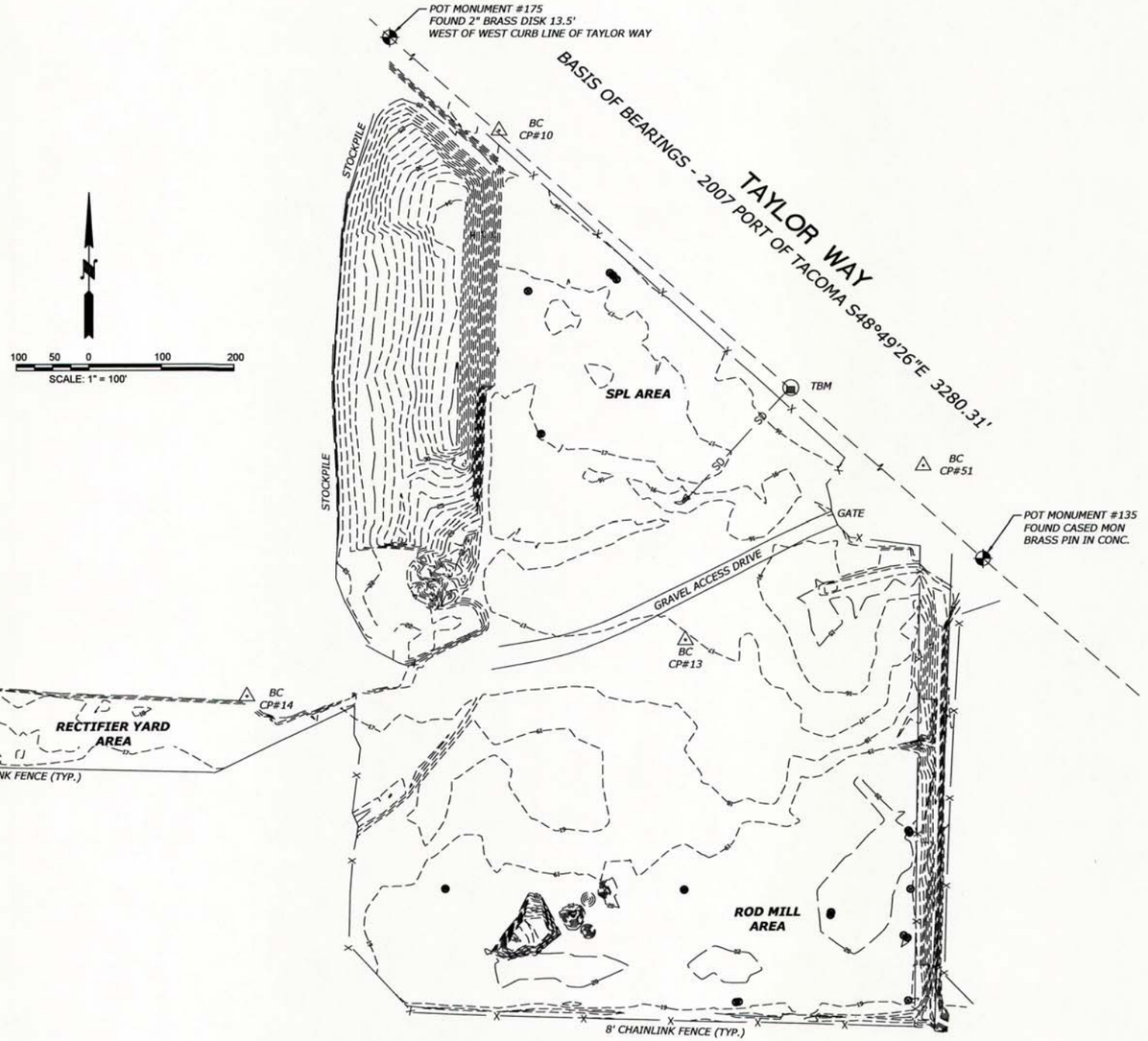
BC CP#14: FOUND HUB & TACK; APEX#2
N: 707617.98
E: 1176654.11
ELV: 20.55

BC CP#51: SET HUB & TACK
N: 707932.33
E: 1177586.57
ELV: 16.59

TBM: CENTER RIM OF STORM DRAIN MANHOLE
N: 708039.39
E: 1177403.70
ELV: 15.13

LEGEND

- *EXISTING SURVEY MONUMENT AS NOTED*
- *SURVEY CONTROL POINT AS NOTED*
- *MAJOR CONTOUR*
- *MINOR CONTOUR*



1/9/2014

THOMAS R. GOLD — STATE OF WASHINGTON — 22016 — REGISTERED PROFESSIONAL LAND SURVEYOR

AS-BUILT CERTIFICATION
I HEREBY DECLARE THAT THE HORIZONTAL AND VERTICAL ELEVATIONS OF THE GRADING AND EXCAVATION AREA SHOWN HEREON IS THE RESULT OF A FIELD SURVEY PERFORMED BY ME OR UNDER MY DIRECTION

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

BEYLER CONSULTING
LAND SURVEYING | LAND PLANNING
PROJECT MANAGEMENT | PERMIT EXPEDITING | FEASIBILITY
OFFICE
10314 100th St. SW
Lakewood, WA 98498
PHONES: 253-584-4157
FAX: 253-336-3950

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG. DATE

CHECKED BY	DATE

PROJ. ENGR	DATE

PRINTED BY: drew Jon 09, 2014
PORT ADDRESS:DNE SITCUM PLAZA
TACOMA, WA 98401-1837

FORMER KAISER FACILITY
INTERIM ACTION
PROJECT SITE
SURVEY CONTROL MAP

SC1.0
SHEET 1 OF 6

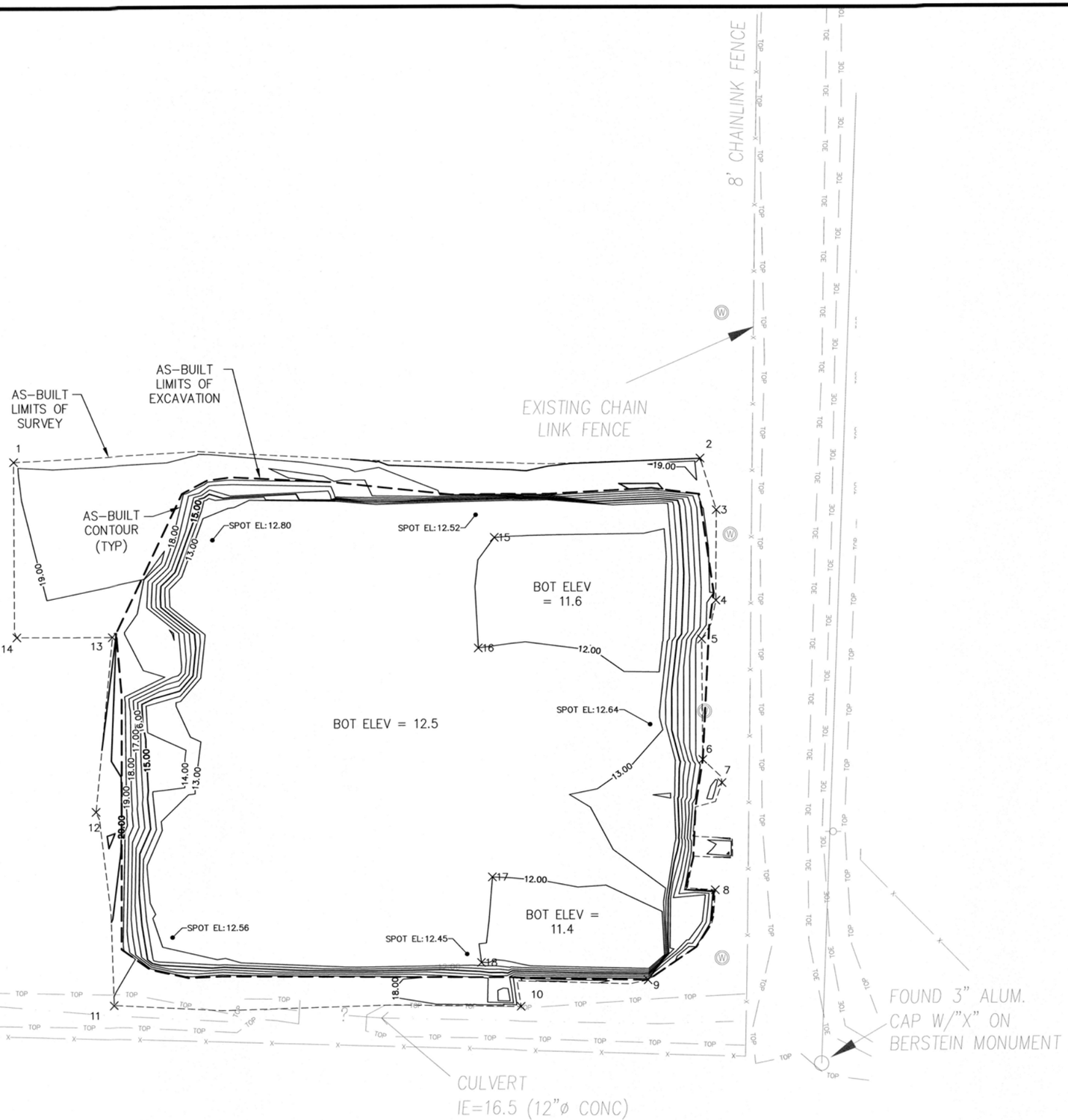
CONT/CONS:	069646	TOWNSHIP: 21 NORTH	RANGE: 3 EAST
PROJECT NO:	092837	DAT-HRZ: WA83-SF	VERT: MLLW 19.39' @ Tide 22 1933
PHASE:	AS-BUILT SET	PARCEL: 77	DRAWING SCALE: AS NOTED

SECTION: SW 1/4-36

BINDING EDGE

PORT OF TACOMA FILE: S:\Projects\13-000\13-160 Clearcreek Contractors, POT Kaiser Facility Const Stkg\6Survey\BC Survey Drawings\As-Builts\092837-SC1.0

BINDING EDGE



AS-BUILT POINT TABLE

POINT #	NORTHING	EASTING
1	707378.81	1177308.70
2	707379.61	1177558.48
3	707360.98	1177564.38
4	707328.30	1177564.24
5	707314.27	1177559.02
6	707270.76	1177559.44
7	707262.36	1177566.41
8	707223.63	1177563.99
9	707191.12	1177539.53
10	707181.59	1177493.31
11	707182.33	1177345.27
12	707252.37	1177338.66
13	707315.51	1177344.64
14	707315.47	1177309.88
15	707350.95	1177483.62
16	707311.03	1177477.79
17	707228.25	1177482.90
18	707197.38	1177478.90

AS-BUILT VOLUME

ROD MILL EXCAVATION	9,067 CY (CUT)

2/25/2014

THOMAS R. GOLD — STATE OF WASHINGTON — 22016 — REGISTERED PROFESSIONAL LAND SURVEYOR

AS-BUILT CERTIFICATION
I HEREBY DECLARE THAT THE HORIZONTAL AND VERTICAL ELEVATIONS OF THE GRADING AND EXCAVATION AREA SHOWN HEREON IS THE RESULT OF A FIELD SURVEY PERFORMED BY ME OR UNDER MY DIRECTION

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

BEYLER CONSULTANTS
CIVIL ENGINEERING | LAND SURVEYING | LAND PLANNING
PROJECT MANAGEMENT | PERMIT EXPEDITING | FEASIBILITY
OFFICE
19314 60th St. SW
LAKEWOOD, WA 98498
PHONE: 253-301-4157
FAX: 253-336-3950

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

DIRECTOR ENG. DATE | CHECKED BY DATE

PRINTED BY: drew Feb 24, 2014 | PROJ. ENGR DATE

PORT ADDRESS:ONE SITCUM PLAZA

TACOMA, WA 98401-1837

DRAWING SCALE: AS NOTED | PARCEL: 77

PHASE: AS-BUILT SET | DAT-HRZ: WA83-SF | VERT: MLLW 19.39' @ Tide 22 1933

PROJECT NO: 092837 | TOWNSHIP: 21 NORTH | RANGE: 3 EAST | SECTION: SW 1/4-36

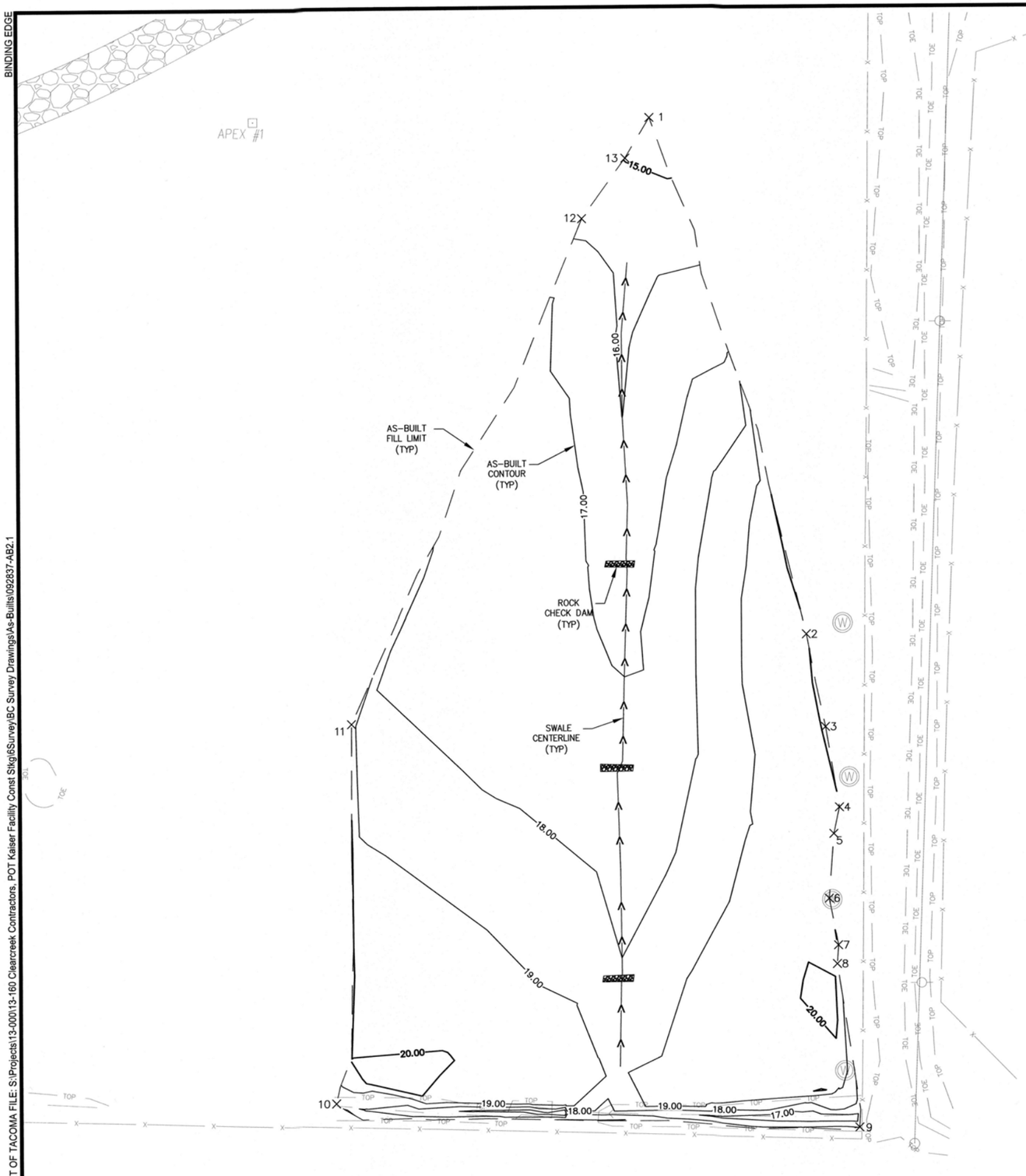
CONT/CONS: 0696646

FORMER KAISER FACILITY
INTERIM ACTION
ROD MILL CLOSED LANDFILL AREA
AS-BUILT EXCAVATION PLAN

AB2.0
SHEET 4 OF 6

PORT OF TACOMA FILE: S:\Projects\13-000\13-160 Clearcreek Contractors, POT Kaiser Facility Const Stkg\6Survey\BC Survey Drawings\As-Builts\092837-AB2.0

BINDING EDGE



AS-BUILT POINT TABLE

POINT #	ELEV	NORTHING	EASTING
1	14.60	707695.73	1177466.39
2	19.84	707426.60	1177547.36
3	20.47	707378.28	1177557.12
4	19.89	707336.37	1177564.12
5	19.52	707322.57	1177561.13
6	19.89	707288.86	1177558.58
7	19.16	707264.51	1177563.30
8	19.42	707254.76	1177562.61
9	17.94	707169.74	1177573.86
10	18.22	707183.60	1177299.76
11	19.60	707381.12	1177308.69
12	15.66	707643.38	1177430.81
13	14.98	707674.68	1177453.63

AS-BUILT VOLUME

ROD MILL GROSS FILL	7,907 CY (FILL)
ROD MILL GROSS CUT	2,306 CY (CUT)
ROD MILL NET VOLUME	5,601 CY (FILL)

2/25/2014

THOMAS R. GOULD — 22208 — REGISTERED PROFESSIONAL LAND SURVEYOR

AS-BUILT CERTIFICATION
I HEREBY DECLARE THAT THE HORIZONTAL AND VERTICAL ELEVATIONS OF THE GRADING AND BACKFILL AREA SHOWN HEREON IS THE RESULT OF A FIELD SURVEY PERFORMED BY ME OR UNDER MY DIRECTION

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

BEYLER CONSULTING
OFFICE
10314 100th St. SW
Lakewood, WA 98498
PHONE: 253-314-4457
FAX: 253-336-3950
CIVIL ENGINEERING | LAND SURVEYING | LAND PLANNING
PROJECT MANAGEMENT | PERMIT EXPEDITING | FEASIBILITY

MARK:	REVISION:	BY:	APPR:	DATE:

APPROVED:

FORMER KAISER FACILITY
INTERIM ACTION
ROD MILL CLOSED LANDFILL AREA
AS-BUILT BACKFILL AND GRADING PLAN

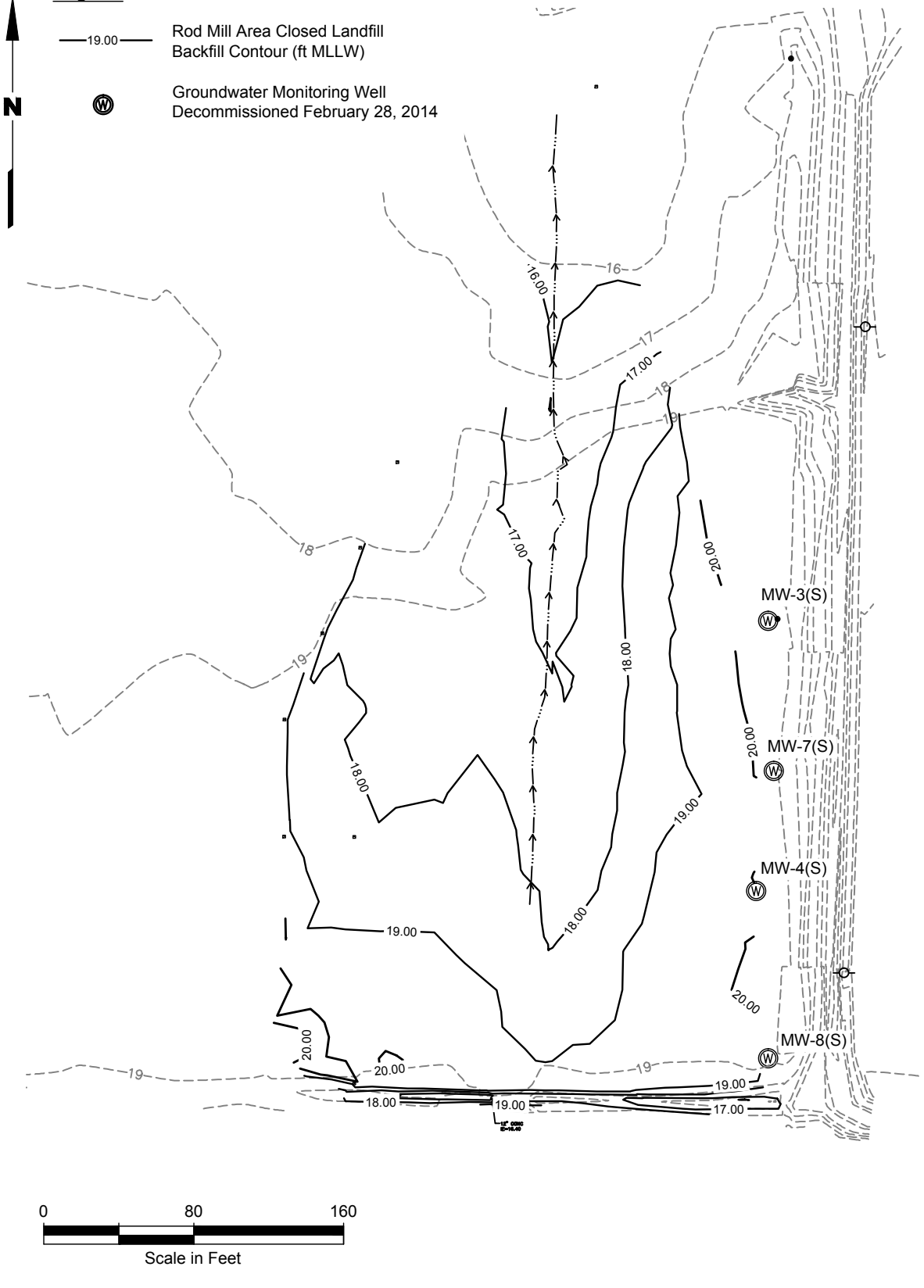
AB2.1
SHEET 5 OF 6

CONT/CONS:	069646	TOWNSHIP: 21 NORTH	RANGE: 3 EAST	SECTION: SW 1/4–36	
PROJECT NO:	092837	DAT–HRZ: WA83–SF	VERT: MLLW 19.39' @ Tide 22 1933		
PHASE:	AS–BUILT SET	PARCEL: 77	DRAWING SCALE: AS NOTED		

DIRECTOR ENG.	DATE	CHECKED BY	DATE

PROJ. ENGR DATE
PRINTED BY: drew Feb 25, 2014
PORT ADDRESS: ONE SITCUM PLAZA
TACOMA, WA 98401–1837

PORT OF TACOMA FILE: S:\Projects\13-000\13-160 Clearcreek Contractors, POT Kaiser Facility Const Stkg\6Survey\BC Survey Drawings\As-Builts\092837-AB2.1



Source: AHBL 2013

LANDAU ASSOCIATES, INC. | G:\Projects\118\033\100\104\Soil Sampling Layout\F D-1 As-built-by-AHBL.dwg (A) "Figure D-1" 4/15/2014

LANDAU ASSOCIATES

Interim Action Completion Report
Rod Mill Area Closed Landfill
Tacoma, Washington

As-Built Survey by AHBL, Inc.
December 11, 2013

Figure
D-1

APPENDIX E

Waste Disposal Records

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/6/2013	1	31.25
	2	33.31
	3	33.46
	4	34.71
	5	35.87
	6	35.47
	7	34.05
	8	34.93
	9	33.30
	10	30.89
	11	31.61
	12	32.55
	13	20.79
	14	29.84
	15	31.20
	16	30.84
	Daily Total:	514.07
8/7/2013	1	28.83
	2	26.89
	3	30.06
	4	26.87
	5	26.10
	6	29.63
	7	31.34
	8	30.72
	9	30.73
	10	27.14
	11	31.12
	12	28.48
	13	28.60
	14	30.43
	15	29.63
	16	32.75
	17	36.41
	18	32.83
	Daily Total:	538.56

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/8/3013	1	34.43
	2	32.67
	3	31.66
	4	28.89
	5	33.22
	6	33.98
	7	32.00
	8	30.73
	9	31.15
	10	35.46
	11	31.27
	12	31.48
	13	33.57
	14	32.17
	15	30.48
	16	31.49
	Daily Total:	514.65
8/9/2013	1	32.00
	2	33.69
	3	30.21
	4	32.67
	5	26.81
	6	32.79
	7	29.35
	8	31.16
	9	32.89
	10	34.27
	11	31.25
	12	31.96
	13	29.85
	14	32.31
	15	32.37
	16	31.83
	17	28.37
	18	29.27
	19	24.91
	20	26.33
	21	28.30
	Daily Total:	642.59
8/10/2013	1	23.97
	Daily Total:	23.97

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/12/2013	1	25.42
	2	29.95
	3	28.94
	4	27.52
	5	31.03
	6	24.54
	7	23.14
	8	29.89
	9	32.01
	10	32.70
	11	28.03
	12	29.32
	13	29.87
	14	31.10
	15	34.18
	16	36.72
	17	36.41
	18	28.84
	19	30.10
	20	32.91
	21	31.58
	22	37.26
	23	35.05
	24	35.91
	25	32.75
	26	33.55
	27	30.89
	28	31.45
	29	31.57
	30	30.07
	31	36.31
	32	35.59
	33	30.97
	34	37.43
	Daily Total:	1,073.00

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/13/2013	1	35.44
	2	38.91
	3	39.90
	4	37.84
	5	35.04
	6	33.45
	7	27.23
	8	30.95
	9	25.69
	10	30.82
	11	26.38
	12	29.03
	13	26.99
	14	30.68
	15	28.58
	16	26.52
	17	28.20
	18	27.17
	19	29.05
	20	27.69
	21	26.52
	22	30.69
	23	29.23
	24	29.81
	25	29.86
	26	28.54
	27	31.69
	28	30.40
	29	33.16
	30	29.72
	31	31.33
	32	28.16
	33	30.07
	34	27.40
	35	29.08
	36	29.11
	37	28.59
	38	29.19
	39	30.84
	40	30.15
	41	25.99
	42	30.50
	43	30.66
	44	33.67
	45	30.95
	46	30.49
	47	33.61
	48	25.41
	49	31.38
	50	29.00
	Daily Total:	1,510.76

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/14/2013	1	30.36
	2	33.09
	3	30.97
	4	31.28
	5	30.84
	6	29.35
	7	34.00
	8	34.84
	9	31.63
	10	34.96
	11	33.64
	12	34.61
	13	33.31
	14	34.03
	15	34.35
	16	31.28
	17	32.94
	18	31.01
	19	33.48
	20	32.61
	21	31.60
	22	29.42
	23	32.23
	24	24.24
	25	34.08
	26	33.30
	27	31.64
	28	33.08
	29	31.97
	30	30.66
	31	34.22
	32	33.01
	33	28.69
	34	31.94
	35	32.40
	36	31.87
	37	35.56
	38	31.37
	39	29.50
	40	29.40
	41	30.74
	42	33.73
	43	28.86
	44	29.09
	45	31.41
	46	31.88
	47	30.82
	48	32.31
	Daily Total:	1,531.60

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/15/2013	1	33.33
	2	28.90
	3	28.29
	4	36.49
	5	32.58
	6	27.67
	7	33.01
	8	29.65
	9	31.13
	10	31.44
	11	28.89
	12	28.69
	13	29.94
	14	30.33
	15	30.27
	16	31.22
	17	28.28
	18	29.07
	19	32.16
	20	32.22
	21	28.14
	22	34.28
	23	32.80
	24	31.14
	25	27.18
	26	26.65
	27	29.48
	28	29.00
	29	32.95
	30	30.58
	31	33.76
	32	33.60
	33	33.40
	Daily Total:	1,016.52

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/16/2013	1	30.77
	2	33.21
	3	34.07
	4	33.64
	5	32.82
	6	28.12
	7	32.00
	8	32.55
	9	32.87
	10	33.04
	11	33.34
	12	33.71
	13	28.31
	14	29.46
	15	28.70
	16	34.01
	17	33.55
	18	30.67
	19	34.02
	20	32.65
	21	33.36
	22	30.83
	23	32.34
	24	31.96
	25	31.63
	26	32.65
	27	30.20
	28	33.15
	Daily Total:	897.63

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/19/2013	1	35.37
	2	34.85
	3	33.05
	4	32.17
	5	33.19
	6	34.03
	7	33.07
	8	32.61
	9	34.66
	10	31.57
	11	31.12
	12	29.55
	13	30.24
	14	37.83
	15	30.19
	16	29.59
	17	27.78
	18	33.27
	19	32.99
	20	32.38
	21	32.93
	22	36.77
	23	35.04
	24	36.45
	25	30.43
	26	30.05
	27	31.34
	28	31.67
	29	34.19
	30	33.46
	31	32.96
	32	30.71
	33	30.13
	34	31.76
	35	29.49
	36	32.10
	37	28.47
	38	27.26
	39	34.09
	40	32.37
	41	32.05
	42	30.91
	43	29.22
	44	31.71
	45	28.18
	Daily Total:	1,443.25

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/20/2013	1	29.35
	2	29.51
	3	32.65
	4	28.66
	5	28.93
	6	31.34
	7	32.28
	8	31.28
	9	29.30
	10	29.00
	11	28.42
	12	31.21
	13	29.93
	14	31.58
	15	30.01
	16	29.04
	17	29.02
	18	31.42
	19	30.00
	20	36.03
	21	29.91
	22	28.66
	23	34.04
	24	33.60
	25	33.50
	26	28.35
	27	31.19
	28	29.71
	29	32.34
	30	33.70
	31	30.45
	32	30.56
	33	30.62
	34	34.97
	35	34.09
	36	30.38
	37	31.30
	38	35.30
	Daily Total:	1,181.63

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
8/21/2013	1	35.34
	2	33.71
	3	34.27
	4	34.42
	5	33.89
	6	29.02
	7	31.03
	8	31.91
	9	30.76
	10	30.25
	11	30.73
	12	31.75
	13	30.28
	14	27.78
	15	33.72
	16	28.85
	17	34.88
	18	35.06
	19	32.71
	20	35.55
	21	28.24
	22	32.90
	23	33.16
	24	31.13
	25	31.38
	26	29.59
	27	32.39
	28	32.31
	29	36.15
	30	35.27
	31	36.21
	Daily Total:	1,004.64

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
9/4/2013	1	30.97
	2	33.35
	3	34.17
	4	31.89
	5	28.91
	6	32.69
	7	33.48
	8	29.86
	9	32.96
	10	32.66
	11	29.02
	12	31.11
	13	33.04
	14	32.61
	15	31.37
	16	31.69
	17	31.00
	18	31.37
	19	32.97
	20	31.58
	21	34.31
	22	33.16
	23	33.08
	24	32.07
	25	33.36
	26	33.28
	27	34.53
	28	33.10
	29	33.67
	30	30.88
	31	34.41
	32	34.30
	Daily Total:	1,036.85
9/5/2013	1	35.18
	2	33.59
	3	31.85
	4	32.39
	5	32.78
	6	29.38
	7	30.45
	8	30.62
	9	30.68
	10	33.13
	Daily Total:	320.05

TABLE E-1
SUMMARY OF TRUCKING INFORMATION
ROD MILL AREA CLOSED LANDFILL
FORMER KAISER SITE INTERIM ACTION

Date Received at Landfill	Truck Number	Weight in Tons
9/6/2013	1	32.16
	2	32.07
	3	32.47
	4	31.89
	5	33.69
	6	32.91
	Daily Total:	195.19
10/2/2013	1	34.64
	2	33.40
	3	34.94
	4	30.27
	5	36.03
	6	33.29
	7	34.52
	8	32.20
	9	34.20
	10	37.86
	11	34.21
	12	28.57
	13	31.60
	14	32.35
	15	28.69
	Daily Total:	496.77
10/3/2013	1	25.47
	2	24.09
	Daily Total:	49.56
	Overall Total:	**13,991.29**

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/31/13		CLEARCREEK CONTRACTOR			LATE CHG	02-024902	0	0	0.00
09/30/13		CLEARCREEK CONTRACTOR			LATE CHG	02-025331	0	0	0.00
				Total		**2**	**0**	**0**	**0.00**
				Average			**0**	**0**	**0.00**
08/06/13	09:05	CLEARCREEK CONTRACTOR		TOM	83	39-279212	0	0	31.25
08/06/13	09:14	CLEARCREEK CONTRACTOR		GEORGE	83	39-279214	0	0	33.31
08/06/13	10:31	CLEARCREEK CONTRACTOR		LANCE	83	39-279233	0	0	33.46
08/06/13	10:33	CLEARCREEK CONTRACTOR		RICK	83	39-279235	0	0	34.71
08/06/13	10:42	CLEARCREEK CONTRACTOR		GAEL	83	39-279243	0	0	35.87
08/06/13	11:22	CLEARCREEK CONTRACTOR		TOM	83	39-279260	0	0	35.47
08/06/13	11:52	CLEARCREEK CONTRACTOR		TIM	83	39-279265	0	0	34.05
08/06/13	12:45	CLEARCREEK CONTRACTOR		RICK	83	39-279280	0	0	34.93
08/06/13	12:53	CLEARCREEK CONTRACTOR		LANCE	83	39-279285	0	0	33.30
08/06/13	13:15	CLEARCREEK CONTRACTOR		GEORGE	83	39-279299	0	0	30.89
08/06/13	13:39	CLEARCREEK CONTRACTOR		GAEL	83	39-279307	0	0	31.61
08/06/13	13:57	CLEARCREEK CONTRACTOR		TOM	83	39-279313	0	0	32.55
08/06/13	14:34	CLEARCREEK CONTRACTOR		TIM	83	39-279325	0	0	20.79
08/06/13	15:09	CLEARCREEK CONTRACTOR		LANCE	83	39-279331	0	0	29.84
08/06/13	15:29	CLEARCREEK CONTRACTOR		RICK	83	39-279338	0	0	31.20
08/06/13	15:52	CLEARCREEK CONTRACTOR		CURT	83	39-279344	0	0	30.84
08/07/13	08:06	CLEARCREEK CONTRACTOR		GEORGE	83	39-279360	0	0	28.83
08/07/13	08:20	CLEARCREEK CONTRACTOR			83	39-279371	0	0	26.89
08/07/13	08:33	CLEARCREEK CONTRACTOR		TERRY	83	39-279379	0	0	30.06
08/07/13	08:56	CLEARCREEK CONTRACTOR		CURT	83	39-279383	0	0	26.87
08/07/13	08:57	CLEARCREEK CONTRACTOR			83	39-279384	0	0	26.10
08/07/13	10:30	CLEARCREEK CONTRACTOR			83	39-279412	0	0	29.63
08/07/13	10:35	CLEARCREEK CONTRACTOR			83	39-279417	0	0	31.34
08/07/13	10:53	CLEARCREEK CONTRACTOR		TERRY	83	39-279426	0	0	30.72
08/07/13	11:26	CLEARCREEK CONTRACTOR		CURT	83	39-279436	0	0	30.73
08/07/13	11:38	CLEARCREEK CONTRACTOR			83	39-279440	0	0	27.14
08/07/13	12:34	CLEARCREEK CONTRACTOR		GEORGE	83	39-279461	0	0	31.12
08/07/13	12:48	CLEARCREEK CONTRACTOR			83	39-279468	0	0	28.48
08/07/13	13:08	CLEARCREEK CONTRACTOR		TERRY	83	39-279477	0	0	28.60
08/07/13	13:52	CLEARCREEK CONTRACTOR		CURT	83	39-279492	0	0	30.43
08/07/13	14:08	CLEARCREEK CONTRACTOR			83	39-279497	0	0	29.63
08/07/13	14:56	CLEARCREEK CONTRACTOR		GEORGE	83	39-279512	0	0	32.75
08/07/13	15:09	CLEARCREEK CONTRACTOR			83	39-279517	0	0	36.41
08/07/13	15:25	CLEARCREEK CONTRACTOR		TERRY	83	39-279523	0	0	32.83
08/08/13	08:05	CLEARCREEK CONTRACTOR		TERRY	83	39-279536	0	0	34.43

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/08/13	08:24	CLEARCREEK CONTRACTOR		CURT	83	39-279555	0	0	32.67
08/08/13	08:33	CLEARCREEK CONTRACTOR		RICK	83	39-279561	0	0	31.66
08/08/13	08:49	CLEARCREEK CONTRACTOR		STAN	83	39-279565	0	0	28.89
08/08/13	10:18	CLEARCREEK CONTRACTOR		TERRY	83	39-279588	0	0	33.22
08/08/13	10:32	CLEARCREEK CONTRACTOR		CURT	83	39-279596	0	0	33.98
08/08/13	10:42	CLEARCREEK CONTRACTOR		RICK	83	39-279601	0	0	32.00
08/08/13	10:54	CLEARCREEK CONTRACTOR		STAN	83	39-279603	0	0	30.73
08/08/13	12:17	CLEARCREEK CONTRACTOR		TERRY	83	39-279619	0	0	31.15
08/08/13	12:44	CLEARCREEK CONTRACTOR		CURT	83	39-279631	0	0	35.46
08/08/13	12:53	CLEARCREEK CONTRACTOR		RICK	83	39-279635	0	0	31.27
08/08/13	13:06	CLEARCREEK CONTRACTOR		STAN	83	39-279638	0	0	31.48
08/08/13	14:40	CLEARCREEK CONTRACTOR		TERRY	83	39-279661	0	0	33.57
08/08/13	14:54	CLEARCREEK CONTRACTOR		CURT	83	39-279666	0	0	32.17
08/08/13	15:02	CLEARCREEK CONTRACTOR		RICK	83	39-279668	0	0	30.48
08/08/13	15:13	CLEARCREEK CONTRACTOR		STAN	83	39-279672	0	0	31.49
08/09/13	08:03	CLEARCREEK CONTRACTOR		GEORGE	83	39-279690	0	0	32.00
08/09/13	08:14	CLEARCREEK CONTRACTOR		TERRY	83	39-279703	0	0	33.69
08/09/13	08:29	CLEARCREEK CONTRACTOR		CURT	83	39-279714	0	0	30.21
08/09/13	08:46	CLEARCREEK CONTRACTOR			83	39-279720	0	0	32.67
08/09/13	09:00	CLEARCREEK CONTRACTOR			83	39-279723	0	0	32.79
08/09/13	09:09	CLEARCREEK CONTRACTOR			83	39-279725	0	0	29.35
08/09/13	09:22	CLEARCREEK CONTRACTOR		JOHN	83	39-279728	0	0	31.16
08/09/13	10:17	CLEARCREEK CONTRACTOR		GEORGE	83	39-279747	0	0	32.89
08/09/13	10:29	CLEARCREEK CONTRACTOR		TERRY	83	39-279758	0	0	34.27
08/09/13	10:49	CLEARCREEK CONTRACTOR		CURT	83	39-279767	0	0	31.25
08/09/13	11:09	CLEARCREEK CONTRACTOR		RICK	83	39-279770	0	0	31.96
08/09/13	11:27	CLEARCREEK CONTRACTOR			83	39-279773	0	0	29.85
08/09/13	11:41	CLEARCREEK CONTRACTOR			83	39-279779	0	0	32.31
08/09/13	12:42	CLEARCREEK CONTRACTOR		GEORGE	83	39-279802	0	0	32.37
08/09/13	12:58	CLEARCREEK CONTRACTOR		TERRY	83	39-279810	0	0	31.83
08/09/13	13:22	CLEARCREEK CONTRACTOR		CURT	83	39-279821	0	0	28.37
08/09/13	13:38	CLEARCREEK CONTRACTOR		RICK	83	39-279825	0	0	29.27
08/09/13	14:03	CLEARCREEK CONTRACTOR			83	39-279830	0	0	24.91
08/09/13	14:03	CLEARCREEK CONTRACTOR		20	83	39-279831	0	0	26.81
08/09/13	15:09	CLEARCREEK CONTRACTOR		GEORGE	83	39-279857	0	0	26.33
08/09/13	15:16	CLEARCREEK CONTRACTOR		TERRY	83	39-279859	0	0	28.30
08/10/13	08:06	CLEARCREEK CONTRACTOR		TIMMY	83	39-279875	0	0	23.97
08/12/13	08:03	CLEARCREEK CONTRACTOR		STAN	83	39-279932	0	0	25.42
08/12/13	08:12	CLEARCREEK CONTRACTOR		CURT	83	39-279945	0	0	29.95
08/12/13	08:15	CLEARCREEK CONTRACTOR		RICK	83	39-279949	0	0	28.94
08/12/13	08:34	CLEARCREEK CONTRACTOR		LANCE	83	39-279963	0	0	27.52

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/12/13	08:35	CLEARCREEK CONTRACTOR		RYAN	83	39-279964	0	0	31.03
08/12/13	08:38	CLEARCREEK CONTRACTOR		AL	83	39-279965	0	0	24.54
08/12/13	08:44	CLEARCREEK CONTRACTOR		JOHN	83	39-279968	0	0	23.14
08/12/13	10:03	CLEARCREEK CONTRACTOR		STAN	83	39-279982	0	0	29.89
08/12/13	10:17	CLEARCREEK CONTRACTOR		CURT	83	39-279989	0	0	32.01
08/12/13	10:22	CLEARCREEK CONTRACTOR		RICK	83	39-279991	0	0	32.70
08/12/13	10:39	CLEARCREEK CONTRACTOR		AL	83	39-280000	0	0	28.03
08/12/13	10:46	CLEARCREEK CONTRACTOR		LANCE	83	39-280004	0	0	29.32
08/12/13	10:53	CLEARCREEK CONTRACTOR		RYAN	83	39-280006	0	0	29.87
08/12/13	11:06	CLEARCREEK CONTRACTOR		JOHN	83	39-280009	0	0	31.10
08/12/13	12:05	CLEARCREEK CONTRACTOR		STAN	83	39-280035	0	0	34.18
08/12/13	12:19	CLEARCREEK CONTRACTOR		CURT	83	39-280043	0	0	36.72
08/12/13	12:27	CLEARCREEK CONTRACTOR		RICK	83	39-280045	0	0	36.41
08/12/13	12:36	CLEARCREEK CONTRACTOR		AL	83	39-280050	0	0	28.84
08/12/13	12:52	CLEARCREEK CONTRACTOR		LANCE	83	39-280055	0	0	30.10
08/12/13	12:56	CLEARCREEK CONTRACTOR		RYAN	83	39-280057	0	0	32.91
08/12/13	13:07	CLEARCREEK CONTRACTOR		JOHN	83	39-280059	0	0	31.58
08/12/13	14:03	CLEARCREEK CONTRACTOR		BILL	83	39-280072	0	0	37.26
08/12/13	14:18	CLEARCREEK CONTRACTOR		STEVE	83	39-280081	0	0	35.05
08/12/13	14:22	CLEARCREEK CONTRACTOR		STAN	83	39-280083	0	0	35.91
08/12/13	14:31	CLEARCREEK CONTRACTOR		DON	83	39-280085	0	0	32.75
08/12/13	14:38	CLEARCREEK CONTRACTOR		LAURA	83	39-280088	0	0	33.55
08/12/13	14:45	CLEARCREEK CONTRACTOR		BILL	83	39-280092	0	0	30.89
08/12/13	14:56	CLEARCREEK CONTRACTOR		CURT	83	39-280097	0	0	31.45
08/12/13	14:58	CLEARCREEK CONTRACTOR		RICK	83	39-280098	0	0	31.57
08/12/13	15:06	CLEARCREEK CONTRACTOR		AL	83	39-280102	0	0	30.07
08/12/13	15:18	CLEARCREEK CONTRACTOR		LANCE	83	39-280103	0	0	36.31
08/12/13	15:24	CLEARCREEK CONTRACTOR		RYAN	83	39-280105	0	0	35.59
08/12/13	15:41	CLEARCREEK CONTRACTOR		JOHN	83	39-280108	0	0	30.97
08/12/13	15:44	CLEARCREEK CONTRACTOR		TERRY	83	39-280109	0	0	37.43
08/13/13	08:07	CLEARCREEK CONTRACTOR		HARLOW16	83	39-280116	0	0	35.44
08/13/13	08:09	CLEARCREEK CONTRACTOR		HARLOW 25	83	39-280117	0	0	38.91
08/13/13	08:15	CLEARCREEK CONTRACTOR		HARLOW 15	83	39-280122	0	0	39.90
08/13/13	08:26	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-280132	0	0	37.84
08/13/13	08:34	CLEARCREEK CONTRACTOR		HARLOW 6	83	39-280139	0	0	33.45
08/13/13	08:36	CLEARCREEK CONTRACTOR		PENNYMAARI	83	39-280141	0	0	35.04
08/13/13	08:42	CLEARCREEK CONTRACTOR		HARLOW27	83	39-280145	0	0	30.95
08/13/13	08:47	CLEARCREEK CONTRACTOR		HARLOW20	83	39-280148	0	0	25.69
08/13/13	08:50	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-280150	0	0	30.82
08/13/13	09:01	CLEARCREEK CONTRACTOR		328MUM	83	39-280153	0	0	26.38
08/13/13	09:07	CLEARCREEK CONTRACTOR		MUMME 9	83	39-280155	0	0	29.03

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/13/13	10:07	CLEARCREEK CONTRACTOR		H5	83	39-280172	0	0	26.99
08/13/13	10:17	CLEARCREEK CONTRACTOR		DON 16	83	39-280178	0	0	30.68
08/13/13	10:19	CLEARCREEK CONTRACTOR		25	83	39-280180	0	0	28.58
08/13/13	10:28	CLEARCREEK CONTRACTOR		H 15	83	39-280187	0	0	26.52
08/13/13	10:39	CLEARCREEK CONTRACTOR		12	83	39-280194	0	0	28.20
08/13/13	10:42	CLEARCREEK CONTRACTOR		H6	83	39-280196	0	0	27.17
08/13/13	10:46	CLEARCREEK CONTRACTOR		PENNIEMAR	83	39-280198	0	0	27.23
08/13/13	10:55	CLEARCREEK CONTRACTOR		HALOW 27	83	39-280204	0	0	27.69
08/13/13	10:59	CLEARCREEK CONTRACTOR		H20	83	39-280208	0	0	26.52
08/13/13	11:02	CLEARCREEK CONTRACTOR		HAR 8	83	39-280210	0	0	30.69
08/13/13	11:14	CLEARCREEK CONTRACTOR		MUM328	83	39-280211	0	0	29.23
08/13/13	11:20	CLEARCREEK CONTRACTOR		MUM9	83	39-280212	0	0	29.81
08/13/13	12:09	CLEARCREEK CONTRACTOR		HARLOW 5	83	39-280235	0	0	29.86
08/13/13	12:19	CLEARCREEK CONTRACTOR		HARL16	83	39-280240	0	0	28.54
08/13/13	12:25	CLEARCREEK CONTRACTOR		HAR25	83	39-280241	0	0	29.05
08/13/13	12:31	CLEARCREEK CONTRACTOR		HAR 15	83	39-280247	0	0	31.69
08/13/13	12:35	CLEARCREEK CONTRACTOR		HARL12	83	39-280248	0	0	30.40
08/13/13	12:45	CLEARCREEK CONTRACTOR		HARL6	83	39-280250	0	0	33.16
08/13/13	12:53	CLEARCREEK CONTRACTOR		PENNYMARIE	83	39-280254	0	0	29.72
08/13/13	13:00	CLEARCREEK CONTRACTOR		H27	83	39-280257	0	0	31.33
08/13/13	13:01	CLEARCREEK CONTRACTOR		H20	83	39-280259	0	0	28.16
08/13/13	13:08	CLEARCREEK CONTRACTOR		H8	83	39-280262	0	0	30.07
08/13/13	13:34	CLEARCREEK CONTRACTOR		I568	83	39-280267	0	0	29.08
08/13/13	13:35	CLEARCREEK CONTRACTOR		INT588	83	39-280268	0	0	27.40
08/13/13	13:36	CLEARCREEK CONTRACTOR		MUM9	83	39-280269	0	0	25.99
08/13/13	14:20	CLEARCREEK CONTRACTOR		I578	83	39-280279	0	0	29.11
08/13/13	14:25	CLEARCREEK CONTRACTOR		H5	83	39-280281	0	0	28.59
08/13/13	14:30	CLEARCREEK CONTRACTOR		H16	83	39-280284	0	0	29.19
08/13/13	14:32	CLEARCREEK CONTRACTOR		H25	83	39-280285	0	0	30.84
08/13/13	14:41	CLEARCREEK CONTRACTOR		I582	83	39-280288	0	0	30.15
08/13/13	14:43	CLEARCREEK CONTRACTOR		H15	83	39-280292	0	0	29.00
08/13/13	14:53	CLEARCREEK CONTRACTOR		H12	83	39-280298	0	0	30.50
08/13/13	14:58	CLEARCREEK CONTRACTOR		H6	83	39-280299	0	0	30.66
08/13/13	15:06	CLEARCREEK CONTRACTOR		PM10	83	39-280301	0	0	33.67
08/13/13	15:14	CLEARCREEK CONTRACTOR		H27	83	39-280304	0	0	30.95
08/13/13	15:27	CLEARCREEK CONTRACTOR		H20	83	39-280311	0	0	30.49
08/13/13	15:30	CLEARCREEK CONTRACTOR		H8	83	39-280313	0	0	33.61
08/13/13	15:41	CLEARCREEK CONTRACTOR		MUM9	83	39-280321	0	0	25.41
08/13/13	15:49	CLEARCREEK CONTRACTOR		MUM 328	83	39-280322	0	0	31.38
08/14/13	08:05	CLEARCREEK CONTRACTOR		H16	83	39-280332	0	0	30.36
08/14/13	08:06	CLEARCREEK CONTRACTOR		H15	83	39-280334	0	0	33.09

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LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/14/13	08:13	CLEARCREEK CONTRACTOR		HARL 25	83	39-280342	0	0	30.97
08/14/13	08:21	CLEARCREEK CONTRACTOR		H 6	83	39-280348	0	0	31.28
08/14/13	08:28	CLEARCREEK CONTRACTOR		H 27	83	39-280352	0	0	30.84
08/14/13	08:34	CLEARCREEK CONTRACTOR		H 20	83	39-280354	0	0	29.35
08/14/13	08:49	CLEARCREEK CONTRACTOR		H 12	83	39-280358	0	0	34.00
08/14/13	08:51	CLEARCREEK CONTRACTOR		H 8	83	39-280360	0	0	34.84
08/14/13	09:01	CLEARCREEK CONTRACTOR		MUMM 328	83	39-280367	0	0	34.96
08/14/13	09:06	CLEARCREEK CONTRACTOR		MUMM9	83	39-280369	0	0	33.64
08/14/13	09:07	CLEARCREEK CONTRACTOR		H 5	83	39-280370	0	0	31.63
08/14/13	09:16	CLEARCREEK CONTRACTOR		IN 568	83	39-280375	0	0	34.61
08/14/13	10:18	CLEARCREEK CONTRACTOR		H 16	83	39-280398	0	0	33.31
08/14/13	10:26	CLEARCREEK CONTRACTOR		H 25	83	39-280401	0	0	34.35
08/14/13	10:29	CLEARCREEK CONTRACTOR		H 15	83	39-280404	0	0	34.03
08/14/13	10:35	CLEARCREEK CONTRACTOR		H 6	83	39-280406	0	0	31.28
08/14/13	10:40	CLEARCREEK CONTRACTOR		H 27	83	39-280409	0	0	32.94
08/14/13	10:45	CLEARCREEK CONTRACTOR		H 20	83	39-280412	0	0	31.01
08/14/13	10:49	CLEARCREEK CONTRACTOR		H 12	83	39-280416	0	0	33.48
08/14/13	10:57	CLEARCREEK CONTRACTOR		H 8	83	39-280418	0	0	32.61
08/14/13	11:06	CLEARCREEK CONTRACTOR		MUMM328	83	39-280421	0	0	31.60
08/14/13	11:10	CLEARCREEK CONTRACTOR		MUM 9	83	39-280423	0	0	29.42
08/14/13	11:23	CLEARCREEK CONTRACTOR		H 5	83	39-280427	0	0	32.23
08/14/13	11:25	CLEARCREEK CONTRACTOR		I 568	83	39-280428	0	0	24.24
08/14/13	12:23	CLEARCREEK CONTRACTOR		H16	83	39-280449	0	0	34.08
08/14/13	12:32	CLEARCREEK CONTRACTOR		H 25	83	39-280451	0	0	33.30
08/14/13	12:33	CLEARCREEK CONTRACTOR		H 15	83	39-280454	0	0	31.64
08/14/13	12:40	CLEARCREEK CONTRACTOR		H 6	83	39-280456	0	0	33.08
08/14/13	12:48	CLEARCREEK CONTRACTOR		H 27	83	39-280460	0	0	31.97
08/14/13	12:54	CLEARCREEK CONTRACTOR		H 20	83	39-280463	0	0	30.66
08/14/13	13:01	CLEARCREEK CONTRACTOR		H 12	83	39-280470	0	0	34.22
08/14/13	13:06	CLEARCREEK CONTRACTOR		H 8	83	39-280472	0	0	33.01
08/14/13	13:15	CLEARCREEK CONTRACTOR		MUMME328	83	39-280478	0	0	28.69
08/14/13	13:20	CLEARCREEK CONTRACTOR		MUM 9	83	39-280480	0	0	31.94
08/14/13	13:33	CLEARCREEK CONTRACTOR		H 5	83	39-280483	0	0	32.40
08/14/13	13:42	CLEARCREEK CONTRACTOR		I 568	83	39-280486	0	0	32.31
08/14/13	14:39	CLEARCREEK CONTRACTOR		H 16	83	39-280503	0	0	31.87
08/14/13	14:40	CLEARCREEK CONTRACTOR		H25	83	39-280505	0	0	35.56
08/14/13	14:49	CLEARCREEK CONTRACTOR		H 15	83	39-280508	0	0	31.37
08/14/13	14:57	CLEARCREEK CONTRACTOR		H 6	83	39-280514	0	0	29.50
08/14/13	15:08	CLEARCREEK CONTRACTOR		H 27	83	39-280516	0	0	29.40
08/14/13	15:10	CLEARCREEK CONTRACTOR		H 20	83	39-280518	0	0	30.74
08/14/13	15:24	CLEARCREEK CONTRACTOR		H 8	83	39-280521	0	0	33.73

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Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/14/13	15:26	CLEARCREEK CONTRACTOR		H 12	83	39-280522	0	0	28.86
08/14/13	15:33	CLEARCREEK CONTRACTOR		MUM 328	83	39-280528	0	0	29.09
08/14/13	15:38	CLEARCREEK CONTRACTOR		H 13	83	39-280530	0	0	31.41
08/14/13	15:46	CLEARCREEK CONTRACTOR		MUMME 9	83	39-280532	0	0	31.88
08/14/13	15:51	CLEARCREEK CONTRACTOR		H 5	83	39-280535	0	0	30.82
08/15/13	08:06	CLEARCREEK CONTRACTOR		CURT	83	39-280547	0	0	33.33
08/15/13	08:08	CLEARCREEK CONTRACTOR		STEVE	83	39-280549	0	0	28.90
08/15/13	08:09	CLEARCREEK CONTRACTOR		CHAD	83	39-280551	0	0	28.29
08/15/13	08:11	CLEARCREEK CONTRACTOR		RICK	83	39-280553	0	0	36.49
08/15/13	08:16	CLEARCREEK CONTRACTOR		STAN	83	39-280560	0	0	32.58
08/15/13	08:26	CLEARCREEK CONTRACTOR		RYAN	83	39-280570	0	0	27.67
08/15/13	08:37	CLEARCREEK CONTRACTOR		AL	83	39-280574	0	0	33.01
08/15/13	08:58	CLEARCREEK CONTRACTOR		JOHN	83	39-280586	0	0	29.65
08/15/13	10:14	CLEARCREEK CONTRACTOR		CURT	83	39-280608	0	0	31.13
08/15/13	10:16	CLEARCREEK CONTRACTOR		STEVE	83	39-280610	0	0	31.44
08/15/13	10:22	CLEARCREEK CONTRACTOR		CHAD	83	39-280612	0	0	28.89
08/15/13	10:28	CLEARCREEK CONTRACTOR		RICK	83	39-280617	0	0	28.69
08/15/13	10:35	CLEARCREEK CONTRACTOR		STAN	83	39-280621	0	0	29.94
08/15/13	10:47	CLEARCREEK CONTRACTOR		CHASE	83	39-280627	0	0	30.33
08/15/13	10:52	CLEARCREEK CONTRACTOR		AL	83	39-280632	0	0	30.27
08/15/13	11:11	CLEARCREEK CONTRACTOR		JOHN	83	39-280638	0	0	31.22
08/15/13	11:16	CLEARCREEK CONTRACTOR		RYAN	83	39-280644	0	0	28.28
08/15/13	12:11	CLEARCREEK CONTRACTOR		LINDA	83	39-280663	0	0	29.07
08/15/13	12:23	CLEARCREEK CONTRACTOR		CURT	83	39-280669	0	0	32.16
08/15/13	12:31	CLEARCREEK CONTRACTOR		STEVE	83	39-280674	0	0	32.22
08/15/13	12:32	CLEARCREEK CONTRACTOR		CHAD	83	39-280675	0	0	28.14
08/15/13	12:47	CLEARCREEK CONTRACTOR		RICK	83	39-280686	0	0	34.28
08/15/13	12:49	CLEARCREEK CONTRACTOR		STAN	83	39-280688	0	0	32.80
08/15/13	13:14	CLEARCREEK CONTRACTOR		CHASE	83	39-280695	0	0	31.14
08/15/13	13:28	CLEARCREEK CONTRACTOR		AL	83	39-280702	0	0	27.18
08/15/13	14:10	CLEARCREEK CONTRACTOR		RYAN	83	39-280714	0	0	26.65
08/15/13	14:53	CLEARCREEK CONTRACTOR		CHAD	83	39-280730	0	0	29.48
08/15/13	15:07	CLEARCREEK CONTRACTOR		LINDA	83	39-280738	0	0	29.00
08/15/13	15:12	CLEARCREEK CONTRACTOR		TERRY	83	39-280740	0	0	32.95
08/15/13	15:14	CLEARCREEK CONTRACTOR		STEVE	83	39-280742	0	0	30.58
08/15/13	15:19	CLEARCREEK CONTRACTOR		RICK	83	39-280744	0	0	33.76
08/15/13	15:28	CLEARCREEK CONTRACTOR		STAN	83	39-280750	0	0	33.60
08/15/13	15:34	CLEARCREEK CONTRACTOR		GAYLE	83	39-280751	0	0	33.40
08/16/13	08:03	CLEARCREEK CONTRACTOR		9	83	39-280768	0	0	33.36
08/16/13	08:04	CLEARCREEK CONTRACTOR		43	83	39-280769	0	0	30.77
08/16/13	08:05	CLEARCREEK CONTRACTOR		44	83	39-280770	0	0	33.21

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Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/16/13	08:12	CLEARCREEK CONTRACTOR		CURT	83	39-280781	0	0	34.07
08/16/13	08:14	CLEARCREEK CONTRACTOR		20	83	39-280784	0	0	33.64
08/16/13	08:20	CLEARCREEK CONTRACTOR		18	83	39-280793	0	0	32.82
08/16/13	08:26	CLEARCREEK CONTRACTOR		ERIC	83	39-280797	0	0	28.12
08/16/13	08:33	CLEARCREEK CONTRACTOR		590	83	39-280802	0	0	32.00
08/16/13	08:43	CLEARCREEK CONTRACTOR		GAIL	83	39-280806	0	0	32.55
08/16/13	08:48	CLEARCREEK CONTRACTOR		27	83	39-280808	0	0	32.87
08/16/13	10:04	CLEARCREEK CONTRACTOR		9	83	39-280830	0	0	33.04
08/16/13	10:19	CLEARCREEK CONTRACTOR		CURT 24	83	39-280835	0	0	33.34
08/16/13	10:20	CLEARCREEK CONTRACTOR		20	83	39-280838	0	0	33.71
08/16/13	10:27	CLEARCREEK CONTRACTOR		18 LINDA	83	39-280845	0	0	28.31
08/16/13	10:34	CLEARCREEK CONTRACTOR		ERIC	83	39-280849	0	0	29.46
08/16/13	10:43	CLEARCREEK CONTRACTOR		590	83	39-280852	0	0	28.70
08/16/13	10:51	CLEARCREEK CONTRACTOR		27 STEVE	83	39-280865	0	0	34.01
08/16/13	10:57	CLEARCREEK CONTRACTOR		GAIL 33	83	39-280868	0	0	33.55
08/16/13	12:31	CLEARCREEK CONTRACTOR		CURT 24	83	39-280903	0	0	34.02
08/16/13	12:33	CLEARCREEK CONTRACTOR		9	83	39-280904	0	0	30.67
08/16/13	12:39	CLEARCREEK CONTRACTOR		20	83	39-280906	0	0	32.65
08/16/13	13:13	CLEARCREEK CONTRACTOR		ERIC	83	39-280917	0	0	32.65
08/16/13	13:18	CLEARCREEK CONTRACTOR		590	83	39-280920	0	0	30.20
08/16/13	13:26	CLEARCREEK CONTRACTOR		27 STEVE	83	39-280923	0	0	33.15
08/16/13	13:28	CLEARCREEK CONTRACTOR		33 GAIL	83	39-280924	0	0	30.83
08/16/13	15:02	CLEARCREEK CONTRACTOR		9	83	39-280961	0	0	32.34
08/16/13	15:10	CLEARCREEK CONTRACTOR		24 CURT	83	39-280963	0	0	31.96
08/16/13	15:11	CLEARCREEK CONTRACTOR		20	83	39-280964	0	0	31.63
08/19/13	08:09	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281055	0	0	33.05
08/19/13	08:10	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281056	0	0	32.17
08/19/13	08:11	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281057	0	0	35.37
08/19/13	08:12	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281058	0	0	34.85
08/19/13	08:15	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281062	0	0	33.19
08/19/13	08:17	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281066	0	0	34.03
08/19/13	08:20	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281070	0	0	33.07
08/19/13	08:34	CLEARCREEK CONTRACTOR		G & L 7	83	39-281076	0	0	32.61
08/19/13	08:43	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281085	0	0	34.66
08/19/13	08:57	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281090	0	0	31.12
08/19/13	08:58	CLEARCREEK CONTRACTOR		HARLOW 13	83	39-281091	0	0	31.57
08/19/13	08:59	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281092	0	0	29.55
08/19/13	09:03	CLEARCREEK CONTRACTOR		INTWES 586	83	39-281095	0	0	30.24
08/19/13	10:09	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281114	0	0	37.83
08/19/13	10:25	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281120	0	0	30.19
08/19/13	10:26	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281121	0	0	29.59

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LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/19/13	10:31	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281125	0	0	27.78
08/19/13	10:33	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281126	0	0	33.27
08/19/13	10:38	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281127	0	0	32.99
08/19/13	10:45	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281131	0	0	32.38
08/19/13	11:01	CLEARCREEK CONTRACTOR		G & L 7	83	39-281136	0	0	32.93
08/19/13	11:05	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281142	0	0	36.77
08/19/13	11:14	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281145	0	0	35.04
08/19/13	11:19	CLEARCREEK CONTRACTOR		HARLOW 13	83	39-281149	0	0	36.45
08/19/13	11:23	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281150	0	0	30.43
08/19/13	11:24	CLEARCREEK CONTRACTOR		INTWES 586	83	39-281152	0	0	30.05
08/19/13	12:39	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281174	0	0	31.34
08/19/13	12:44	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281176	0	0	31.67
08/19/13	12:48	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281177	0	0	34.19
08/19/13	12:54	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281179	0	0	33.46
08/19/13	12:55	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281180	0	0	32.96
08/19/13	13:03	CLEARCREEK CONTRACTOR		HARLOW 4	83	39-281185	0	0	30.71
08/19/13	13:19	CLEARCREEK CONTRACTOR		G & L 7	83	39-281189	0	0	30.13
08/19/13	13:30	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281195	0	0	31.76
08/19/13	13:31	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281198	0	0	29.49
08/19/13	13:39	CLEARCREEK CONTRACTOR		HARLOW 13	83	39-281201	0	0	32.10
08/19/13	13:49	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281203	0	0	28.47
08/19/13	13:56	CLEARCREEK CONTRACTOR		INTWES 586	83	39-281205	0	0	27.26
08/19/13	14:45	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281220	0	0	34.09
08/19/13	15:00	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281225	0	0	32.37
08/19/13	15:01	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281227	0	0	32.05
08/19/13	15:09	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281232	0	0	30.91
08/19/13	15:16	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281235	0	0	29.22
08/19/13	15:30	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281238	0	0	31.71
08/19/13	15:31	CLEARCREEK CONTRACTOR		HARLOW 4	83	39-281240	0	0	28.18
08/20/13	08:03	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281255	0	0	29.35
08/20/13	08:04	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281256	0	0	29.51
08/20/13	08:06	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281259	0	0	32.65
08/20/13	08:07	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281260	0	0	28.66
08/20/13	08:08	CLEARCREEK CONTRACTOR		G & L 7	83	39-281261	0	0	28.93
08/20/13	08:17	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281269	0	0	31.34
08/20/13	08:21	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281273	0	0	32.28
08/20/13	08:26	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281282	0	0	31.28
08/20/13	08:41	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281296	0	0	29.30
08/20/13	08:44	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281298	0	0	29.00
08/20/13	08:49	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281303	0	0	28.42
08/20/13	09:58	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281321	0	0	31.21

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Site Activity Report

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Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/20/13	10:06	CLEARCREEK CONTRACTOR	CLC44	CLEARCK 44	83	39-281325	0	0	29.93
08/20/13	10:32	CLEARCREEK CONTRACTOR	CLC18	HARLOW 18	83	39-281333	0	0	29.04
08/20/13	10:36	CLEARCREEK CONTRACTOR	CLC12	HARLOW 12	83	39-281339	0	0	31.58
08/20/13	10:40	CLEARCREEK CONTRACTOR	CLC7	G & L 7	83	39-281342	0	0	29.02
08/20/13	10:42	CLEARCREEK CONTRACTOR	CLC20	HARLOW 20	83	39-281344	0	0	31.42
08/20/13	10:42	CLEARCREEK CONTRACTOR	CLC24	HARLOW 24	83	39-281345	0	0	30.01
08/20/13	10:49	CLEARCREEK CONTRACTOR	CLC27	HARLOW 27	83	39-281351	0	0	30.00
08/20/13	11:00	CLEARCREEK CONTRACTOR	CLC8	HARLOW 8	83	39-281356	0	0	36.03
08/20/13	11:17	CLEARCREEK CONTRACTOR	CLC328	MUMME 328	83	39-281367	0	0	29.91
08/20/13	11:19	CLEARCREEK CONTRACTOR	CLC590	INTWES 590	83	39-281368	0	0	28.66
08/20/13	12:12	CLEARCREEK CONTRACTOR	CLC43	CLEARCK 43	83	39-281390	0	0	34.04
08/20/13	08:47	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281414	0	0	31.19
08/20/13	08:48	CLEARCREEK CONTRACTOR		G&L 7	83	39-281415	0	0	29.71
08/20/13	08:48	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281416	0	0	33.50
08/20/13	08:49	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281417	0	0	28.35
08/20/13	08:49	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281418	0	0	33.60
08/20/13	08:50	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281419	0	0	32.34
08/20/13	08:50	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281420	0	0	33.70
08/20/13	08:51	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281421	0	0	30.45
08/20/13	08:51	CLEARCREEK CONTRACTOR		INTER 590	83	39-281422	0	0	30.56
08/20/13	08:52	CLEARCREEK CONTRACTOR		CLEAR 43	83	39-281423	0	0	30.62
08/20/13	08:52	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281424	0	0	34.97
08/20/13	08:53	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281425	0	0	34.09
08/20/13	08:53	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281426	0	0	30.38
08/20/13	08:54	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281427	0	0	31.30
08/20/13	08:54	CLEARCREEK CONTRACTOR		G&L 7	83	39-281428	0	0	35.30
08/21/13	08:03	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281602	0	0	33.71
08/21/13	08:05	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281606	0	0	35.34
08/21/13	08:10	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281611	0	0	34.27
08/21/13	08:13	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281615	0	0	34.42
08/21/13	08:16	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281618	0	0	33.89
08/21/13	08:35	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281632	0	0	29.02
08/21/13	08:36	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281633	0	0	31.03
08/21/13	08:38	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281636	0	0	31.91
08/21/13	08:46	CLEARCREEK CONTRACTOR		G & L 6	83	39-281641	0	0	30.25
08/21/13	08:47	CLEARCREEK CONTRACTOR		G & L 7	83	39-281642	0	0	30.76
08/21/13	08:59	CLEARCREEK CONTRACTOR		HARLOW 17	83	39-281647	0	0	30.73
08/21/13	09:02	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281651	0	0	31.75
08/21/13	09:16	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281654	0	0	27.78
08/21/13	09:24	CLEARCREEK CONTRACTOR		INTWES 586	83	39-281660	0	0	30.28
08/21/13	10:09	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281675	0	0	33.72

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
08/21/13	10:14	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281679	0	0	28.85
08/21/13	10:26	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281685	0	0	34.88
08/21/13	10:33	CLEARCREEK CONTRACTOR		HARLOW 8	83	39-281692	0	0	35.06
08/21/13	10:34	CLEARCREEK CONTRACTOR		HARLOW 27	83	39-281693	0	0	32.71
08/21/13	10:44	CLEARCREEK CONTRACTOR		HARLOW 12	83	39-281698	0	0	35.55
08/21/13	10:52	CLEARCREEK CONTRACTOR		HARLOW 18	83	39-281702	0	0	28.24
08/21/13	10:54	CLEARCREEK CONTRACTOR		G & L 6	83	39-281704	0	0	32.90
08/21/13	11:01	CLEARCREEK CONTRACTOR		HARLOW 20	83	39-281707	0	0	33.16
08/21/13	11:12	CLEARCREEK CONTRACTOR		G & L 7	83	39-281711	0	0	31.13
08/21/13	11:20	CLEARCREEK CONTRACTOR		HARLOW 17	83	39-281714	0	0	31.38
08/21/13	11:26	CLEARCREEK CONTRACTOR		INTWES 590	83	39-281717	0	0	29.59
08/21/13	11:30	CLEARCREEK CONTRACTOR		INTWES 586	83	39-281721	0	0	32.39
08/21/13	11:34	CLEARCREEK CONTRACTOR		MUMME 328	83	39-281724	0	0	32.31
08/21/13	12:16	CLEARCREEK CONTRACTOR		CLEARCK 43	83	39-281736	0	0	36.15
08/21/13	12:41	CLEARCREEK CONTRACTOR		HARLOW 24	83	39-281747	0	0	35.27
08/21/13	13:34	CLEARCREEK CONTRACTOR		CLEARCK 44	83	39-281774	0	0	36.21
09/04/13	08:04	CLEARCREEK CONTRACTOR	CC5	5 BARRY	83	39-283720	0	0	30.97
09/04/13	08:09	CLEARCREEK CONTRACTOR	CC12		83	39-283722	0	0	33.35
09/04/13	08:20	CLEARCREEK CONTRACTOR	CC15	15	83	39-283733	0	0	31.89
09/04/13	08:21	CLEARCREEK CONTRACTOR	CC16	16 DON	83	39-283734	0	0	34.17
09/04/13	08:31	CLEARCREEK CONTRACTOR	CC17	17 ERIC	83	39-283742	0	0	28.91
09/04/13	08:44	CLEARCREEK CONTRACTOR	CC6	6	83	39-283749	0	0	32.69
09/04/13	08:49	CLEARCREEK CONTRACTOR	CC21	21 GEORGE	83	39-283753	0	0	33.48
09/04/13	09:00	CLEARCREEK CONTRACTOR	CC18	18 LINDA	83	39-283755	0	0	29.86
09/04/13	09:15	CLEARCREEK CONTRACTOR	CC20	20	83	39-283760	0	0	32.96
09/04/13	09:34	CLEARCREEK CONTRACTOR		33 GAEL	83	39-283764	0	0	32.66
09/04/13	10:57	CLEARCREEK CONTRACTOR	CC3	3	83	39-283800	0	0	29.02
09/04/13	11:02	CLEARCREEK CONTRACTOR	CC5	5	83	39-283805	0	0	31.11
09/04/13	11:22	CLEARCREEK CONTRACTOR	CC16	16	83	39-283812	0	0	32.61
09/04/13	11:24	CLEARCREEK CONTRACTOR	CC15	15	83	39-283815	0	0	33.04
09/04/13	11:35	CLEARCREEK CONTRACTOR	CC12	12	83	39-283819	0	0	31.37
09/04/13	11:46	CLEARCREEK CONTRACTOR	CC4	4 TOM	83	39-283820	0	0	31.69
09/04/13	11:58	CLEARCREEK CONTRACTOR	CC17	17 ERIC	83	39-283823	0	0	31.00
09/04/13	12:03	CLEARCREEK CONTRACTOR	CC6	6	83	39-283825	0	0	31.37
09/04/13	12:19	CLEARCREEK CONTRACTOR	CC18	18 LINDA	83	39-283831	0	0	32.97
09/04/13	12:23	CLEARCREEK CONTRACTOR	CC21	GEORGE	83	39-283834	0	0	31.58
09/04/13	12:28	CLEARCREEK CONTRACTOR	CC20	20	83	39-283837	0	0	34.31
09/04/13	12:48	CLEARCREEK CONTRACTOR	CC33	33 GAIL	83	39-283844	0	0	33.16
09/04/13	13:42	CLEARCREEK CONTRACTOR		1	83	39-283866	0	0	33.08
09/04/13	13:58	CLEARCREEK CONTRACTOR		5 BARRY	83	39-283876	0	0	32.07
09/04/13	14:11	CLEARCREEK CONTRACTOR	CC16	16 DON	83	39-283881	0	0	33.36

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
09/04/13	14:13	CLEARCREEK CONTRACTOR	CC15	15 BILL	83	39-283882	0	0	33.28
09/04/13	14:39	CLEARCREEK CONTRACTOR	CC12	12	83	39-283896	0	0	34.53
09/04/13	15:08	CLEARCREEK CONTRACTOR		17 ERIC	83	39-283901	0	0	33.10
09/04/13	15:09	CLEARCREEK CONTRACTOR	CC6	6	83	39-283902	0	0	33.67
09/04/13	15:30	CLEARCREEK CONTRACTOR	CC18	18	83	39-283909	0	0	30.88
09/04/13	15:44	CLEARCREEK CONTRACTOR	CC20	20	83	39-283913	0	0	34.30
09/04/13	15:47	CLEARCREEK CONTRACTOR	CC21	GEOTRGE	83	39-283914	0	0	34.41
09/05/13	09:00	CLEARCREEK CONTRACTOR		21	83	39-283965	0	0	35.18
09/05/13	09:17	CLEARCREEK CONTRACTOR		1	83	39-283973	0	0	33.59
09/05/13	09:18	CLEARCREEK CONTRACTOR		33	83	39-283974	0	0	31.85
09/05/13	09:20	CLEARCREEK CONTRACTOR		5	83	39-283975	0	0	32.39
09/05/13	12:11	CLEARCREEK CONTRACTOR		5	83	39-284048	0	0	32.78
09/05/13	12:34	CLEARCREEK CONTRACTOR		21	83	39-284055	0	0	29.38
09/05/13	12:35	CLEARCREEK CONTRACTOR		1	83	39-284056	0	0	30.45
09/05/13	14:57	CLEARCREEK CONTRACTOR		32	83	39-284111	0	0	30.62
09/05/13	15:07	CLEARCREEK CONTRACTOR		5	83	39-284116	0	0	30.68
09/05/13	15:34	CLEARCREEK CONTRACTOR		21	83	39-284122	0	0	33.13
09/06/13	08:27	CLEARCREEK CONTRACTOR	CC28		83	39-284158	0	0	32.16
09/06/13	08:30	CLEARCREEK CONTRACTOR	CC33	33 GAIL	83	39-284160	0	0	32.07
09/06/13	08:35	CLEARCREEK CONTRACTOR	CC21	21 GEORGE	83	39-284163	0	0	32.47
09/06/13	11:25	CLEARCREEK CONTRACTOR	CC28	28	83	39-284221	0	0	31.89
09/06/13	12:18	CLEARCREEK CONTRACTOR	CC21	21 GEORGE	83	39-284235	0	0	33.69
09/06/13	12:19	CLEARCREEK CONTRACTOR	CC33	33 GAIL	83	39-284238	0	0	32.91
10/02/13	08:26	CLEARCREEK CONTRACTOR	CC28	28	83	39-288180	0	0	34.64
10/02/13	08:33	CLEARCREEK CONTRACTOR	CC21	21	83	39-288184	0	0	33.40
10/02/13	08:39	CLEARCREEK CONTRACTOR	CC5	5	83	39-288187	0	0	34.94
10/02/13	08:56	CLEARCREEK CONTRACTOR	CC3	3	83	39-288197	0	0	30.27
10/02/13	10:46	CLEARCREEK CONTRACTOR	CC24	24	83	39-288230	0	0	36.03
10/02/13	10:50	CLEARCREEK CONTRACTOR	CC28	28	83	39-288235	0	0	33.29
10/02/13	10:56	CLEARCREEK CONTRACTOR	CC21	21	83	39-288241	0	0	34.52
10/02/13	11:48	CLEARCREEK CONTRACTOR	CC3	3	83	39-288258	0	0	32.20
10/02/13	12:36	CLEARCREEK CONTRACTOR	CC5		83	39-288271	0	0	34.20
10/02/13	13:05	CLEARCREEK CONTRACTOR	CC24	24	83	39-288283	0	0	37.86
10/02/13	13:12	CLEARCREEK CONTRACTOR	CC12	12	83	39-288289	0	0	34.21
10/02/13	13:15	CLEARCREEK CONTRACTOR	CC28	28	83	39-288292	0	0	28.57
10/02/13	13:27	CLEARCREEK CONTRACTOR	CC21	21	83	39-288297	0	0	31.60
10/02/13	14:49	CLEARCREEK CONTRACTOR	CC3	3	83	39-288320	0	0	32.35
10/02/13	14:54	CLEARCREEK CONTRACTOR	CC5	5	83	39-288323	0	0	28.69
10/03/13	08:19	CLEARCREEK CONTRACTOR		14	83	39-288352	0	0	25.47
10/03/13	10:50	CLEARCREEK CONTRACTOR		14	83	39-288407	0	0	24.09

Date 10/07/13
Time 10:31:28

LRI - 304th Street Landfill

Site Activity Report

Inbound and outbound materials for the period 08/06/2013 - 10/07/2013
Detailed Report for Sites: 2, 39
Accounts 2144 - 2144 Customer types - Z

Date	Time	Customer	Vehicle	Reference	Material	Tickets	Count	Volume	Net Wt.
				Total		444	0	0	13991.29
				Average			0	0	31.51
				Report Total		446	0	0	13991.29
				Report Average			0	0	31.37

APPENDIX F

Backfill Compaction Test Data

SUBMITTAL TRANSMITTAL

Clearcreek CONTRACTORS Environmental/Civil
3919 88th St NE
Marysville, WA 98270
Tel: [425] 252-5800
Fax: [425] 252-1093
www.clearcreekcon.com

TO:	Port of Tacoma	DATE:	1/15/2014
	1 Sitcom Plaza	PROJECT:	Former Kaiser Interim Action
	Tacoma, WA 98421	JOB NO:	213055
		SUBMITTAL #:	31 20 00 – 009 – 01
ATTENTION:	Gregg Takamura	RE:	Krazan On-site Compaction Test

WE ARE SENDING YOU THE FOLLOWING SUBMITTALS:

COPIES	SPEC NO.	DESCRIPTION
1	31 20 00 - 009 - 01	On-site Compaction Test Reports: See Attached.

REMARKS:

Test Reports from Krazan's on-site compaction testing in the Rod Mill Landfill Area.

RECEIVED BY: _____ TITLE: _____

SIGNATURE: _____ DATE: _____

If enclosures are not as noted, please notify us at once.

Krazan & Associates, Inc.

Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR101013RH

DATE: 10/10/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KRAZAN P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: City of Tacoma
WEATHER: Mostly Cloudy

ITEM 6

On site as requested for soils inspection on back fill at pond area south corner of project site.

Upon arrival at the project location, met with the contractor and was informed of the area ready for testing.

Took 3 in place density tests on the brown sandy silt w/cobble material being used from the onsite stock pile.

The tests were in excess of the 90% minimum compaction requirement.

See Krazan Soils Compaction Report # 13230SCR101013RH1 for the locations and test data.

Reviewed By: RH ASTM Test #: Equipment/Asset Number(s):Troxler 3430 # 36444

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications, and regulatory requirements.

Superintendent/Representative:

Technician: Randy Hansen

Offices Serving the Western United States

Bothell (425) 485-5519 • Poulsbo (360) 598-2126 • Puyallup (253) 939-2500

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

COMPACTION REPORT NO.: 13230SCR101013RH1

DATE: 10/10/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KA P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: Cityo of Tacoma
WEATHER: Mostly Cloudy TEMP: 60°

☐ NUCLEAR DENSOMETER ASTM D6938 ☐ SANDCONE ASTM D1556 ☐ OTHER

LOCATION MAP

○ Paved Areas :
○ Building Pad(s) :
○ Utility :
◉ Other : Back Fill at Pond Area

Curve	Unified Soils Classification or Description	Maximum Dry Density / Rice	Optimum Moisture
1	Brown Sandy Silt w/ gravel	115	18

☐ MAP LOCATION ATTACHED SEPERATELY

TEST	ELEVATION	LOCATION	CURVE	MODE & DEPTH	DENSITY (PCF)	MOISTURE (%)	COMPACTION (%)	REQUIRED COMPACTION
1	1' b/g	29'w/24'n of se corner of fill area	1	10"	108.1	17.7	94	90%
2	1' b/g	32's/28'w of ne corner of fill area	1	10"	107.9	17.6	93.8	90%
3	2' b/g	58'w/41'n of se corner of fill area	1	10"	104.8	18.6	91.1	90%

EQUIPMENT NO.: Troxler 3430 # 36444
DAILY AVERAGE STANDARD DENSITY COUNT: 2382
DAILY AVERAGE STANDARD MOISTURE COUNT: 655

Reviewed By:

This testing does not preclude the possibility that the soil or hot mix asphalt may be loosened by future construction or rainfall events. The compaction tests were performed at the approximate locations and elevations shown, and indicate relative compaction at those locations. Horizontal and vertical limits of the compacted areas were determined by others. Our firm does not guarantee earthwork or paving construction, nor does our work relieve the contractor's responsibility to conform to the approved project plans and specifications.

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications and regulatory requirements.

REMARKS :

Superintendent/Representative:

Technician: R. Hansen

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD
REPORT NO.: 13230DFR101013-WM -1

DATE: 10/10/2013
PROJECT #: 06613230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: Tacoma
KA P.M.: Bill Throne

CONTRACTOR:
PERMIT #:
INSPECTOR: William Mrkvicka
JURISDICTION:
WEATHER: Overcast
TEMP: 52 °

This Krazan & Associates, Inc. inspector arrived on site for scheduled compaction tests on fill.

Contractor placed fill in green area and compacted the material with a Cat CS-433E vibratory steel wheel roller. This Krazan & Associates, Inc. inspector performed in place field density tests of compacted soils using a Troxler 3430 moisture density gauge. All tests met or exceeded the minimum 90% compaction requirement, see compaction test sheets for test results.

Reviewed By: ASTM Test #: Equipment/Asset Number(s):

To the best of my knowledge, the above **WAS performed in accordance with the approved plans, specifications and regulatory requirements.**

Superintendent/Representative:

Technician: Mrk

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

COMPACTION REPORT NO.: 13230SCR101013-WM 1

DATE: 10/10/2013
PROJECT #: 06613230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: Tacoma
KA P.M.: Bill Throne

CONTRACTOR:
PERMIT #:
INSPECTOR: William Mrkvicka
JURISDICTION:
WEATHER: Overcast TEMP: 52

☑ NUCLEAR DENSOMETER ASTM D6938
☐ SANDCONE ASTM D1556
☐ OTHER

LOCATION MAP

- ○ Paved Areas :
- ○ Building Pad(s) :
- ○ Utility :
- ◉ Other : green area

Curve	Unified Soils Classification or Description	Maximum Dry Density / Rice (PCF)	Optimum Moisture
1	Sand w/silt and gravel	128.4	9.5%
2	Heavy silty sand	118.0	18.0%

TEST	ELEVATION	LOCATION	CURVE	MODE & DEPTH	DENSITY (PCF)	MOISTURE	COMPACTION	REQUIRED COMPACTION
1	1st lift	green area	1	6"	115.9	7.4%	90%	90%
2	1st lift	green area	1	6"	116.4	6.8%	91%	90%
3	1st lift	green area	1	6"	117.4	5.6%	91%	90%
4	1st lift	green area	1	6"	117.8	8.4%	92%	90%
5	1st lift	green area	1	6"	119.7	7.8%	93%	90%
6	1st lift	green area	1	6"	116.0	8.1%	90%	90%
7	1st lift	green area	1	6"	115.8	8.9%	90%	90%
8	1st lift	green area	2	6"	107.3	18.9%	91%	90%
9	1st lift	green area	2	6"	106.8	19.1%	91%	90%
10	1st lift	green area	2	6"	107.1	17.1%	91%	90%
11	1st lift	green area	2	6"	108.0	18.0%	92%	90%

EQUIPMENT NO.: 21303
DAILY AVERAGE STANDARD DENSITY COUNT: 2128
DAILY AVERAGE STANDARD MOISTURE COUNT: 692

Reviewed By:

This testing does not preclude the possibility that the soil or hot mix asphalt may be loosened by future construction or rainfall events. The compaction tests were performed at the approximate locations and elevations shown, and indicate relative compaction at those locations. Horizontal and vertical limits of the compacted areas were determined by others. Our firm does not guarantee earthwork or paving construction, nor does our work relieve the contractor's responsibility to conform to the approved project plans and specifications.

To the best of my knowledge, the above WAS performed in accordance with the approved plans, specifications and regulatory requirements.

REMARKS :

Superintendent/Representative:

Technician: Mrk.

Krazan & Associates, Inc.

Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR101413RH

DATE: 10/14/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KRAZAN P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: City of Tacoma
WEATHER: Fog/Clear

ITEM 5

On site as requested for soils inspection on back fill at pond area south corner of project site.

Upon arrival at the project location, met with the contractor and was informed of the area ready for testing.

Took 7 in place density tests on the brown sandy silt w/gravel and cobble material being used from the onsite stock pile.

Obtained a sample of the material for proctor and sieve from the onsite material.

The tests are pending until the completion of the sample.

See Krazan Soils Compaction Report # 13230SCR101413RH1 for the locations and test data.

Reviewed By: RH ASTM Test #: Equipment/Asset Number(s):Troxler 3430 # 36444

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications, and regulatory requirements.

Superintendent/Representative:

Technician: Randy Hansen

Offices Serving the Western United States

Bothell (425) 485-5519 • Poulsbo (360) 598-2126 • Puyallup (253) 939-2500

Krazan & Associates, Inc.

Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR101513RH

DATE: 10/15/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KRAZAN P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: City of Tacoma
WEATHER: Fog

ITEM 4

On site as requested for soils inspection on back fill at pond area south corner of project site.

Upon arrival at the project location, met with the contractor and was informed of the area ready for testing.

Took 6 in place density tests on the brown sandy silt w/gravel and cobble material being used from the onsite stock pile.

The tests are pending until the completion of the sample that was taken on prior inspection visit.

See Krazan Soils Compaction Report # 13230SCR101513RH1 for the locations and test data.

Reviewed By: ASTM Test #: Equipment/Asset Number(s): Troxler 3430 # 36444

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications, and regulatory requirements.

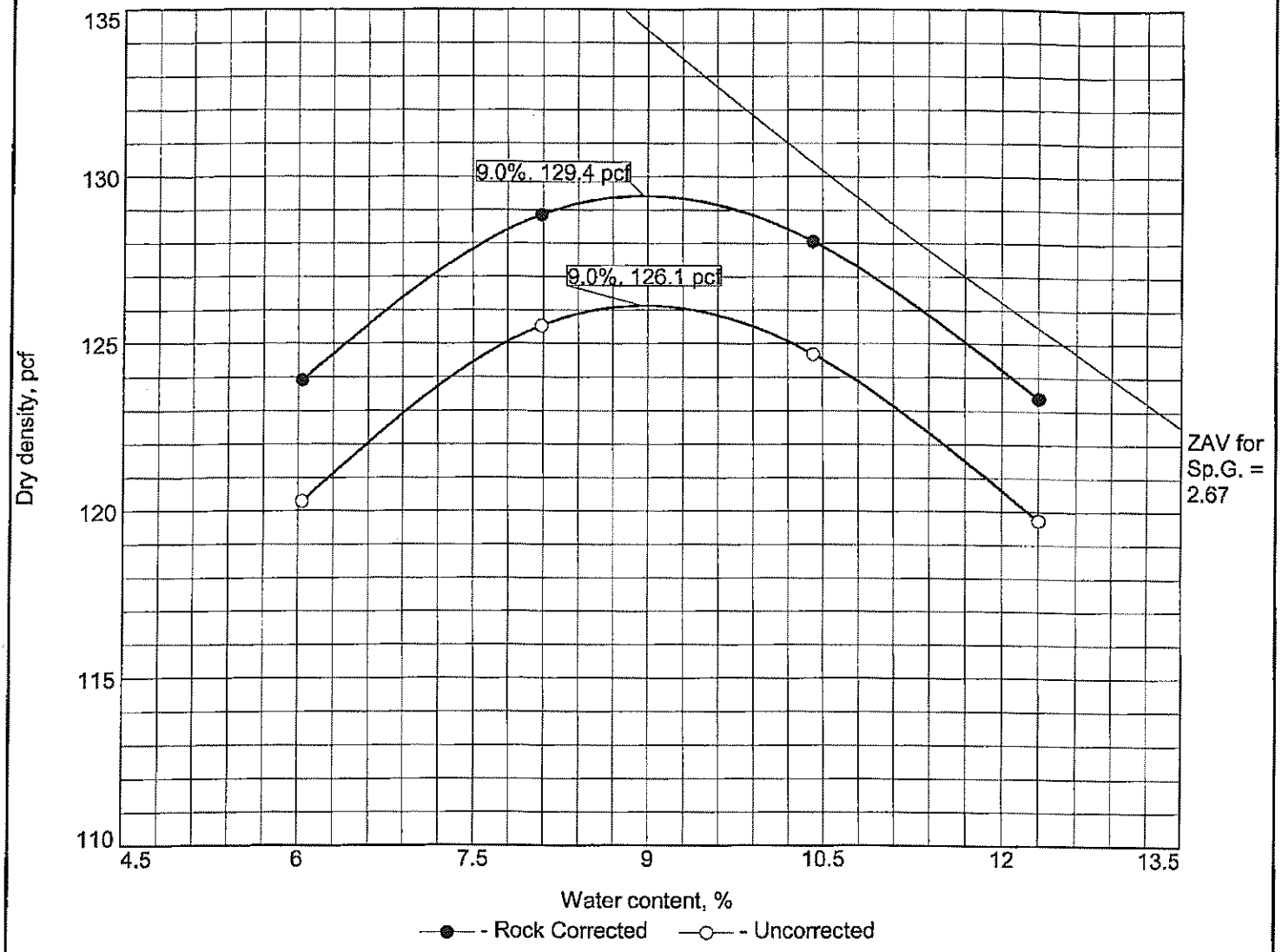
Superintendent/Representative:

Technician: Randy Hansen

Offices Serving the Western United States

Bothell (425) 485-5519 • Poulsbo (360) 598-2126 • Puyallup (253) 939-2500

PROCTOR TEST REPORT



Test specification: ASTM D 1557-07 Method C Modified
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)		2.67	NV	NP	10.7	27.3

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 129.4 pcf	126.1 pcf	Native: Reddish brown sandy silt with gravel. Sampled from onsite stockpile. Sampled by R.Hansen
Optimum moisture = 9.0 %	9.0 %	

Project No. 066-13230 **Client:** Clearcreek Contractors
Project: Kaiser Aluminum Cleanup

○ **Source of Sample:** Native **Sample Number:** 13L490

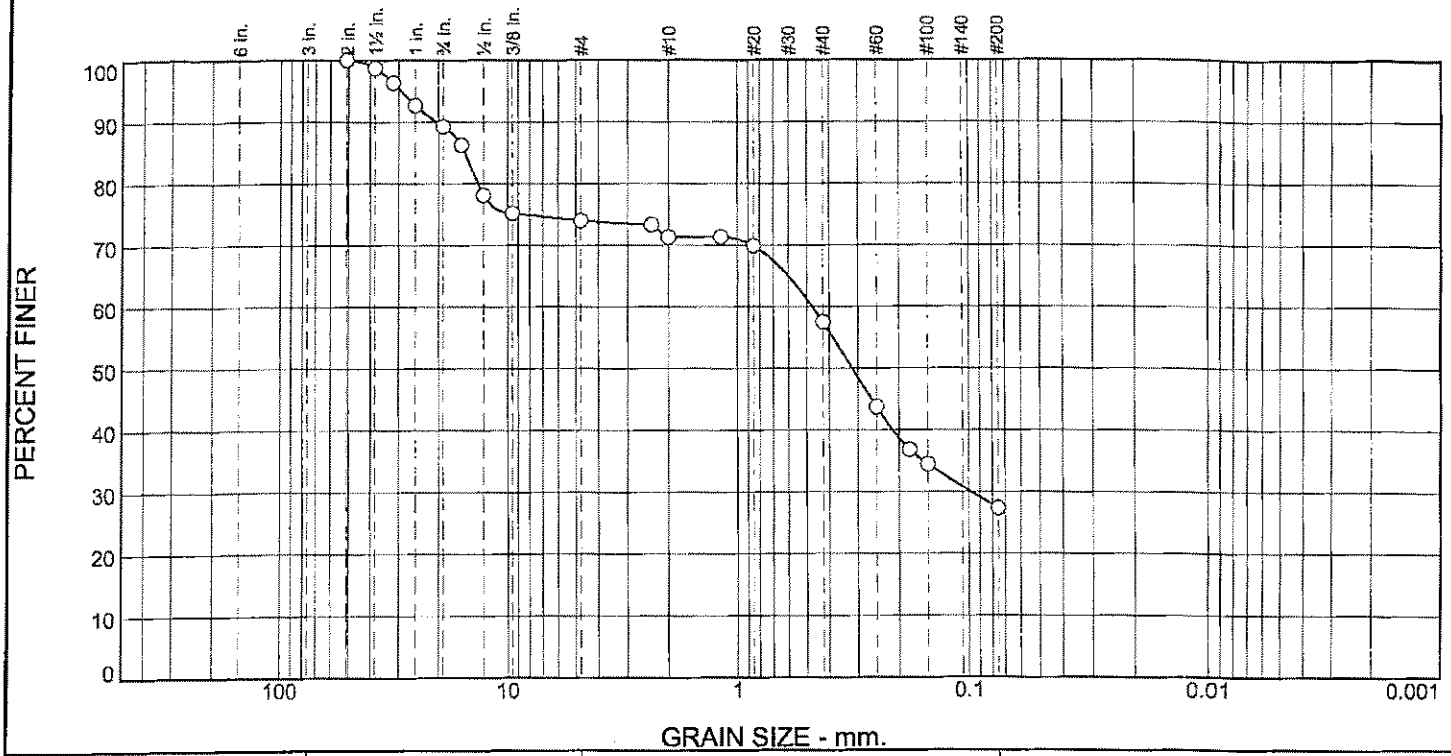
Remarks:
Sample ID: 13L490
Sample Date 10/16/13

Krazan

Figure

Tested By: M.Thomas **Checked By:** D.Hollingshead

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.7	15.3	2.7	13.8	30.2	27.3	

Test Results (ASTM C 136 & ASTM C 117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0		
1.5	98.8		
1.25	96.4		
1	92.7		
.75	89.3		
.625	86.2		
.5	78.1		
.375	75.2		
#4	74.0		
#8	73.3		
#10	71.3		
#16	71.3		
#20	69.9		
#40	57.5		
#60	43.7		
#80	36.7		
#100	34.4		
#200	27.3		

* (no specification provided)

Material Description

Native: Reddish brown sandy silt with gravel.
Sampled from onsite stockpile.
Sampled by R.Hansen

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 20.3872 D_{85}= 15.2784 D_{60}= 0.4725
D_{50}= 0.3187 D_{30}= 0.0986 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample ID: 13L490.
Sample Date: 10/14/2013.

Date Received: 10-15-13 **Date Tested:** 10-16-13
Tested By: M.Thomas
Checked By: D.Hollingshead
Title: Laboratory Manager

Source of Sample: Native **Date Sampled:** 10-14-13
Sample Number: 13L490

Krazan

Client: Clearcreek Contractors
Project: Kaiser Aluminum Cleanup

Project No: 066-13230 **Figure**

Krazan & Associates, Inc.

Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR101613RH

DATE: 10/16/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KRAZAN P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: City of Tacoma
WEATHER: Partly Cloudy/Fog
ITEM 4

On site as requested for soils inspection on back fill at pond area south corner of project site.

Upon arrival at the project location, met with the contractor and was informed of the area ready for testing.

Took 4 in place density tests on the brown sandy silt w/gravel and cobble material being used from the onsite stock pile.

The tests are pending until the completion of the sample that was taken on prior inspection visit.

See Krazan Soils Compaction Report # 13230SCR101613RH1 for the locations and test data.

Reviewed By: WT ASTM Test #: Equipment/Asset Number(s): Troxler 3430 # 36444

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications, and regulatory requirements.

Superintendent/Representative:

Technician: Randy Hansen

Offices Serving the Western United States

Bothell (425) 485-5519 • Poulsbo (360) 598-2126 • Puyallup (253) 939-2500

Krazan & Associates, Inc.

Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR101613RH

DATE: 10/17/2013
PROJECT #: 066-13230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way
KRAZAN P.M.: WT

CONTRACTOR: Clear Creek
PERMIT #:
INSPECTOR: Randy Hansen
JURISDICTION: City of Tacoma
WEATHER: Cloudy

ITEM 4

On site as requested for soils inspection on back fill at pond area south corner of project site.

Upon arrival at the project location, met with the contractor and was informed of the area ready for testing.

Took 2 in place density tests on the brown sandy silt w/gravel and cobble material being used from the onsite stock pile.

The tests are pending until the completion of the sample that was taken on prior inspection visit.

See Krazan Soils Compaction Report # 13230SCR101713RH1 for the locations and test data.

Reviewed By: ASTM Test #: Equipment/Asset Number(s):Troxler 3430 # 36444

To the best of my knowledge, the above **WAS** performed in accordance with the approved plans, specifications, and regulatory requirements.

Superintendent/Representative:

Technician: Randy Hansen

Offices Serving the Western United States

Bothell (425) 485-5519 • Poulsbo (360) 598-2126 • Puyallup (253) 939-2500

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

FIELD REPORT NO.: 13230DFR102213-AA

DATE: 10/22/2013
PROJECT #: 06613230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way Tacoma WA
KA P.M.: Bill T.

CONTRACTOR: N/A
PERMIT #: N/A
INSPECTOR: Andy Ayres
JURISDICTION: City of Tacoma
WEATHER: Cloudy TEMP: 55 °

Krazan representative on site in Tacoma WA to perform nuclear density on imported fill.

Inspector completed four density tests with all meeting the minimum compaction requirement for the project. For test results please refer to compaction report number 13230SCR102213-AA.

Reviewed By: _____ ASTM Test #: _____ Equipment/Asset Number(s): _____

To the best of my knowledge, the above **WAS performed in accordance with the approved plans, specifications and regulatory requirements.**

Superintendent/Representative:

Technician: A. Ayres

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

COMPACTION REPORT NO.: 13230SCR102213-AA

DATE: 10/22/2013
PROJECT #: 06613230
PROJECT: Kaiser Aluminum Cleanup
LOCATION: 3400 Taylor Way Tacoma WA
KA P.M.: Bill T

CONTRACTOR: N/A
PERMIT #: N/A
INSPECTOR: Andy Ayres
JURISDICTION: City of Tacoma
WEATHER: Cloudy TEMP: 55

☑ NUCLEAR DENSOMETER ASTM D6938 ☐ SANDCONE ASTM D1556 ☐ OTHER

LOCATION MAP

MAP LOCATION ATTACHED SEPARATELY

- ○ Paved Areas :
- ◉ Building Pad(s) : imported fill
- ○ Utility :
- ○ Other :

Curve	Unified Soils Classification or Description	Maximum Dry Density / Rice	Optimum Moisture
13L4	Imported Fill	128.4	9.5

TEST	ELEVATION	LOCATION	CURVE	MODE & DEPTH	DENSITY (PCF)	MOISTURE (%)	COMPACTION (%)	REQUIRED COMPACTION
1	SG	100ft west of east fence on pad	13L400	6"	122	10	95	95
2	SG	300ft west of east fence on pad	13L400	6"	122.5	10.9	95	95
3	SG	425ft west of east fence on pad	13L400	6"	121.9	11.4	95	95
4	SG	525ft west of east fence on pad	13L400	6"	122.6	11.1	95	95

EQUIPMENT NO.: 21303
DAILY AVERAGE STANDARD DENSITY COUNT: 2110
DAILY AVERAGE STANDARD MOISTURE COUNT: 658

Reviewed By: [signature]

This testing does not preclude the possibility that the soil or hot mix asphalt may be loosened by future construction or rainfall events. The compaction tests were performed at the approximate locations and elevations shown, and indicate relative compaction at those locations. Horizontal and vertical limits of the compacted areas were determined by others. Our firm does not guarantee earthwork or paving construction, nor does our work relieve the contractor's responsibility to conform to the approved project plans and specifications.

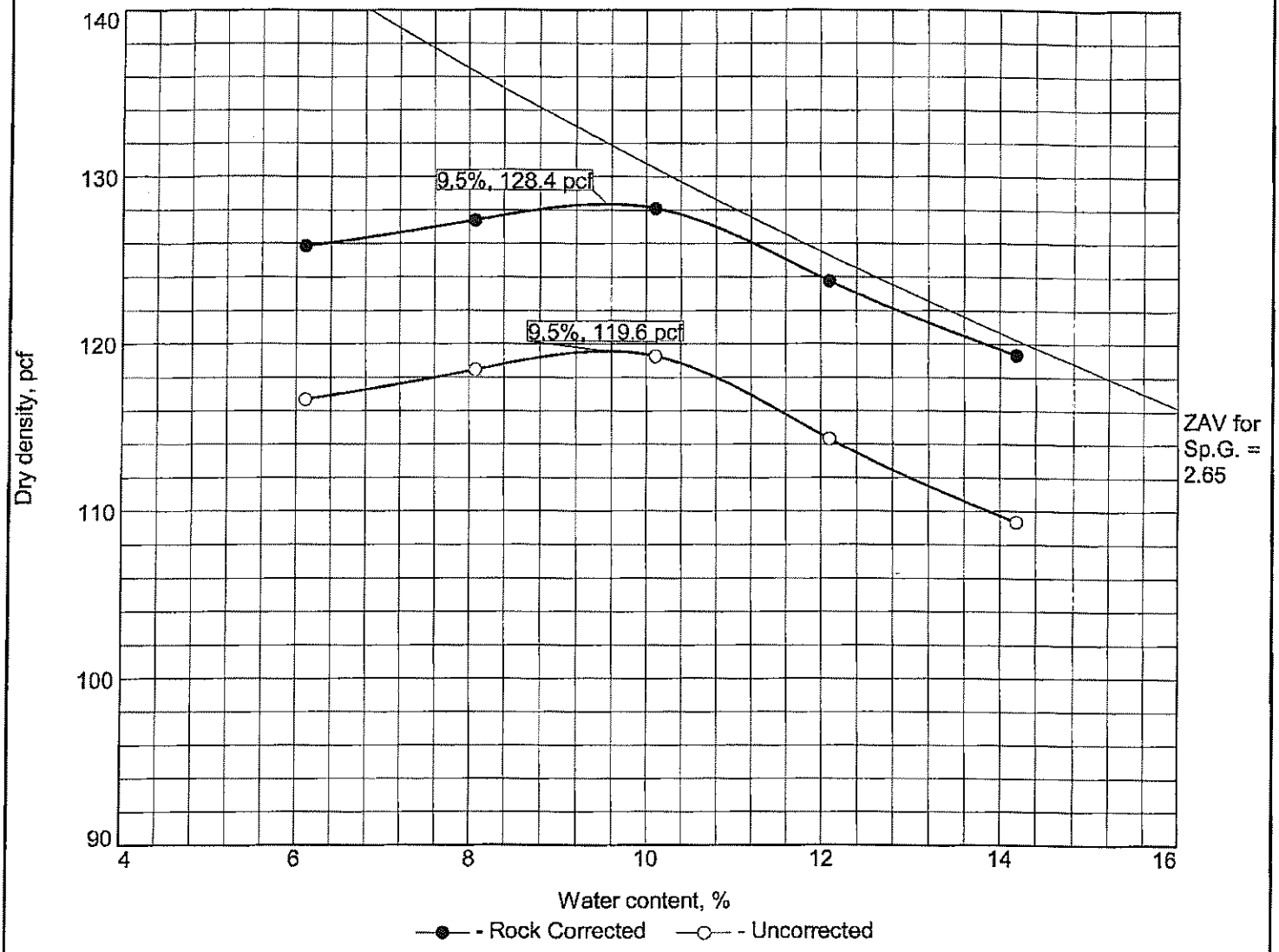
To the best of my knowledge, the above WAS NOT performed in accordance with the approved plans, specifications and regulatory requirements.

REMARKS :

Superintendent/Representative:

Technician: A. Ayres

PROCTOR TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP-SM	A-3		2.65	NV	NP	24.7	6.4

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 128.4 pcf	119.6 pcf	Native: Brown silty sand with gravel. Sampled from Onsite Stockpile. Sampled by R.Hansen.
Optimum moisture = 9.5 %	9.5 %	

Project No. 066-13230 **Client:** Clearcreek Contractors
Project: Kaiser Aluminum Cleanup

○ **Source of Sample:** Native **Sample Number:** 13L400

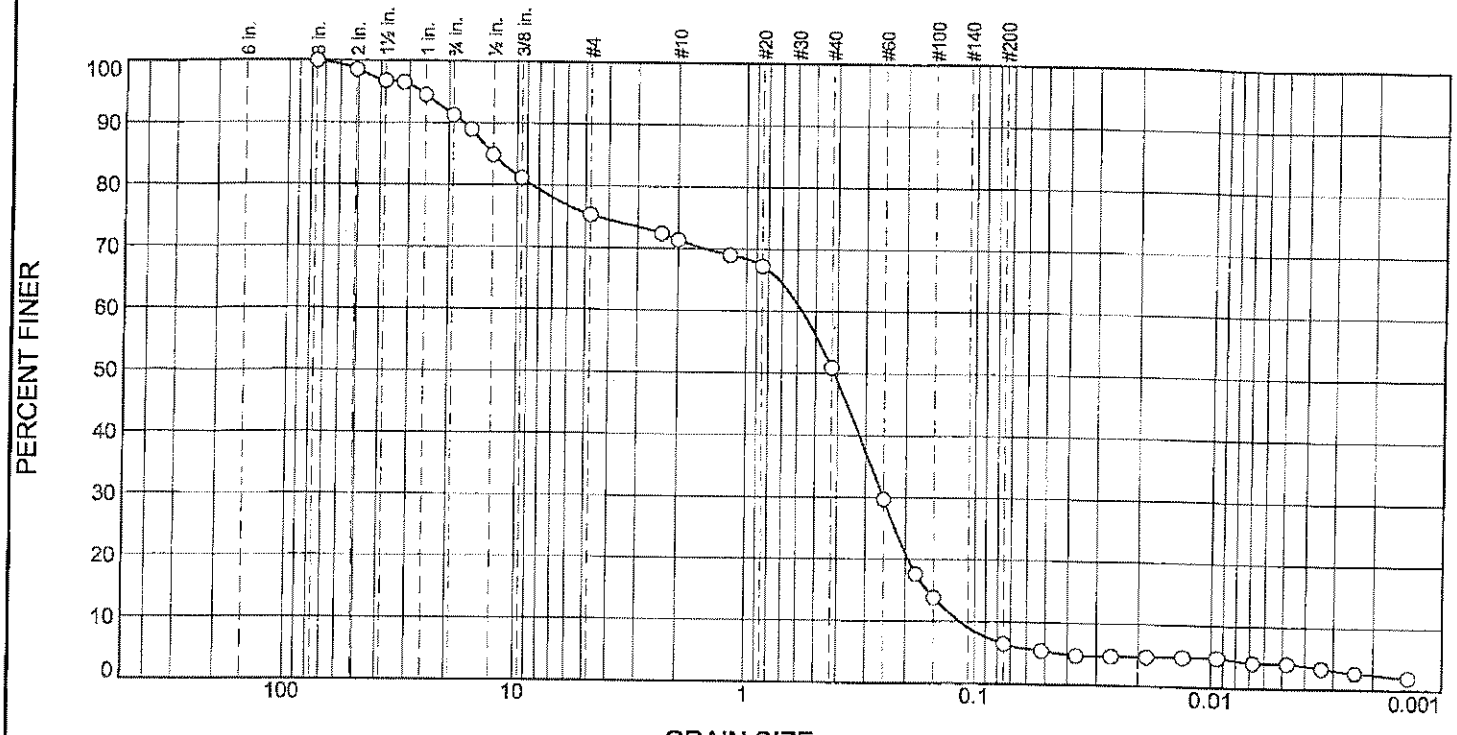
Remarks:
Sample ID: 13L400.
Sample Date: 8/20/2013.

Krazan

Figure

Tested By: M.Thomas **Checked By:** D.Hollingshead VC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.7	16.0	3.9	20.5	44.5	2.3	4.1

Test Results (ASTM C 136 & ASTM C 117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0		
2	98.6		
1.5	96.8		
1.25	96.5		
1	94.5		
.75	91.3		
.625	89.0		
.5	84.9		
.375	81.1		
#4	75.3		
#8	72.4		
#10	71.4		
#16	69.0		
#20	67.2		
#40	50.9		
#60	29.7		
#80	17.6		
#100	13.8		
#200	6.4		
0.0516 mm.	5.4		
0.0367 mm.	4.7		
0.0260 mm.	4.7		
0.0184 mm.	4.7		
0.0130 mm.	4.7		
0.0095 mm.	4.7		
0.0067 mm.	4.1		
0.0048 mm.	4.1		
0.0034 mm.	3.4		
0.0024 mm.	2.7		
0.0014 mm.	2.0		

* (no specification provided)

Material Description

Native: Brown silty sand with gravel.
Sampled from Onsite Stockpile.
Sampled by R.Hansen.

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-3

Coefficients

D_{90}= 17.0512 D_{85}= 12.7853 D_{60}= 0.5716
D_{50}= 0.4144 D_{30}= 0.2518 D_{15}= 0.1602
D_{10}= 0.1155 C_u= 4.95 C_c= 0.96

Remarks

Moisture Content (ASTM D2216): 1.7%.
Sample ID: 13L400.
Sample Date: 8/20/2013.

Date Received: 8/20/2013 **Date Tested:** 8/23/2013
Tested By: M.Thomas
Checked By: D.Hollingshead
Title: Laboratory Manager

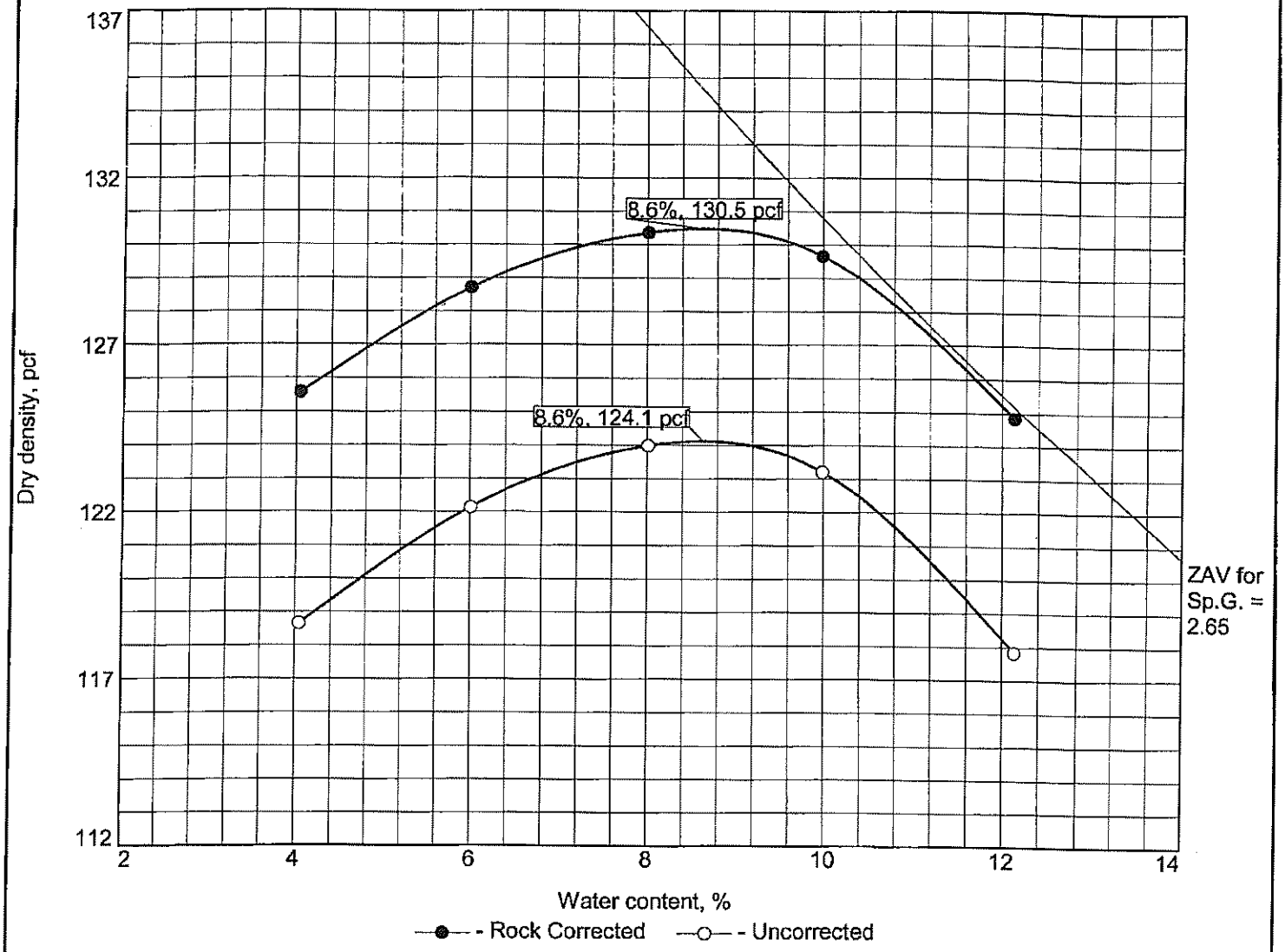
Source of Sample: Native
Sample Number: 13L400

Date Sampled: 8/20/2013

Krazan

Client: Clearcreek Contractors
Project: Kaiser Aluminum Cleanup
Project No: 066-13230 **Figure**

PROCTOR TEST REPORT



Test specification: ASTM D 1557-07 Method B Modified
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)		2.65	NV	NP	19.5	30.3

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 130.5 pcf	124.1 pcf	Native: Brown silty sand with gravel. Sampled from Onsite Stockpile. Sampled by R.Hansen.
Optimum moisture = 8.6 %	8.6 %	

Project No. 066-13230 **Client:** Clearcreek Contractors
Project: Kaiser Aluminum Cleanup

○ **Source of Sample:** Native **Sample Number:** 13L401

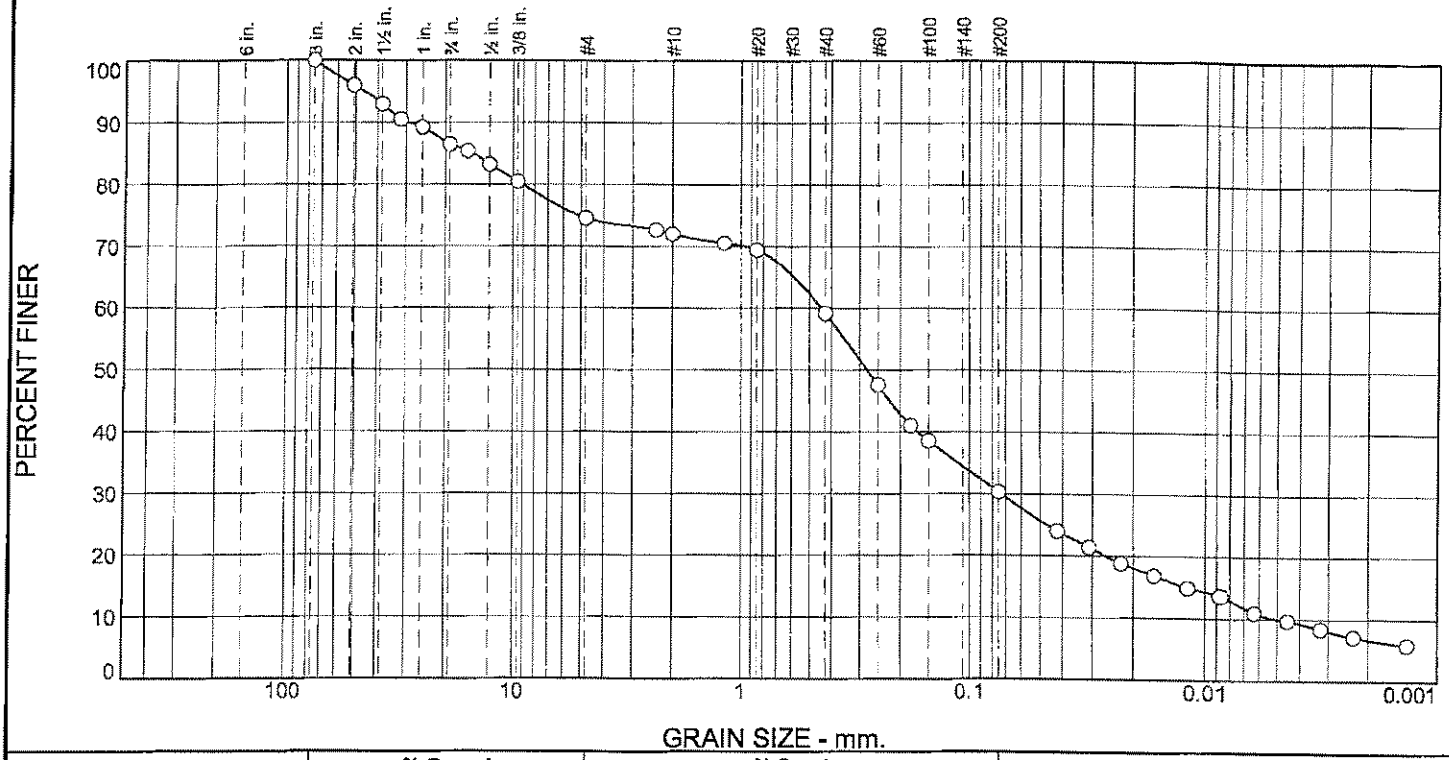
Remarks:
Sample ID: 13L401.
Sample Date: 8/20/2013.

Krazan

Figure

Tested By: M.Thomas **Checked By:** D.Hollingshead VC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.5	12.0	2.5	12.8	28.9	20.3	10.0

Test Results (ASTM C 136 & ASTM C 117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0		
2	96.0		
1.5	93.0		
1.25	90.5		
1	89.2		
.75	86.5		
.625	85.4		
.5	83.3		
.375	80.5		
#4	74.5		
#8	72.7		
#10	72.0		
#16	70.6		
#20	69.4		
#40	59.2		
#60	47.5		
#80	41.0		
#100	38.5		
#200	30.3		
0.0422 mm.	24.0		
0.0309 mm.	21.4		
0.0225 mm.	18.8		
0.0163 mm.	16.9		
0.0118 mm.	14.9		
0.0087 mm.	13.6		
0.0063 mm.	11.0		
0.0045 mm.	9.7		
0.0032 mm.	8.4		
0.0023 mm.	7.1		
0.0014 mm.	5.8		

* (no specification provided)

Material Description

Native: Brown silty sand with gravel.
Sampled from Onsite Stockpile.
Sampled by R.Hansen.

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 29.7110 D_{85}= 15.0243 D_{60}= 0.4430
D_{50}= 0.2789 D_{30}= 0.0734 D_{15}= 0.0120
D_{10}= 0.0050 C_u= 88.75 C_c= 2.44

Remarks

Moisture Content (ASTM D2216): 6.0%.
Sample ID: 13L401.
Sample Date: 8/20/2013.

Date Received: 8/20/2013 **Date Tested:** 8/20/2013
Tested By: M.Thomas
Checked By: D.Hollingshead
Title: Laboratory Manager

VC

Source of Sample: Native
Sample Number: 13L401

Date Sampled: 8/20/2013

Krazan

Client: Clearcreek Contractors
Project: Kaiser Aluminum Cleanup

Project No: 066-13230 **Figure**

APPENDIX G

Analytical Laboratory Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 12, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XA16

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on August 8, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ ______

XA16

Date 8/8/13
Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA   Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name Brandon Duncan, Dave Rupert, Sienna Mott
Project Contact Jessica Stone / Dave Pischer
Send Results To Jessica Stone, Anne Halvorsen, Sienna Mott, Bill Evans, Dave Pischer

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: cPAH-8270 D
RMLF-1-20130806	8/6/13	1359	soil	1	X
RMLF-2-20130807	8/7/13	1454	soil	1	X

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ______ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other ______

Special Shipment/Handling or Storage Requirements: On ice

Method of Shipment: Courier

Relinquished by	**Received by**	**Relinquished by**	**Received by**
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: Sienna Mott	Printed Name: Rich Hudson	Printed Name	Printed Name
Company: Landau Associates	Company: ARI	Company	Company
Date 8/8/13 Time 1433	Date 8/8/13 Time 1435	Date ___ Time ___	Date ___ Time ___

WHITE COPY - Project File **YELLOW COPY** - Laboratory **PINK COPY** - Client Representative

Rev 8/09

XA16 : 00002

LANDAU ASSOCIATES

- ☐ Seattle/Edmonds (425) 778-0907
- ☒ Tacoma (253) 926-2493
- ☐ Spokane (509) 327-9737
- ☐ Portland (503) 542-1080
- ☐ ____

Date 8/8/13

Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA

Project No. 1180033.100.104

Project Location/Event Kaiser Port of Tacoma

Sampler's Name Brandon Dunkin Dave Rogers Sierra Mott

Project Contact Jessica Stone / Dave Pischer

Send Results To [illegible]

Testing Parameters: NWTPH-Dx

Turnaround Time
- ☐ Standard
- ☐ Accelerated
- ☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Dx
RMLF-1-2013[illegible]	8/6/13	1359	Soil	1	X
RMLF-2-2013[illegible]	8/7/13	1454	Soil	1	X

Observations/Comments

- X Allow water samples to settle, collect aliquot from clear portion
- X NWTPH-Dx - run acid wash/silica gel cleanup
- __ run samples standardized to ____ product
- __ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
- __ non-preserved
- __ preserved w/methanol
- __ preserved w/sodium bisulfate
- __ Freeze upon receipt
- __ Dissolved metal water samples field filtered

Other
Re-sent via email 8/9/13 Sierra Mott to Kelly Bottom

Special Shipment/Handling or Storage Requirements On ice

Method of Shipment [illegible]

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature]	Signature	Signature
Printed Name Sierra Mott	Printed Name [illegible]	Printed Name	Printed Name
Company Landau Associates	Company	Company	Company
Date 8/8/13 Time 1433	Date 8/8/13 Time 1435	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

XA16:00003

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Kaiser IA

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: XA16 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	6.3	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#: 122412224	

Cooler Accepted by: _____ Date: 8/8/13 Time: 1435

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 8/8/13 Time: 1725

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

XA16:06604

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

XA16

Cooler#: 1 Temperature(°C): 6.3

Sample ID	Bottle Count	Bottle Type
All samples received above 6°C		

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Completed by: AV Date: 8/8/13 Time: 1726

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XA16
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-1-20130806	XA16A	13-16427	Soil	08/06/13 13:59	08/08/13 14:35
2.	RMLF-2-20130807	XA16B	13-16428	Soil	08/07/13 14:54	08/08/13 14:35

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XA16
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-1-20130806	XA16A	13-16427	Soil	08/06/13 13:59	08/08/13 14:35
2.	RMLF-2-20130807	XA16B	13-16428	Soil	08/07/13 14:54	08/08/13 14:35

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: RMLF-1-20130806
SAMPLE

Lab Sample ID: XA16A
LIMS ID: 13-16427
Matrix: Soil
Data Release Authorized:
Reported: 08/12/13

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/06/13
Date Received: 08/08/13

Date Extracted: 08/09/13
Date Analyzed: 08/12/13 13:15
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.08 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 33.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	270
218-01-9	Chrysene	62	350
50-32-8	Benzo(a)pyrene	62	240
193-39-5	Indeno(1,2,3-cd)pyrene	62	130
53-70-3	Dibenz(a,h)anthracene	62	69
TOTBFA	Total Benzofluoranthenes	62	420

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	73.2%
2-Fluorobiphenyl	72.0%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: RMLF-2-20130807
SAMPLE

Lab Sample ID: XA16B
LIMS ID: 13-16428
Matrix: Soil
Data Release Authorized:
Reported: 08/12/13

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/07/13
Date Received: 08/08/13

Date Extracted: 08/09/13
Date Analyzed: 08/12/13 13:49
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.95 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 29.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	63	< 63 U
218-01-9	Chrysene	63	< 63 U
50-32-8	Benzo(a)pyrene	63	< 63 U
193-39-5	Indeno(1,2,3-cd)pyrene	63	< 63 U
53-70-3	Dibenz(a,h)anthracene	63	< 63 U
TOTBFA	Total Benzofluoranthenes	63	< 63 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	73.6%
2-Fluorobiphenyl	73.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: MB-080913
METHOD BLANK

Lab Sample ID: MB-080913
LIMS ID: 13-16427
Matrix: Soil
Data Release Authorized:
Reported: 08/12/13

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/09/13
Date Analyzed: 08/12/13 11:32
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	88.0%
2-Fluorobiphenyl	68.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-080913	88.0%	68.4%	0
LCS-080913	89.2%	73.6%	0
LCSD-080913	80.0%	66.4%	0
RMLF-1-20130806	73.2%	72.0%	0
RMLF-2-20130807	73.6%	73.6%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-16427 to 13-16428

XA16:00011

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-080913
LCS/LCSD

Lab Sample ID: LCS-080913
LIMS ID: 13-16427
Matrix: Soil
Data Release Authorized:
Reported: 08/12/13

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/08/13

Date Extracted LCS/LCSD: 08/09/13

Date Analyzed LCS: 08/12/13 12:06
LCSD: 08/12/13 14:23
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1380	1670	82.6%	1360	1670	81.4%	1.5%
Chrysene	1480	1670	88.6%	1380	1670	82.6%	7.0%
Benzo(a)pyrene	1400	1670	83.8%	1300	1670	77.8%	7.4%
Indeno(1,2,3-cd)pyrene	1440	1670	86.2%	1370	1670	82.0%	5.0%
Dibenz(a,h)anthracene	1430	1670	85.6%	1440	1670	86.2%	0.7%
Total Benzofluoranthenes	3000	3330	90.1%	2780	3330	83.5%	7.6%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	89.2%	80.0%
2-Fluorobiphenyl	73.6%	66.4%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

NWTPHD by GC/FID
Extraction Method: SW3546
Page 1 of 1

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil

Date Received: 08/08/13

Data Release Authorized: MW
Reported: 08/12/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	LOQ	Result
MB-081013	Method Blank	08/10/13	08/11/13	1.00	Diesel Range	5.0	< 5.0 U
13-16427	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		81.7%
XA16A	RMLF-1-20130806	08/10/13	08/11/13	1.00	**Diesel Range**	**7.5**	**28**
13-16427	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**15**	**71**
					o-Terphenyl		68.6%
XA16B	RMLF-2-20130807	08/10/13	08/11/13	1.00	**Diesel Range**	**7.0**	**16**
13-16428	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**14**	**47**
					o-Terphenyl		71.6%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
LOQ-Limit of Quantitation

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
081013MBS	81.7%	0
081013LCS	85.3%	0
081013LCSD	81.0%	0
RMLF-1-20130806	68.6%	0
RMLF-2-20130807	71.6%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-16427 to 13-16428

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-081013
LCS/LCSD

Lab Sample ID: LCS-081013
LIMS ID: 13-16427
Matrix: Soil
Data Release Authorized:
Reported: 08/12/13

QC Report No: XA16-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 08/10/13

Date Analyzed LCS: 08/11/13 14:25
LCSD: 08/11/13 14:47
Instrument/Analyst LCS: FID9/JLW
LCSD: FID9/JLW

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	129	150	86.0%	121	150	80.7%	6.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	85.3%	81.0%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XA16
Matrix: Soil Project: Kaiser IA
Date Received: 08/08/13 118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-16427-081013MB1	Method Blank	10.0 g	1.00 mL	-	08/10/13
13-16427-081013LCS1	Lab Control	10.0 g	1.00 mL	-	08/10/13
13-16427-081013LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/10/13
13-16427-XA16A	RMLF-1-20130806	6.70 g	1.00 mL	D	08/10/13
13-16428-XA16B	RMLF-2-20130807	7.11 g	1.00 mL	D	08/10/13

Basis: D=Dry Weight W=As Received

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 13, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XA43

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on August 9, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

XA43

Date 8/9/13

Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA Project No. 1180 33.100.104

Project Location/Event Kaiser, Port of Tacoma

Sampler's Name Don Malkemus

Project Contact Dave Pischer

Send Results To Anne Ittaiorsen, Bill Evans, Dave Pischer, Sierra Mott, Jessica Stone

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: cPAH-8270D	Observations/Comments
RMLF-3-20130809	8/9/13	1132	Soil	1	X	
RMLF-4-20130809	8/9/13	1345	Soil	1	X	

Observations/Comments:

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: Sierra Mott	Signature:	Signature:	Signature:
Printed Name: Sierra Mott	Printed Name: Rich Hudson	Printed Name:	Printed Name:
Company: Landau Associates	Company: ARI	Company:	Company:
Date: 8/9/13 Time: 1356	Date: 8/9/13 Time: 1356	Date: Time:	Date: Time:

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau
Project Name: Kaiser IA
COC No(s): (NA)
Delivered by: Fed-Ex UPS Courier Hand Delivered Other:
Assigned ARI Job No: XA43
Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry)		4.9

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 122412224

Cooler Accepted by: _____ Date: 8/9/13 Time: 1356

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time _____ Equipment _____ Split by: _____

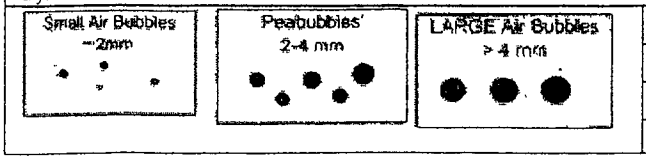
Samples Logged by: AV Date: 8/9/13 Time: 1502

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

LANDAU ASSOCIATES

- [ ] Seattle/Edmonds (425) 778-0907
- [x] Tacoma (253) 926-2493
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080
- [ ] ______

Date 8/9/13

Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA — Project No. 1180 33.100 104

Project Location/Event Kaiser, Port of Tacoma

Sampler's Name Don Malkemus

Project Contact Dave Pischer

Send Results To Anne Halvorsen, Sierra Mott, Bill Evans, Regina Storrie, Dave Pischer

Turnaround Time
- [ ] Standard
- [ ] Accelerated
- [x] 1-2 Day TAT

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	PAH - 8270D	NWTPH - DX
RMLF-3-20130809	8/9/13	1132	Soil	1	X	X
RMLF-4-20130809	8/9/13	1345	Soil	1	X	X

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ______ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other: Re-sent via email 8/9/13 Sierra Mott to Kelly Bottem

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: Sierra Mott	Signature: [illegible]	Signature	Signature
Printed Name: Sierra Mott	Printed Name: [illegible]	Printed Name	Printed Name
Company: Landau Associates	Company: [illegible]	Company	Company
Date 8/9/13 Time 1356	Date 8/9/13 Time 1356	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XA43
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-3-20130809	XA43A	13-16579	Soil	08/09/13 11:32	08/09/13 13:56
2.	RMLF-4-20130809	XA43B	13-16580	Soil	08/09/13 13:45	08/09/13 13:56

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

NWTPHD by GC/FID
Extraction Method: SW3546
Page 1 of 1

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil

Date Received: 08/09/13

Data Release Authorized:
Reported: 08/13/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	LOQ	Result
MB-081013	Method Blank	08/10/13	08/11/13	1.00	Diesel Range	5.0	< 5.0 U
13-16579	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		81.7%
XA43A	RMLF-3-20130809	08/10/13	08/11/13	1.00	**Diesel Range**	**7.9**	**28**
13-16579	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**76**
					o-Terphenyl		66.7%
XA43B	RMLF-4-20130809	08/10/13	08/11/13	1.00	**Diesel Range**	**7.1**	**34**
13-16580	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**14**	**56**
					o-Terphenyl		70.0%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
LOQ-Limit of Quantitation

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

XA43: 00006 (1)

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
081013MBS	81.7%	0
081013LCS	85.3%	0
081013LCSD	81.0%	0
RMLF-3-20130809	66.7%	0
RMLF-4-20130809	70.0%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-16579 to 13-16580

XA43. 00007(1)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-081013
LCS/LCSD

Lab Sample ID: LCS-081013
LIMS ID: 13-16579
Matrix: Soil
Data Release Authorized:
Reported: 08/13/13

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 08/10/13

Date Analyzed LCS: 08/11/13 14:25
LCSD: 08/11/13 14:47
Instrument/Analyst LCS: FID9/JLW
LCSD: FID9/JLW

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	129	150	86.0%	121	150	80.7%	6.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	85.3%	81.0%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XA43
Matrix: Soil Project: Kaiser IA
Date Received: 08/09/13 118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-16579-081013MB1	Method Blank	10.0 g	1.00 mL	-	08/10/13
13-16579-081013LCS1	Lab Control	10.0 g	1.00 mL	-	08/10/13
13-16579-081013LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/10/13
13-16579-XA43A	RMLF-3-20130809	6.32 g	1.00 mL	D	08/10/13
13-16580-XA43B	RMLF-4-20130809	7.04 g	1.00 mL	D	08/10/13

XA43:0000 9(1)

Basis: D=Dry Weight W=As Received

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-3-20130809
SAMPLE

Lab Sample ID: XA43A
LIMS ID: 13-16579
Matrix: Soil
Data Release Authorized:
Reported: 08/13/13

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/09/13
Date Received: 08/09/13

Date Extracted: 08/10/13
Date Analyzed: 08/12/13 16:39
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	56.4%
2-Fluorobiphenyl	60.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-4-20130809
SAMPLE

Lab Sample ID: XA43B
LIMS ID: 13-16580
Matrix: Soil
Data Release Authorized:
Reported: 08/13/13

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/09/13
Date Received: 08/09/13

Date Extracted: 08/10/13
Date Analyzed: 08/12/13 17:13
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.74 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 30.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	65	< 65 U
218-01-9	Chrysene	65	< 65 U
50-32-8	Benzo(a)pyrene	65	< 65 U
193-39-5	Indeno(1,2,3-cd)pyrene	65	< 65 U
53-70-3	Dibenz(a,h)anthracene	65	< 65 U
TOTBFA	Total Benzofluoranthenes	65	< 65 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	71.2%
2-Fluorobiphenyl	71.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-081013
METHOD BLANK

Lab Sample ID: MB-081013
LIMS ID: 13-16579
Matrix: Soil
Data Release Authorized:
Reported: 08/13/13

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/10/13
Date Analyzed: 08/12/13 14:57
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	82.8%
2-Fluorobiphenyl	66.0%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-081013	82.8%	66.0%	0
LCS-081013	88.0%	67.2%	0
LCSD-081013	79.2%	69.6%	0
RMLF-3-20130809	56.4%	60.4%	0
RMLF-4-20130809	71.2%	71.2%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-16579 to 13-16580

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-081013
LCS/LCSD

Lab Sample ID: LCS-081013
LIMS ID: 13-16579
Matrix: Soil
Data Release Authorized:
Reported: 08/13/13

QC Report No: XA43-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/09/13

Date Extracted LCS/LCSD: 08/10/13

Date Analyzed LCS: 08/12/13 15:31
LCSD: 08/12/13 16:05
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1410	1670	84.4%	1340	1670	80.2%	5.1%
Chrysene	1470	1670	88.0%	1410	1670	84.4%	4.2%
Benzo(a)pyrene	1390	1670	83.2%	1360	1670	81.4%	2.2%
Indeno(1,2,3-cd)pyrene	1510	1670	90.4%	1480	1670	88.6%	2.0%
Dibenz(a,h)anthracene	1550	1670	92.8%	1520	1670	91.0%	2.0%
Total Benzofluoranthenes	2950	3330	88.6%	2910	3330	87.4%	1.4%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	88.0%	79.2%
2-Fluorobiphenyl	67.2%	69.6%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 16, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XA80

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted three soil samples on August 13, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ ____________

Date 8/13/13

Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA   Project No. 118033.100.104

Project Location/Event Kaiser, PoT

Sampler's Name Don Malkemus

Project Contact Dave Pischer

Send Results To Anne Halvorsen, Jessica Stone, Bill Evans, Sierra Mott, Dave Pischer

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	PAH-8270D	NWTPH-Dx										
RMLF-5-20130812	8/12/13	1240	soil	1	X	X										
RMLF-6-20130813	8/13/13	0350	soil	1	X	X										
RMLF-7-20130813	8/13/13	1032	soil	1	X	X										

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ___________ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other ____________

Special Shipment/Handling or Storage Requirements On ice

Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature Sierra Mott	Signature [signature]	Signature	Signature
Printed Name Sierra Mott	Printed Name Rich Hyden	Printed Name	Printed Name
Company Landau Associates	Company ARI	Company	Company
Date 8/13/13 Time 1514	Date 8/13/13 Time 1516	Date ____ Time ____	Date ____ Time ____

WHITE COPY - Project File   YELLOW COPY - Laboratory   PINK COPY - Client Representative

Rev 8/09

XA88 : 00002

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau | Project Name: Kaiser IA

COC No(s): _____ (NA) | Delivered by: Fed-Ex UPS (Courier) Hand Delivered Other: _____

Assigned ARI Job No: XA80 | Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry)	8.1	

If cooler temperature is out of compliance ~~fill out~~ form 00070F | Temp Gun ID#: 12241222U

Cooler Accepted by: _____ Date: 8/13/13 Time: 1516

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time _____ Equipment _____ Split by: _____

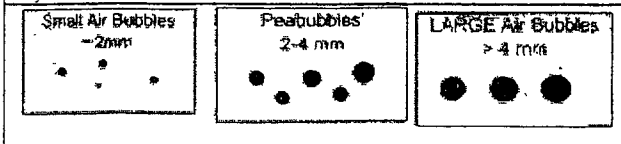
Samples Logged by: TS Date: 8/14/13 Time: 700

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

XA80 : 88883

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1	Temperature(°C): 8.1	
Sample ID	**Bottle Count**	**Bottle Type**
Sam ples received above 6°C.		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: TS Date: 8-14-13 Time 701

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XA80
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-5-20130812	XA80A	13-16826	Soil	08/12/13 12:40	08/13/13 15:16
2.	RMLF-6-20130812	XA80B	13-16827	Soil	08/13/13 08:50	08/13/13 15:16
3.	RMLF-7-20130812	XA80C	13-16828	Soil	08/13/13 10:32	08/13/13 15:16

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

ANALYTICAL RESOURCES INCORPORATED

NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method: SW3546

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil
Data Release Authorized:
Reported: 08/15/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-081413	Method Blank	08/14/13	08/15/13	1.00	Diesel Range	5.0	< 5.0 U
13-16826	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		86.6%
XA80A	RMLF-5-20130813	08/14/13	08/15/13	1.00	**Diesel Range**	**7.4**	**8.9**
13-16826	HC ID: **DIESEL**		FID9	1.0	Motor Oil Range	15	< 15 U
					o-Terphenyl		72.1%
XA80B	RMLF-6-20130813	08/14/13	08/15/13	1.00	**Diesel Range**	**7.7**	**15**
13-16827	HC ID: **DIESEL**		FID9	1.0	Motor Oil Range	16	< 16 U
					o-Terphenyl		69.0%
XA80C	RMLF-7-20130813	08/14/13	08/15/13	1.00	**Diesel Range**	**7.9**	**14**
13-16828	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**20**
					o-Terphenyl		64.0%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-081413**
 LCS/LCSD

Lab Sample ID: LCS-081413
LIMS ID: 13-16826
Matrix: Soil
Data Release Authorized:
Reported: 08/15/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/12/13
Date Received: 08/13/13

Date Extracted LCS/LCSD: 08/14/13
Date Analyzed LCS: 08/15/13 12:09
LCSD: 08/15/13 12:32
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	120	150	80.0%	117	150	78.0%	2.5%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	84.1%	85.4%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 08/13/13

ARI Job: XA80
Project: Kaiser IA
118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-16826-081413MB1	Method Blank	10.0 g	1.00 mL	-	08/14/13
13-16826-081413LCS1	Lab Control	10.0 g	1.00 mL	-	08/14/13
13-16826-081413LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/14/13
13-16826-XA80A	RMLF-5-20130813	6.71 g	1.00 mL	D	08/14/13
13-16827-XA80B	RMLF-6-20130813	6.46 g	1.00 mL	D	08/14/13
13-16828-XA80C	RMLF-7-20130813	6.33 g	1.00 mL	D	08/14/13

Basis: D=Dry Weight W=As Received

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
MB-081413	86.6%	0
LCS-081413	84.1%	0
LCSD-081413	85.4%	0
RMLF-5-20130813	72.1%	0
RMLF-6-20130813	69.0%	0
RMLF-7-20130813	64.0%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-16826 to 13-16828

Data File: /chem2/fid9.i/20130815.b/0815a009.d

Date : 15-AUG-2013 11:46

Client ID: XA80MBS1

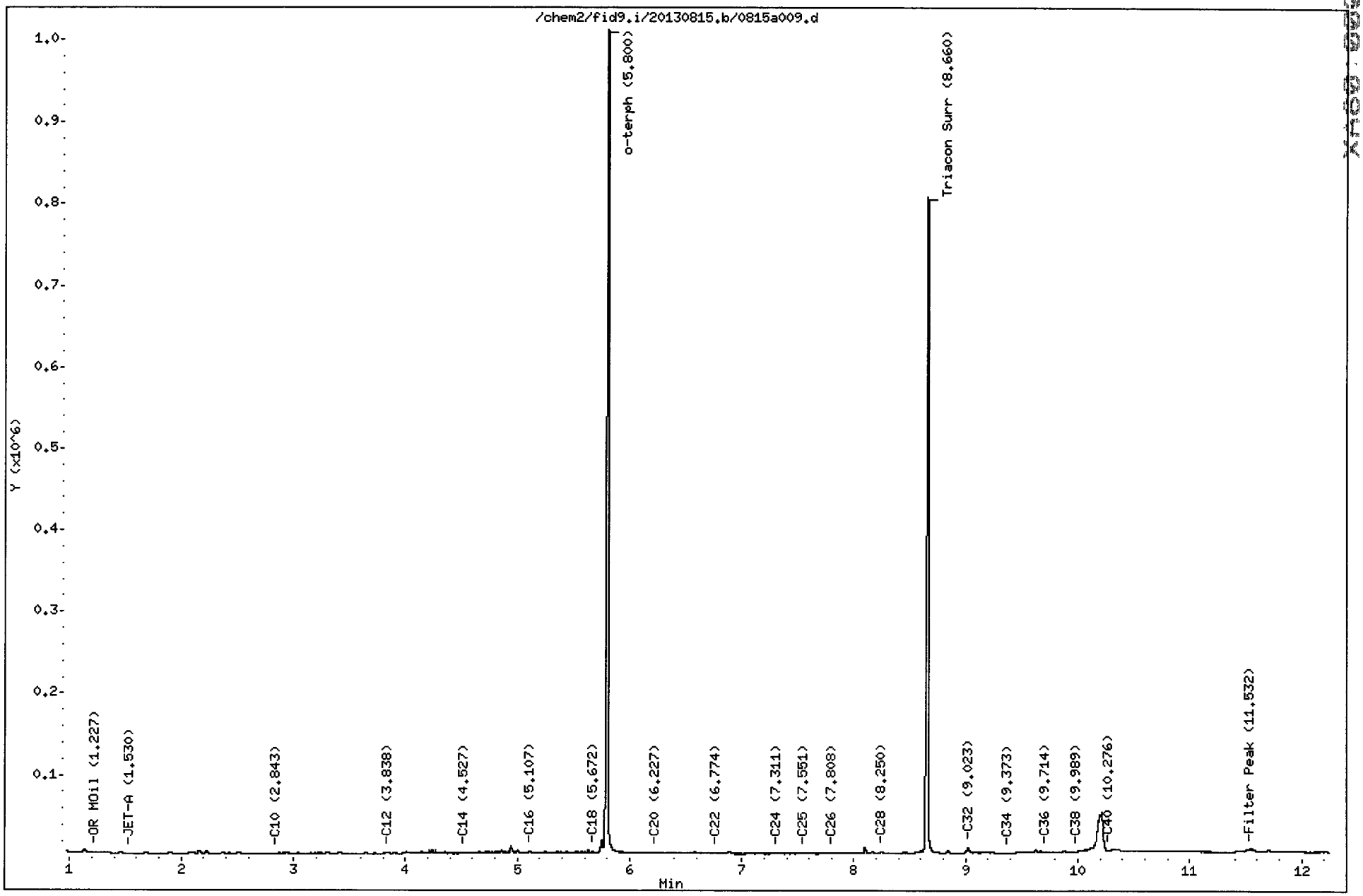
Sample Info: XA80MBS1

Instrument: fid9.i

Operator: JW

Column phase: RTX-1

Column diameter: 0.25



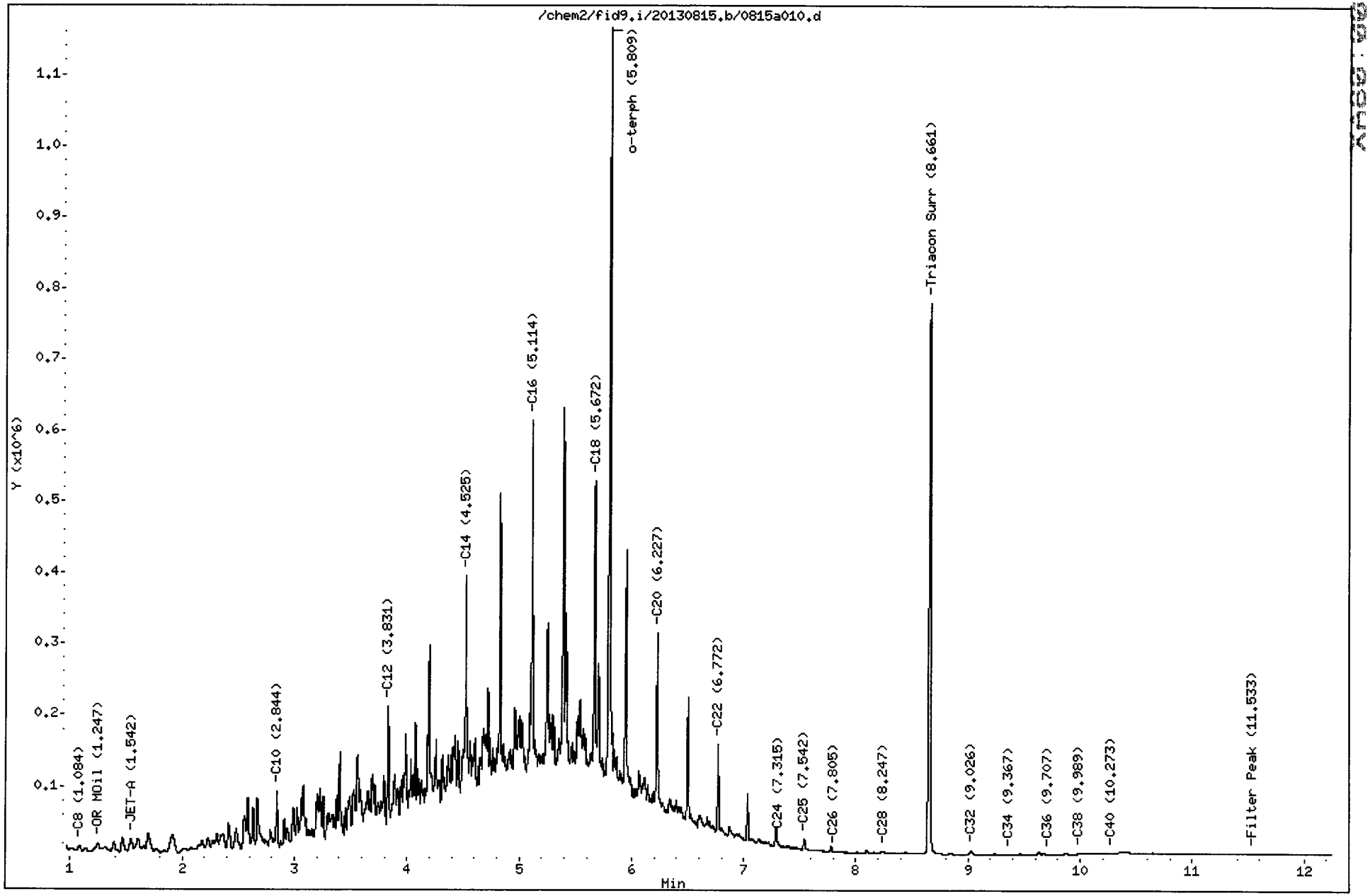
Data File: /chem2/fid9.i/20130815.b/0815a010.d
Date : 15-AUG-2013 12:09
Client ID: XA80LCSS1
Sample Info: XA80LCSS1

Instrument: fid9.i

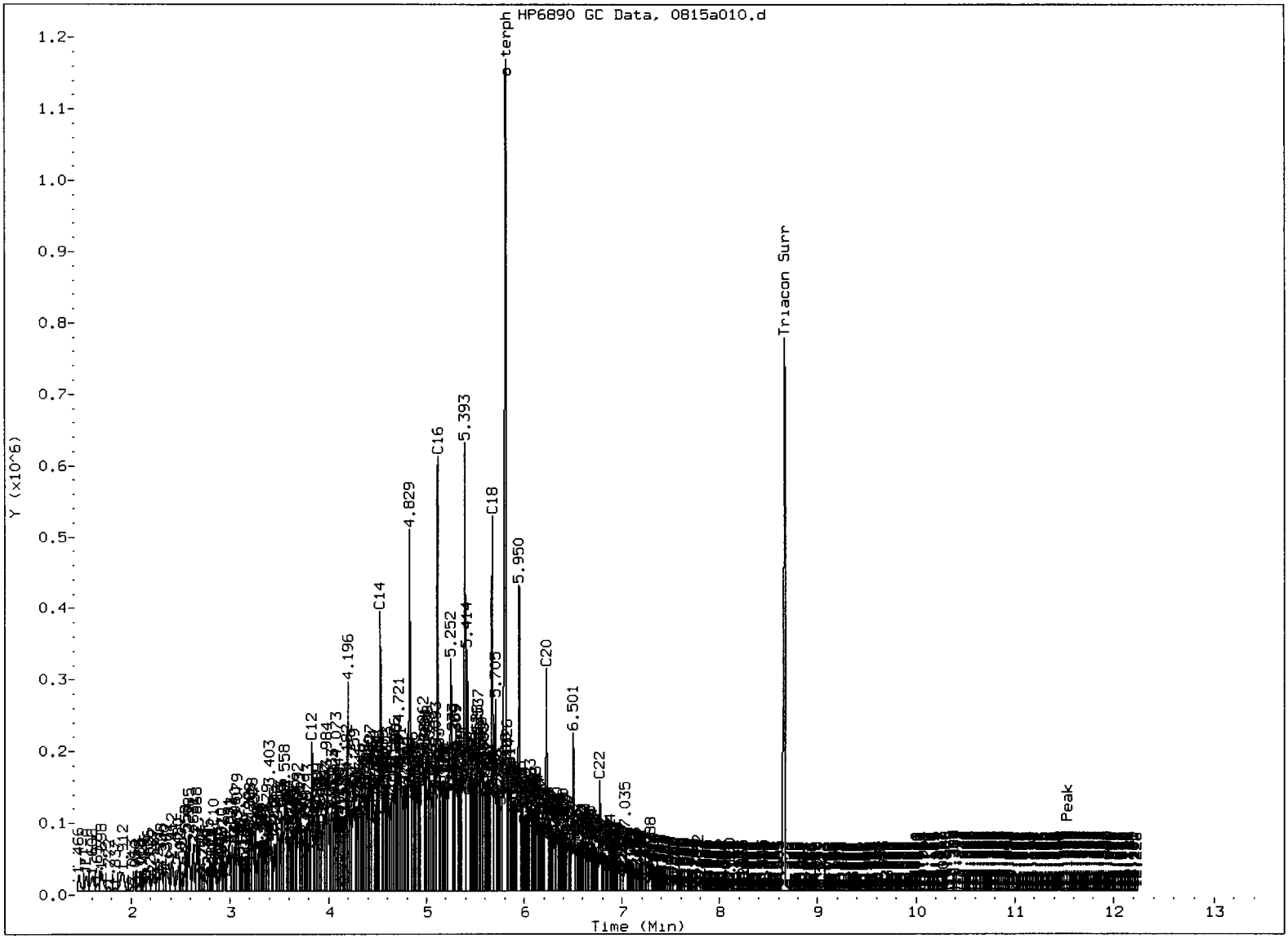
Operator: JW
Column diameter: 0.25

Column phase: RTX-1

JW 8/15/13



FID:9A-2C/RTX-1 XA80LCSS1 FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

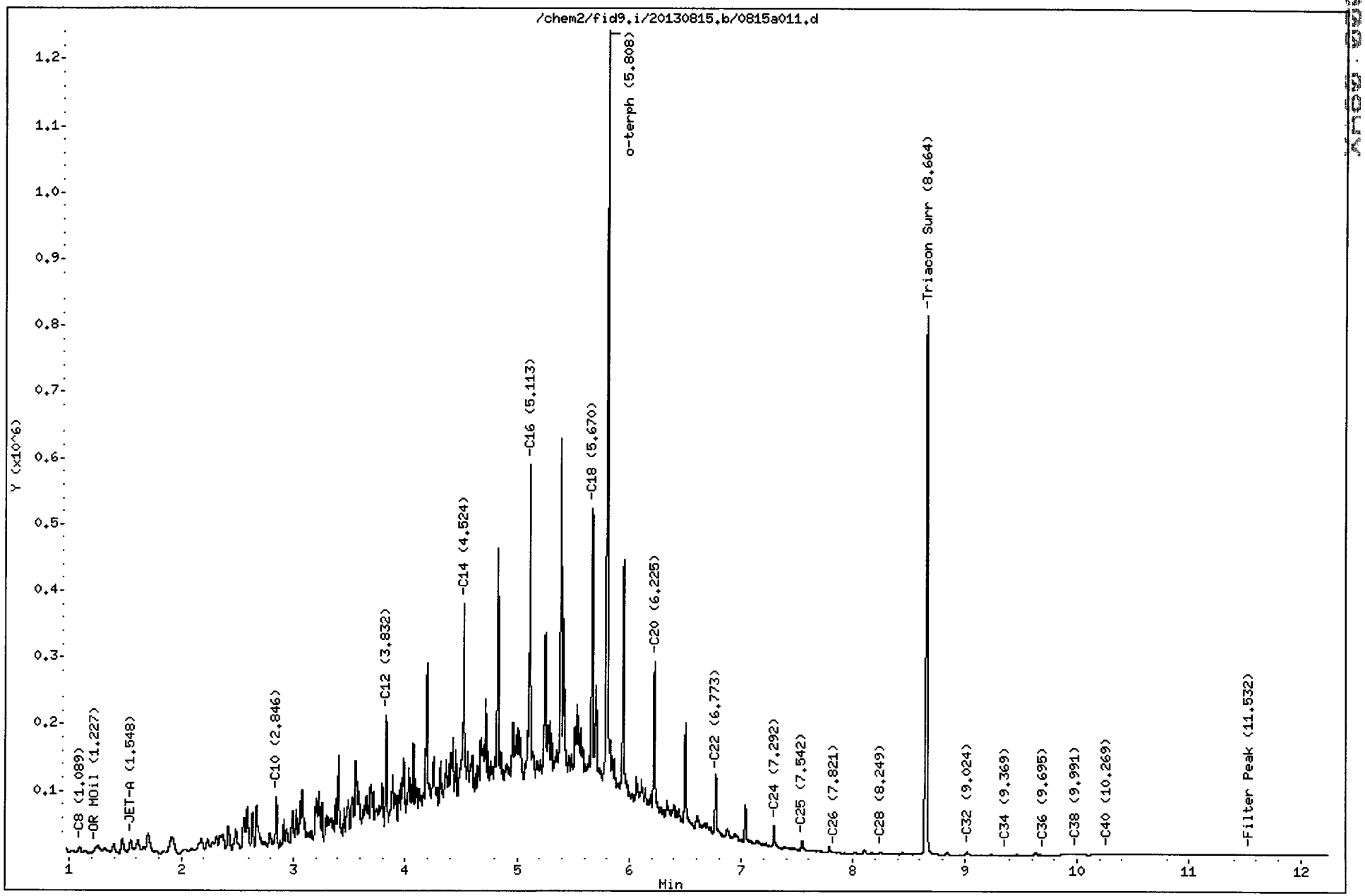
Analyst: JU Date: 3/15/13

Data File: /chem2/fid9.i/20130815.b/0815a011.d
Date : 15-AUG-2013 12:32
Client ID: XA80LCSDS1
Sample Info: XA80LCSDS1

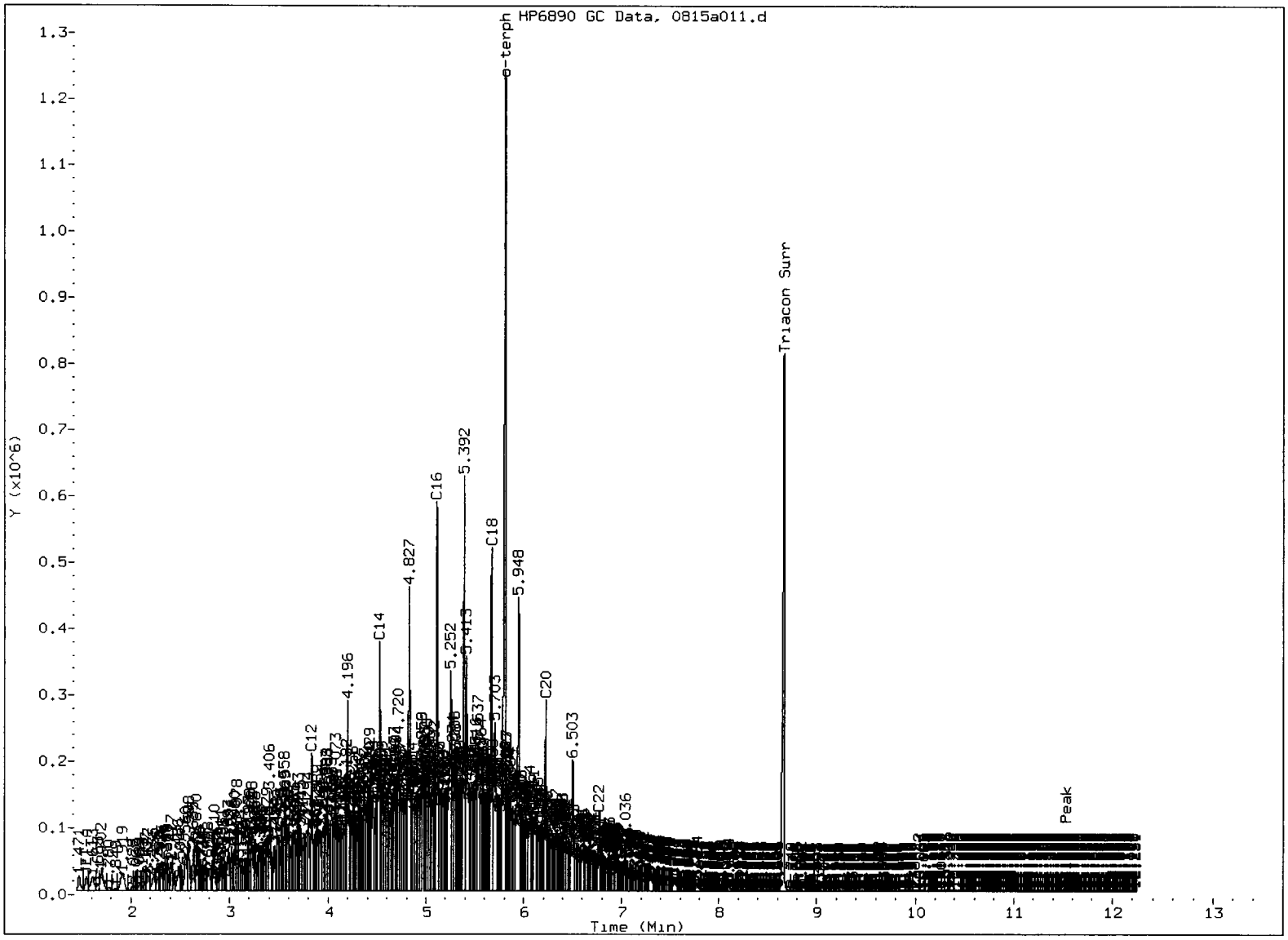
Instrument: fid9.i

Operator: JW
Column diameter: 0.25

Column phase: RTX-1



FID:9A-2C/RTX-1 XA80LCSDS1 FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: JW Date: 3/15/12

XA80:00017

Data File: /chem2/fid9.i/20130815.b/0815a012.d

Date : 15-AUG-2013 12:55

Client ID: RMLF-5-20130813

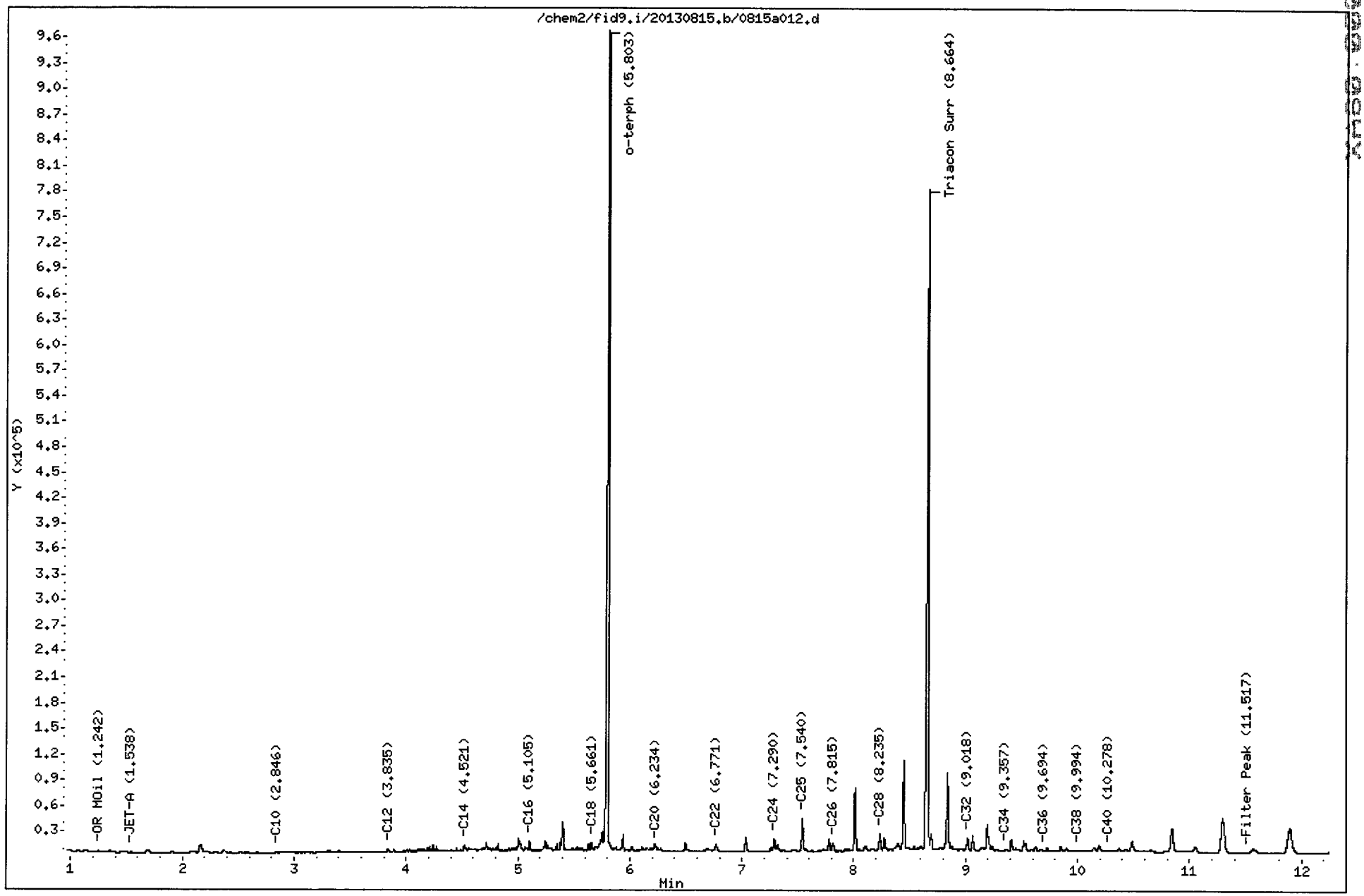
Sample Info: XA80A

Instrument: fid9.i

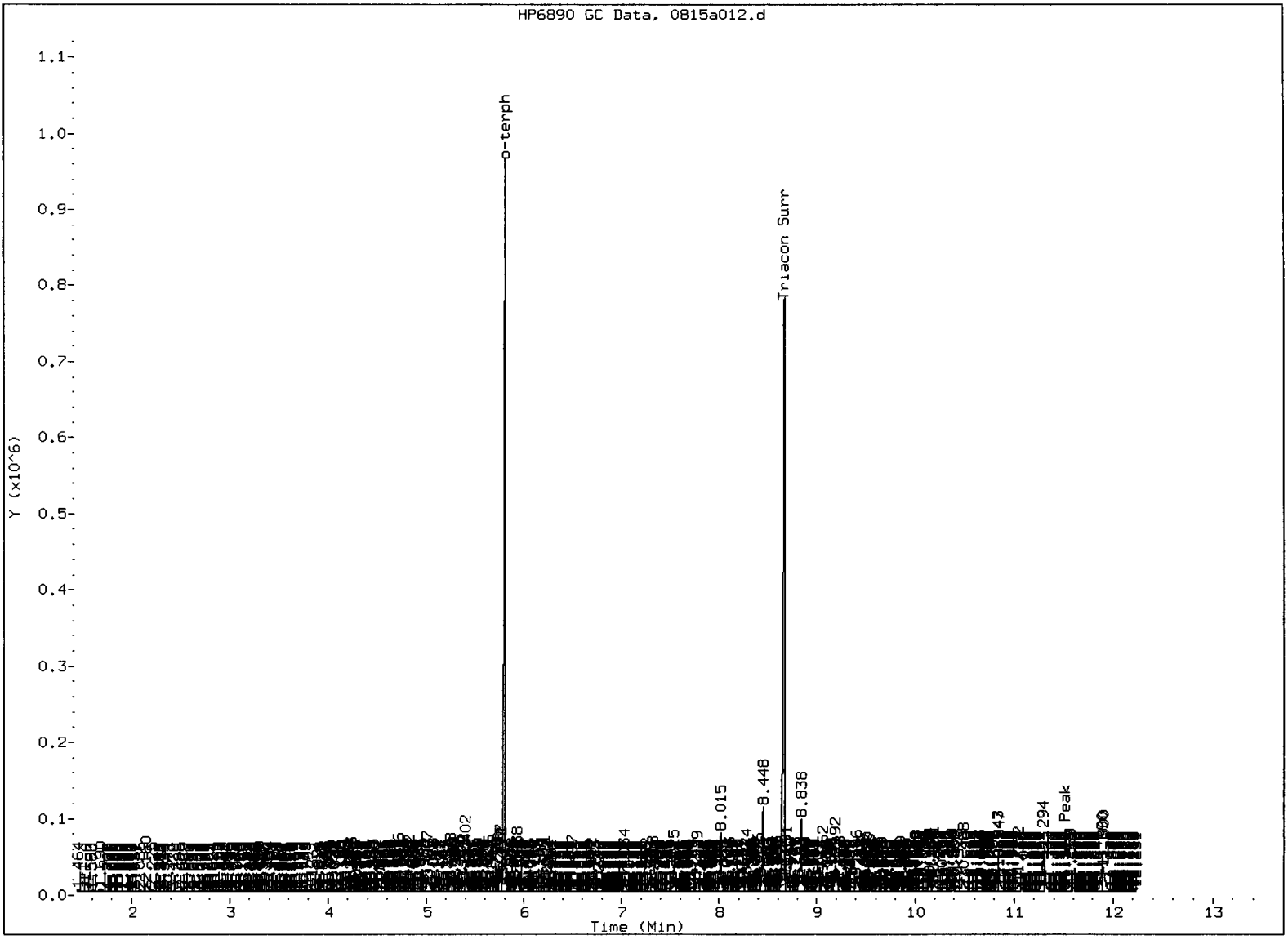
Operator: JW

Column phase: RTX-1

Column diameter: 0.25



FID:9A-2C/RTX-1 XA80A FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: JW Date: 8/15/13

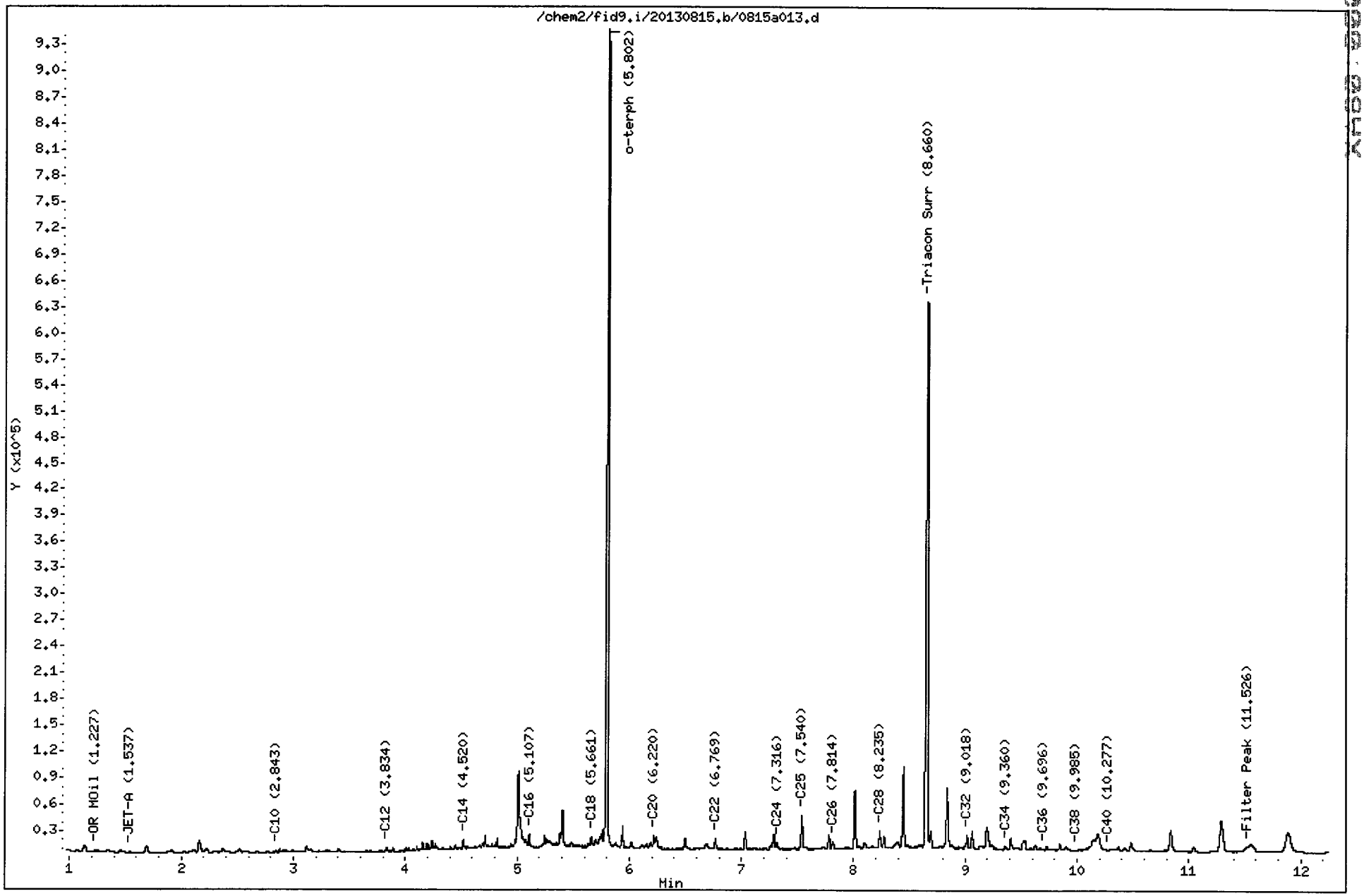
XA80:80813

Data File: /chem2/fid9.i/20130815.b/0815a013.d
Date : 15-AUG-2013 13:18
Client ID: RMLF-6-20130813
Sample Info: XA80B

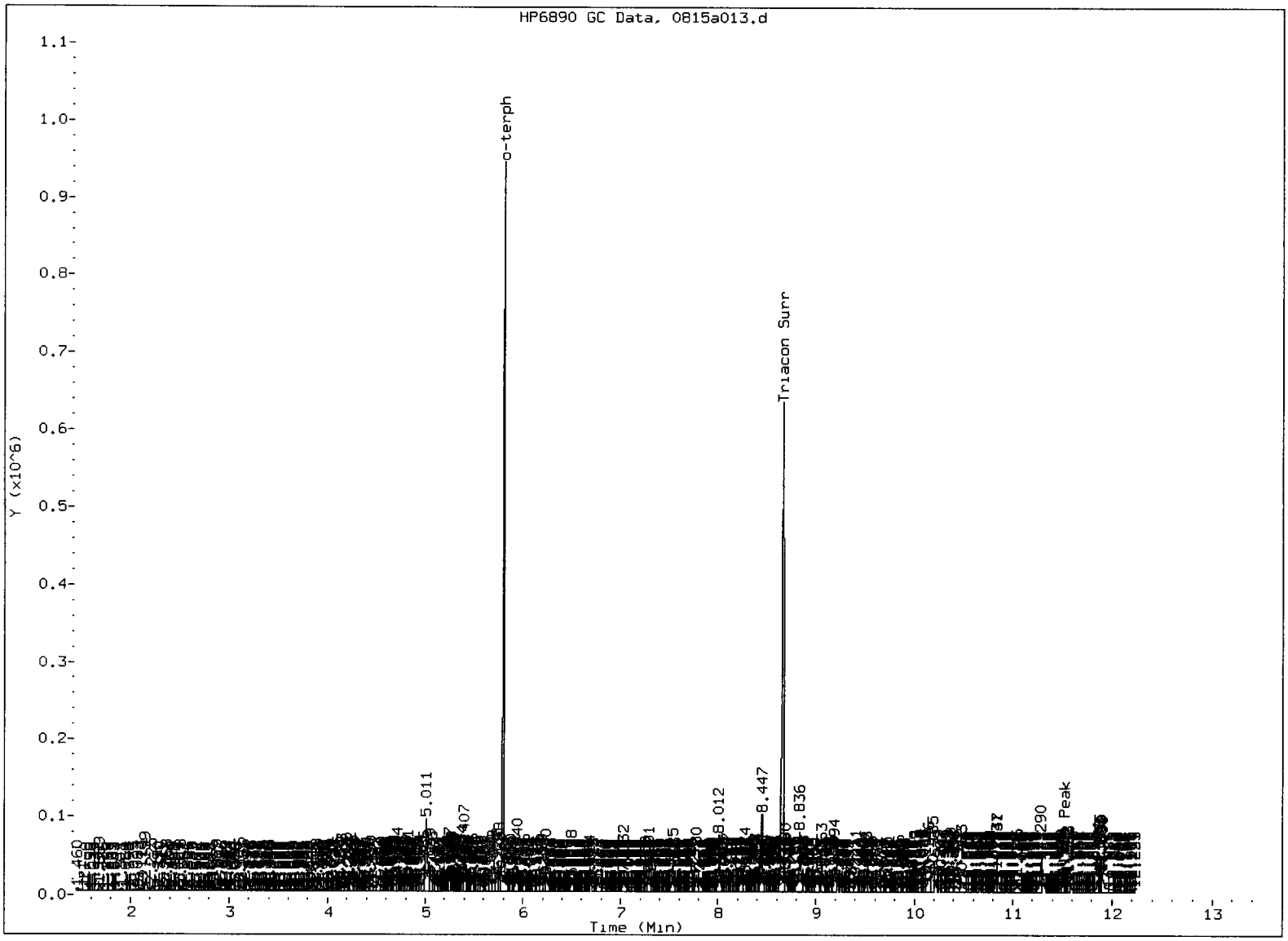
Instrument: fid9.i
Operator: JW
Column diameter: 0.25

Column phase: RTX-1

JW 8/15/13



FID:9A-2C/RTX-1 XA80B FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: JW Date: 8/15/12

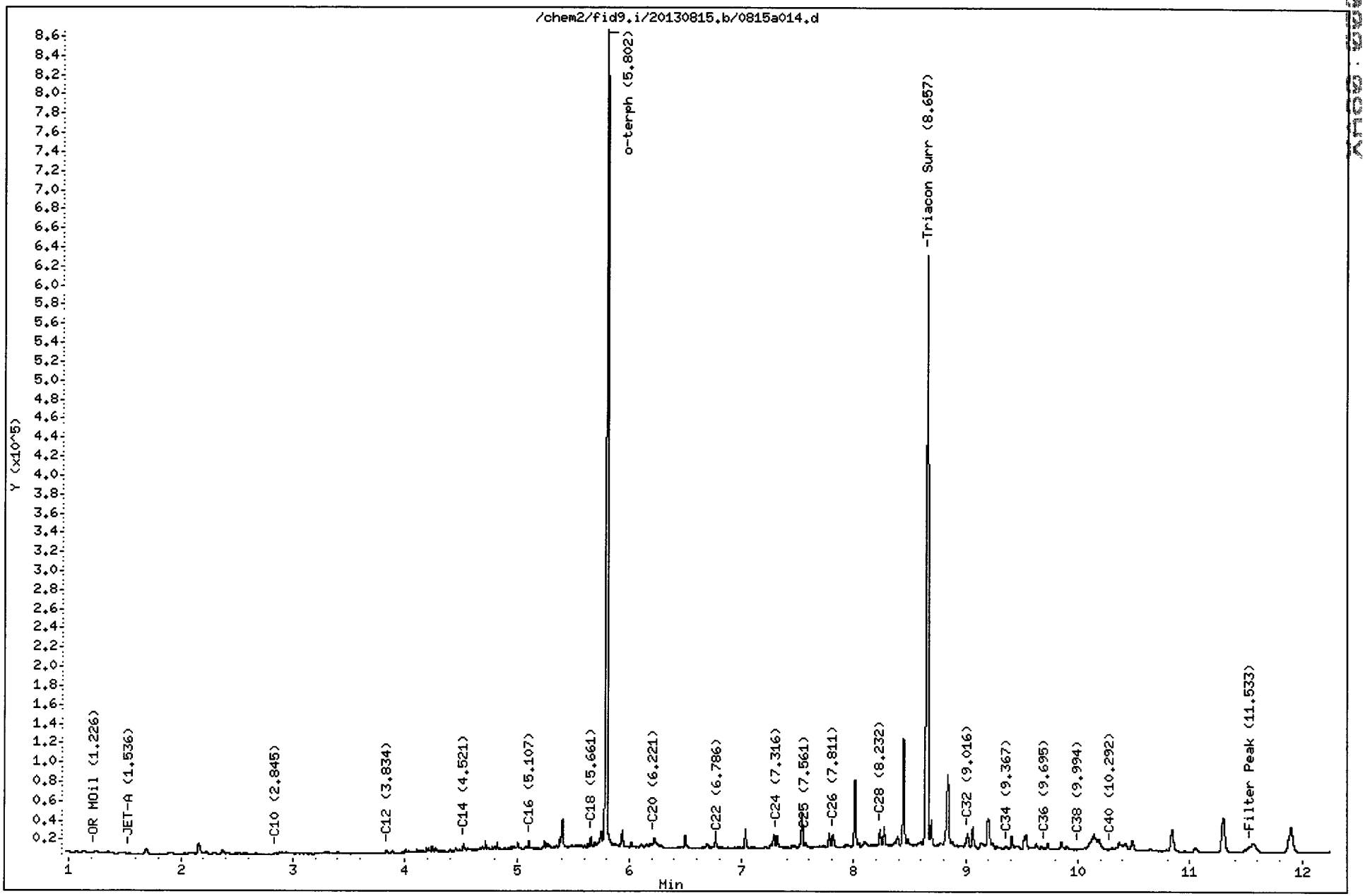
Data File: /chem2/fid9.i/20130815.b/0815a014.d
Date : 15-AUG-2013 13:41
Client ID: RMLF-7-20130813
Sample Info: XA80C

Instrument: fid9.i

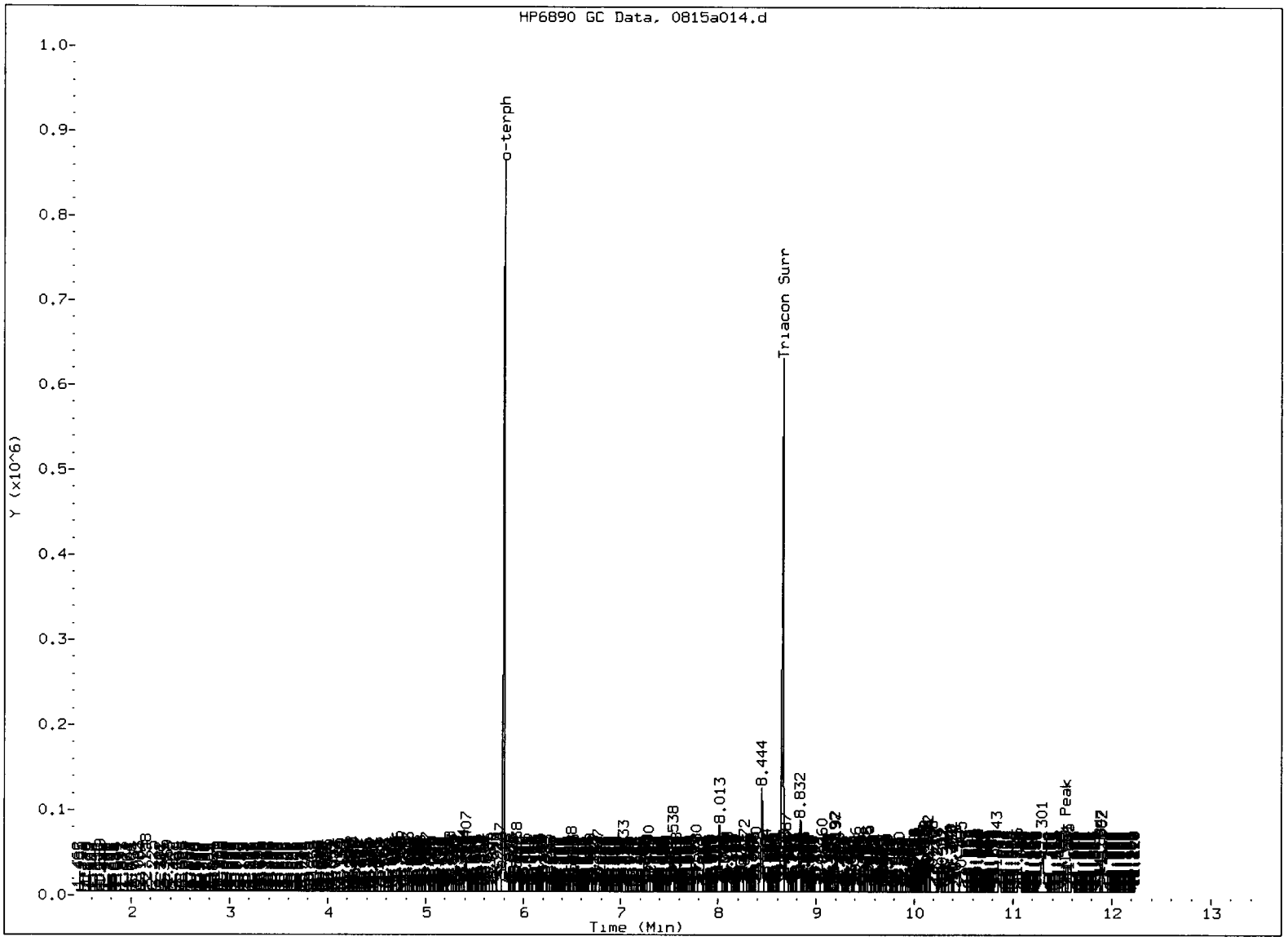
Operator: JW
Column diameter: 0.25

Column phase: RTX-1

JW 8/15/13



FID:9A-2C/RTX-1 XA80C FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: JW Date: 9/15/13

XA80:000023

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: RMLF-5-20130813
SAMPLE

Lab Sample ID: XA80A
LIMS ID: 13-16826
Matrix: Soil
Data Release Authorized:
Reported: 08/16/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/12/13
Date Received: 08/13/13

Date Extracted: 08/15/13
Date Analyzed: 08/15/13 21:37
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.03 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 33.4%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	< 62 U
218-01-9	**Chrysene**	**62**	**66**
50-32-8	Benzo(a)pyrene	62	< 62 U
193-39-5	Indeno(1,2,3-cd)pyrene	62	< 62 U
53-70-3	Dibenz(a,h)anthracene	62	< 62 U
TOTBFA	**Total Benzofluoranthenes**	**62**	**75**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	71.6%
2-Fluorobiphenyl	78.4%

XA80:080824

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: RMLF-6-20130813
SAMPLE

Lab Sample ID: XA80B
LIMS ID: 13-16827
Matrix: Soil
Data Release Authorized:
Reported: 08/16/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/13/13
Date Received: 08/13/13

Date Extracted: 08/15/13
Date Analyzed: 08/15/13 22:11
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.77 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 35.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	64	< 64 U
218-01-9	Chrysene	64	< 64 U
50-32-8	Benzo(a)pyrene	64	< 64 U
193-39-5	Indeno(1,2,3-cd)pyrene	64	< 64 U
53-70-3	Dibenz(a,h)anthracene	64	< 64 U
TOTBFA	Total Benzofluoranthenes	64	< 64 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	58.0%
2-Fluorobiphenyl	62.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-7-20130813
SAMPLE

Lab Sample ID: XA80C
LIMS ID: 13-16828
Matrix: Soil
Data Release Authorized:
Reported: 08/16/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/13/13
Date Received: 08/13/13

Date Extracted: 08/15/13
Date Analyzed: 08/15/13 22:45
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.58 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	**Chrysene**	**66**	**79**
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	**Total Benzofluoranthenes**	**66**	**76**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	58.8%
2-Fluorobiphenyl	63.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-081513
METHOD BLANK

Lab Sample ID: MB-081513
LIMS ID: 13-16826
Matrix: Soil
Data Release Authorized:
Reported: 08/16/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/15/13
Date Analyzed: 08/15/13 19:54
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	86.4%
2-Fluorobiphenyl	84.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-081513
LCS/LCSD

Lab Sample ID: LCS-081513
LIMS ID: 13-16826
Matrix: Soil
Data Release Authorized:
Reported: 08/16/13

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/13/13

Date Extracted LCS/LCSD: 08/15/13

Date Analyzed LCS: 08/15/13 20:29
LCSD: 08/15/13 21:03
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1500	1670	89.8%	1500	1670	89.8%	0.0%
Chrysene	1480	1670	88.6%	1500	1670	89.8%	1.3%
Benzo(a)pyrene	1510	1670	90.4%	1530	1670	91.6%	1.3%
Indeno(1,2,3-cd)pyrene	936	1670	56.0%	987	1670	59.1%	5.3%
Dibenz(a,h)anthracene	1000	1670	59.9%	1040	1670	62.3%	3.9%
Total Benzofluoranthenes	3320	3330	99.7%	3320	3330	99.7%	0.0%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	80.8%	78.4%
2-Fluorobiphenyl	77.6%	76.0%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XA80-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-081513	86.4%	84.8%	0
LCS-081513	80.8%	77.6%	0
LCSD-081513	78.4%	76.0%	0
RMLF-5-20130813	71.6%	78.4%	0
RMLF-6-20130813	58.0%	62.0%	0
RMLF-7-20130813	58.8%	63.2%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-16826 to 13-16828

XA80:66825

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 19, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XB44

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted five soil samples on August 16, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

XB44

Date 8/16/13
Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name Don Maikemus / Sierra Mott
Project Contact Dave Pischer
Send Results To Anne Halvorsen, Bill Evans, Dave Pischer, Jessica Stone, Sierra Mott

Turnaround Time
☐ Standard
☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: CPAH-8270D	NWTPH-Dx
RMLF-8-20130814	8/14/13	1200	Soil	1	X	X
RMLF-9-20130814	8/14/13	1215	Soil	1	X	X
RMLF-10-20130816	8/16/13	1157	Soil	1	X	X
RMLF-11-20130816	8/16/13	1204	Soil	1	X	X
RMLF-12-20130816	8/16/13	1211	Soil	1	X	X

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion
X NWTPH-Dx - run acid wash/silica gel cleanup
___ run samples standardized to _____ product
___ Analyze for EPH if no specific product identified
VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered
Other _____

Special Shipment/Handling or Storage Requirements Onice
Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature Sierra Mott	Signature Rich Hudson	Signature	Signature
Printed Name Sierra Mott	Printed Name ARI	Printed Name	Printed Name
Company Landau Associates	Company	Company	Company
Date 8/16/13 Time 1300	Date 8/16/13 Time 1300	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau — Project Name: Kaiser IA

COC No(s): (NA) — Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: XB44 — Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry)		4.6

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID# 12247224

Cooler Accepted by: _____ Date: 8/16/13 Time: 1300

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

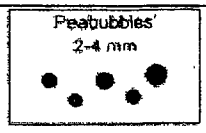
Samples Logged by: AV Date: 8/16/13 Time: 1505

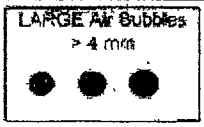
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:





Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XB44
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-8-20130814	XB44A	13-17183	Soil	08/14/13 12:00	08/16/13 13:00
2.	RMLF-9-20130814	XB44B	13-17184	Soil	08/14/13 12:15	08/16/13 13:00
3.	RMLF-10-20130816	XB44C	13-17185	Soil	08/16/13 11:57	08/16/13 13:00
4.	RMLF-11-20130816	XB44D	13-17186	Soil	08/16/13 12:04	08/16/13 13:00
5.	RMLF-12-20130816	XB44E	13-17187	Soil	08/16/13 12:11	08/16/13 13:00

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-8-20130814
SAMPLE

Lab Sample ID: XB44A
LIMS ID: 13-17183
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/14/13
Date Received: 08/16/13

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 12:50
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.10 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 33.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	< 62 U
218-01-9	Chrysene	62	< 62 U
50-32-8	Benzo(a)pyrene	62	< 62 U
193-39-5	Indeno(1,2,3-cd)pyrene	62	< 62 U
53-70-3	Dibenz(a,h)anthracene	62	< 62 U
TOTBFA	Total Benzofluoranthenes	62	< 62 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	80.4%
2-Fluorobiphenyl	76.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-9-20130814
SAMPLE

Lab Sample ID: XB44B
LIMS ID: 13-17184
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/14/13
Date Received: 08/16/13

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 13:24
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.90 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 34.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	63	< 63 U
218-01-9	Chrysene	63	< 63 U
50-32-8	Benzo(a)pyrene	63	< 63 U
193-39-5	Indeno(1,2,3-cd)pyrene	63	< 63 U
53-70-3	Dibenz(a,h)anthracene	63	< 63 U
TOTBFA	Total Benzofluoranthenes	63	< 63 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	80.8%
2-Fluorobiphenyl	74.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-10-20130816
SAMPLE

Lab Sample ID: XB44C
LIMS ID: 13-17185
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/16/13
Date Received: 08/16/13

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 13:58
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.56 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.5%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	80.0%
2-Fluorobiphenyl	81.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-11-20130816
SAMPLE

Lab Sample ID: XB44D
LIMS ID: 13-17186
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/16/13
Date Received: 08/16/13

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 14:33
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.03 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 38.9%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	< 62 U
218-01-9	Chrysene	62	< 62 U
50-32-8	Benzo(a)pyrene	62	< 62 U
193-39-5	Indeno(1,2,3-cd)pyrene	62	< 62 U
53-70-3	Dibenz(a,h)anthracene	62	< 62 U
TOTBFA	Total Benzofluoranthenes	62	< 62 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	77.2%
2-Fluorobiphenyl	77.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-12-20130816
SAMPLE

Lab Sample ID: XB44E
LIMS ID: 13-17187
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/16/13
Date Received: 08/16/13

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 15:07
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.99 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 39.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	63	< 63 U
218-01-9	Chrysene	63	< 63 U
50-32-8	Benzo(a)pyrene	63	< 63 U
193-39-5	Indeno(1,2,3-cd)pyrene	63	< 63 U
53-70-3	Dibenz(a,h)anthracene	63	< 63 U
TOTBFA	Total Benzofluoranthenes	63	< 63 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	74.4%
2-Fluorobiphenyl	80.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-081713
METHOD BLANK

Lab Sample ID: MB-081713
LIMS ID: 13-17183
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/17/13
Date Analyzed: 08/19/13 11:08
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	88.0%
2-Fluorobiphenyl	69.6%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-081713	88.0%	69.6%	0
LCS-081713	86.0%	70.8%	0
LCSD-081713	89.2%	70.8%	0
RMLF-8-20130814	80.4%	76.4%	0
RMLF-9-20130814	80.8%	74.0%	0
RMLF-10-20130816	80.0%	81.6%	0
RMLF-11-20130816	77.2%	77.6%	0
RMLF-12-20130816	74.4%	80.8%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-17183 to 13-17187

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-081713
LCS/LCSD

Lab Sample ID: LCS-081713
LIMS ID: 13-17183
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/16/13

Date Extracted LCS/LCSD: 08/17/13

Date Analyzed LCS: 08/19/13 11:42
LCSD: 08/19/13 12:16
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1340	1670	80.2%	1460	1670	87.4%	8.6%
Chrysene	1330	1670	79.6%	1440	1670	86.2%	7.9%
Benzo(a)pyrene	1340	1670	80.2%	1430	1670	85.6%	6.5%
Indeno(1,2,3-cd)pyrene	1350	1670	80.8%	1470	1670	88.0%	8.5%
Dibenz(a,h)anthracene	1380	1670	82.6%	1500	1670	89.8%	8.3%
Total Benzofluoranthenes	2910	3330	87.4%	3170	3330	95.2%	8.6%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	86.0%	89.2%
2-Fluorobiphenyl	70.8%	70.8%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

ANALYTICAL RESOURCES INCORPORATED

NWTPHD by GC/FID
Extraction Method: SW3546
Page 1 of 1

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil

Date Received: 08/16/13

Data Release Authorized:
Reported: 08/19/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	LOQ	Result
MB-081713	Method Blank	08/17/13	08/19/13	1.00	Diesel Range	5.0	< 5.0 U
13-17183	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		94.2%
XB44A	RMLF-8-20130814	08/17/13	08/19/13	1.00	**Diesel Range**	**7.4**	**18**
13-17183	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**15**	**68**
					o-Terphenyl		79.7%
XB44B	RMLF-9-20130814	08/17/13	08/19/13	1.00	**Diesel Range**	**7.4**	**29**
13-17184	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**15**	**92**
					o-Terphenyl		78.2%
XB44C	RMLF-10-20130816	08/17/13	08/19/13	1.00	**Diesel Range**	**7.9**	**38**
13-17185	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**98**
					o-Terphenyl		78.4%
XB44D	RMLF-11-20130816	08/17/13	08/19/13	1.00	**Diesel Range**	**8.0**	**26**
13-17186	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**130**
					o-Terphenyl		79.8%
XB44E	RMLF-12-20130816	08/17/13	08/19/13	1.00	**Diesel Range**	**8.1**	**57**
13-17187	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**140**
					o-Terphenyl		72.9%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
LOQ-Limit of Quantitation

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
081713MBS	94.2%	0
081713LCS	93.8%	0
081713LCSD	93.7%	0
RMLF-8-20130814	79.7%	0
RMLF-9-20130814	78.2%	0
RMLF-10-20130816	78.4%	0
RMLF-11-20130816	79.8%	0
RMLF-12-20130816	72.9%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-17183 to 13-17187

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-081713
LCS/LCSD

Lab Sample ID: LCS-081713
LIMS ID: 13-17183
Matrix: Soil
Data Release Authorized:
Reported: 08/19/13

QC Report No: XB44-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 08/17/13

Date Analyzed LCS: 08/19/13 13:01
LCSD: 08/19/13 12:38
Instrument/Analyst LCS: FID9/JLW
LCSD: FID9/JLW

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	138	150	92.0%	139	150	92.7%	0.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	93.8%	93.7%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XB44
Matrix: Soil Project: Kaiser IA
Date Received: 08/16/13 118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-17183-081713MB1	Method Blank	10.0 g	1.00 mL	-	08/17/13
13-17183-081713LCS1	Lab Control	10.0 g	1.00 mL	-	08/17/13
13-17183-081713LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/17/13
13-17183-XB44A	RMLF-8-20130814	6.72 g	1.00 mL	D	08/17/13
13-17184-XB44B	RMLF-9-20130814	6.71 g	1.00 mL	D	08/17/13
13-17185-XB44C	RMLF-10-20130816	6.30 g	1.00 mL	D	08/17/13
13-17186-XB44D	RMLF-11-20130816	6.24 g	1.00 mL	D	08/17/13
13-17187-XB44E	RMLF-12-20130816	6.15 g	1.00 mL	D	08/17/13

Basis: D=Dry Weight W=As Received

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 23, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XB85

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted six soil samples on August 21, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ ____________

Date 8/21/13
Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA
Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name Brett Borgeson / Sierra Mott
Project Contact Dave Pischer
Send Results To Anne Halvorsen, Dave Pischer, Bill Evans, Jessica Stone, Sierra Mott

Turnaround Time
☐ Standard
☐ Accelerated
☒ 2 Day TAT

	Sample I.D.	Date	Time	Matrix	No. of Containers	CPAH-8270D	NWTPH-Dx
	RMLF-13-20130820	8/20/13	1057	Soil	1	X	X
	RMLF-14-20130820	8/20/13	1105	Soil	1	X	X
	RMLF-15-20130820	8/20/13	1109	Soil	1	X	X
*	RMLF-16-20130820	8/20/13	1402	Soil	1	X	X
	RMLF-17-20130821	8/21/13	1358	Soil	1	X	X
	RMLF-18-20130821	8/21/13	1354	Soil	1	X	X

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ___________ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other * RMLF-16-20130821 was collected 8/21/13; hard to read.

Special Shipment/Handling or Storage Requirements: On ice

Method of Shipment: Courier

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature] Rich Hudson	Signature	Signature
Printed Name Sierra Mott	Printed Name ARI	Printed Name	Printed Name
Company Landau Associates	Company	Company	Company
Date 8/21/13 Time 1425	Date 8/21/13 Time 1425	Date Time	Date Time

WHITE COPY - Project File **YELLOW COPY - Laboratory** **PINK COPY - Client Representative**

Rev 8/09

XB85 : 00002

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Kaiser IA

COC No(s) _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: XB85

Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry)	4C	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#	12241222

Cooler Accepted by: _____ Date: 8/21/13 Time: 1425

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs).	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

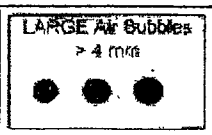
Samples Logged by: JM Date: 8/21/13 Time: 1514

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

XB85 : 00003

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XB85
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-13-20130820	XB85A	13-17422	Soil	08/20/13 10:57	08/21/13 14:25
2.	RMLF-14-20130820	XB85B	13-17423	Soil	08/20/13 11:05	08/21/13 14:25
3.	RMLF-15-20130820	XB85C	13-17424	Soil	08/20/13 11:09	08/21/13 14:25
4.	RMLF-16-20130821	XB85D	13-17425	Soil	08/21/13 14:02	08/21/13 14:25
5.	RMLF-17-20130821	XB85E	13-17426	Soil	08/21/13 13:58	08/21/13 14:25
6.	RMLF-18-20130821	XB85F	13-17427	Soil	08/21/13 13:54	08/21/13 14:25

XB85 : 66664

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-13-20130820
SAMPLE

Lab Sample ID: XB85A
LIMS ID: 13-17422
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/20/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 18:14
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.02 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 38.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	< 62 U
218-01-9	**Chrysene**	**62**	**150**
50-32-8	Benzo(a)pyrene	62	< 62 U
193-39-5	Indeno(1,2,3-cd)pyrene	62	< 62 U
53-70-3	Dibenz(a,h)anthracene	62	< 62 U
TOTBFA	**Total Benzofluoranthenes**	**62**	**160**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	55.2%
2-Fluorobiphenyl	64.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-14-20130820
SAMPLE

Lab Sample ID: XB85B
LIMS ID: 13-17423
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/20/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 18:48
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.83 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 40.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	64	< 64 U
218-01-9	Chrysene	64	< 64 U
50-32-8	Benzo(a)pyrene	64	< 64 U
193-39-5	Indeno(1,2,3-cd)pyrene	64	< 64 U
53-70-3	Dibenz(a,h)anthracene	64	< 64 U
TOTBFA	Total Benzofluoranthenes	64	< 64 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	64.8%
2-Fluorobiphenyl	68.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-15-20130820
SAMPLE

Lab Sample ID: XB85C
LIMS ID: 13-17424
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/20/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 19:22
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.94 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 35.5%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**63**	**72**
218-01-9	**Chrysene**	**63**	**110**
50-32-8	**Benzo(a)pyrene**	**63**	**74**
193-39-5	Indeno(1,2,3-cd)pyrene	63	< 63 U
53-70-3	Dibenz(a,h)anthracene	63	< 63 U
TOTBFA	**Total Benzofluoranthenes**	**63**	**140**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	51.6%
2-Fluorobiphenyl	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-16-20130821
SAMPLE

Lab Sample ID: XB85D
LIMS ID: 13-17425
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/21/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 19:56
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.90 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 39.4%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	63	< 63 U
218-01-9	Chrysene	63	< 63 U
50-32-8	Benzo(a)pyrene	63	< 63 U
193-39-5	Indeno(1,2,3-cd)pyrene	63	< 63 U
53-70-3	Dibenz(a,h)anthracene	63	< 63 U
TOTBFA	Total Benzofluoranthenes	63	< 63 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	57.2%
2-Fluorobiphenyl	62.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-17-20130821
SAMPLE

Lab Sample ID: XB85E
LIMS ID: 13-17426
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/21/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 20:30
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 8.17 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 38.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	61	< 61 U
218-01-9	Chrysene	61	< 61 U
50-32-8	Benzo(a)pyrene	61	< 61 U
193-39-5	Indeno(1,2,3-cd)pyrene	61	< 61 U
53-70-3	Dibenz(a,h)anthracene	61	< 61 U
TOTBFA	Total Benzofluoranthenes	61	< 61 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	45.6%
2-Fluorobiphenyl	55.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-18-20130821
SAMPLE

Lab Sample ID: XB85F
LIMS ID: 13-17427
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/21/13
Date Received: 08/21/13

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 21:04
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.59 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	**Total Benzofluoranthenes**	**66**	**76**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	48.8%
2-Fluorobiphenyl	57.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-082213
METHOD BLANK

Lab Sample ID: MB-082213
LIMS ID: 13-17422
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/22/13
Date Analyzed: 08/22/13 16:32
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	83.6%
2-Fluorobiphenyl	68.0%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-082213	83.6%	68.0%	0
LCS-082213	80.4%	68.0%	0
LCSD-082213	73.6%	62.8%	0
RMLF-13-20130820	55.2%	64.4%	0
RMLF-14-20130820	64.8%	68.4%	0
RMLF-15-20130820	51.6%	62.8%	0
RMLF-16-20130821	57.2%	62.4%	0
RMLF-17-20130821	45.6%	55.6%	0
RMLF-18-20130821	48.8%	57.6%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-17422 to 13-17427

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-082213
LCS/LCSD

Lab Sample ID: LCS-082213
LIMS ID: 13-17422
Matrix: Soil
Data Release Authorized:
Reported: 08/23/13

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/21/13

Date Extracted LCS/LCSD: 08/22/13

Date Analyzed LCS: 08/22/13 17:06
LCSD: 08/22/13 17:40
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1260	1670	75.4%	1170	1670	70.1%	7.4%
Chrysene	1270	1670	76.0%	1210	1670	72.5%	4.8%
Benzo(a)pyrene	1270	1670	76.0%	1150	1670	68.9%	9.9%
Indeno(1,2,3-cd)pyrene	1390	1670	83.2%	1310	1670	78.4%	5.9%
Dibenz(a,h)anthracene	1410	1670	84.4%	1340	1670	80.2%	5.1%
Total Benzofluoranthenes	2700	3330	81.1%	2590	3330	77.8%	4.2%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	80.4%	73.6%
2-Fluorobiphenyl	68.0%	62.8%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3546

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil

Date Received: 08/21/13

Data Release Authorized: MW
Reported: 08/23/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	LOQ	Result
MB-082213	Method Blank	08/22/13	08/22/13	1.00	Diesel Range	5.0	< 5.0 U
13-17422	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		97.6%
XB85A	RMLF-13-20130820	08/22/13	08/22/13	1.00	**Diesel Range**	**8.0**	**65**
13-17422	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**130**
					o-Terphenyl		74.5%
XB85B	RMLF-14-20130820	08/22/13	08/22/13	1.00	**Diesel Range**	**8.2**	**53**
13-17423	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**110**
					o-Terphenyl		77.7%
XB85C	RMLF-15-20130820	08/22/13	08/22/13	1.00	**Diesel Range**	**7.6**	**36**
13-17424	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**15**	**98**
					o-Terphenyl		78.8%
XB85D	RMLF-16-20130821	08/22/13	08/22/13	1.00	**Diesel Range**	**8.2**	**33**
13-17425	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**110**
					o-Terphenyl		77.8%
XB85E	RMLF-17-20130821	08/22/13	08/22/13	1.00	**Diesel Range**	**8.0**	**46**
13-17426	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**130**
					o-Terphenyl		80.6%
XB85F	RMLF-18-20130821	08/22/13	08/22/13	1.00	**Diesel Range**	**7.9**	**57**
13-17427	HC ID: **DIESEL/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**16**	**150**
					o-Terphenyl		76.6%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
LOQ-Limit of Quantitation

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XB85-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
082213MBS	97.6%	0
082213LCS	94.5%	0
082213LCSD	96.7%	0
RMLF-13-20130820	74.5%	0
RMLF-14-20130820	77.7%	0
RMLF-15-20130820	78.8%	0
RMLF-16-20130821	77.8%	0
RMLF-17-20130821	80.6%	0
RMLF-18-20130821	76.6%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-17422 to 13-17427

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID **Sample ID: LCS-082213**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-082213 QC Report No: XB85-Landau Associates, Inc.
LIMS ID: 13-17422 Project: Kaiser IA
Matrix: Soil 118033.100.104
Data Release Authorized: Date Sampled: NA
Reported: 08/23/13 Date Received: NA

Date Extracted LCS/LCSD: 08/22/13 Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Date Analyzed LCS: 08/22/13 16:10 Final Extract Volume LCS: 1.0 mL
LCSD: 08/22/13 16:33 LCSD: 1.0 mL
Instrument/Analyst LCS: FID9/JLW Dilution Factor LCS: 1.00
LCSD: FID9/JLW LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	137	150	91.3%	135	150	90.0%	1.5%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	94.5%	96.7%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 08/21/13

ARI Job: XB85
Project: Kaiser IA
118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-17422-082213MB1	Method Blank	10.0 g	1.00 mL	-	08/22/13
13-17422-082213LCS1	Lab Control	10.0 g	1.00 mL	-	08/22/13
13-17422-082213LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/22/13
13-17422-XB85A	RMLF-13-20130820	6.28 g	1.00 mL	D	08/22/13
13-17423-XB85B	RMLF-14-20130820	6.08 g	1.00 mL	D	08/22/13
13-17424-XB85C	RMLF-15-20130820	6.59 g	1.00 mL	D	08/22/13
13-17425-XB85D	RMLF-16-20130821	6.11 g	1.00 mL	D	08/22/13
13-17426-XB85E	RMLF-17-20130821	6.27 g	1.00 mL	D	08/22/13
13-17427-XB85F	RMLF-18-20130821	6.35 g	1.00 mL	D	08/22/13

Basis: D=Dry Weight W=As Received

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 26, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XC06

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted ten soil samples on August 22, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form. Select samples have been placed on hold pending further instructions.

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

XC0086

LANDAU ASSOCIATES

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ _____

Chain-of-Custody Record

Date 8-22-13
Page 1 of 1

Project Name Kaiser IA Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name BHTB, DAR
Project Contact Dave Pischer
Send Results To Jessica Stone, Sierra Mott, Anne Halvorsen, Bill Evans, Dave Pischer

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1 week TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAH-8270D	NWTPH-Dx	*Hold	Observations/Comments
RMLF-SP1-082213	8-22-13	1032	Soil	1	X	X		
RMLF-SP2-082213		1039					X	
RMLF-SP3-082213		1045			X	X		
RMLF-SP4-082213		1053					X	
RMLF-SP5-082213		1103			X	X		
RMLF-SP6-082213		1110					X	
RMLF-SP7-082213		1119			X	X		
RMLF-SP8-082213		1127					X	
RMLF-SP9-082213		1135			X	X		
RMLF-SP10-082213		1142					X	

Testing Parameters

X Allow water samples to settle, collect aliquot from clear portion
X NWTPH-Dx - run acid wash/silica gel cleanup
___ run samples standardized to _____ product
___ Analyze for EPH if no specific product identified
VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered
Other * Archive Sample pending results.

Special Shipment/Handling or Storage Requirements: On ice
Method of Shipment: Courier

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Rich Hudson	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name:	Printed Name:	Printed Name:
Company: LAI	Company: ARI	Company:	Company:
Date: 8-22-13 Time: 1245	Date: 8/22/13 Time: 1245	Date: Time:	Date: Time:

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

XC0086 : 0086

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client LAI Project Name: Kaiser IA

COC No(s) _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other _____

Assigned ARI Job No. XC06 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry)		8.2

If cooler temperature is out of compliance ~~fill out form 00070F~~ Temp Gun ID#: 12241222 4

Cooler Accepted by: _____ Date: 8/22/13 Time: 1245

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 8/22/13 Time: 1745

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm	Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1	Temperature(°C): 8.2	
Sample ID	**Bottle Count**	**Bottle Type**
All Samples received above 6°C		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: AV Date: 8/22/13 Time: 1735

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XC06
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-SP1-082213	XC06A	13-17540	Soil	08/22/13 10:32	08/22/13 12:45
2.	RMLF-SP3-082213	XC06B	13-17541	Soil	08/22/13 10:45	08/22/13 12:45
3.	RMLF-SP5-082213	XC06C	13-17542	Soil	08/22/13 11:03	08/22/13 12:45
4.	RMLF-SP7-082213	XC06D	13-17543	Soil	08/22/13 11:19	08/22/13 12:45
5.	RMLF-SP9-082213	XC06E	13-17544	Soil	08/22/13 11:35	08/22/13 12:45
6.	RMLF-SP2-082213	XC06F	13-17545	Soil	08/22/13 10:39	08/22/13 12:45
7.	RMLF-SP4-082213	XC06G	13-17546	Soil	08/22/13 10:53	08/22/13 12:45
8.	RMLF-SP6-082213	XC06H	13-17547	Soil	08/22/13 11:10	08/22/13 12:45
9.	RMLF-SP8-082213	XC06I	13-17548	Soil	08/22/13 11:27	08/22/13 12:45
10.	RMLF-SP10-082213	XC06J	13-17549	Soil	08/22/13 11:42	08/22/13 12:45

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SP1-082213
SAMPLE

Lab Sample ID: XC06A
LIMS ID: 13-17540
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 01:53
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.86 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 2.3%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**64**	**890**
218-01-9	**Chrysene**	**64**	**1,300**
50-32-8	**Benzo(a)pyrene**	**64**	**910**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**64**	**600**
53-70-3	**Dibenz(a,h)anthracene**	**64**	**300**
TOTBFA	**Total Benzofluoranthenes**	**64**	**1,700**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	67.2%
2-Fluorobiphenyl	63.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SP3-082213
SAMPLE

Lab Sample ID: XC06B
LIMS ID: 13-17541
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 02:27
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.72 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.6%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**65**	**4,800**
218-01-9	**Chrysene**	**65**	**5,400 E**
50-32-8	**Benzo(a)pyrene**	**65**	**4,400**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**65**	**2,400**
53-70-3	**Dibenz(a,h)anthracene**	**65**	**1,300**
TOTBFA	**Total Benzofluoranthenes**	**65**	**6,600**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	73.2%
2-Fluorobiphenyl	68.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: RMLF-SP3-082213
DILUTION

Lab Sample ID: XC06B
LIMS ID: 13-17541
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 12:18
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.72 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 3.6%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**190**	**5,100**
218-01-9	**Chrysene**	**190**	**6,200**
50-32-8	**Benzo(a)pyrene**	**190**	**5,100**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**190**	**2,600**
53-70-3	**Dibenz(a,h)anthracene**	**190**	**1,300**
TOTBFA	**Total Benzofluoranthenes**	**190**	**7,900**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	74.6%
2-Fluorobiphenyl	66.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SP5-082213
SAMPLE

Lab Sample ID: XC06C
LIMS ID: 13-17542
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 10:36
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.74 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	65	< 65 U
218-01-9	**Chrysene**	**65**	**160**
50-32-8	Benzo(a)pyrene	65	< 65 U
193-39-5	Indeno(1,2,3-cd)pyrene	65	< 65 U
53-70-3	Dibenz(a,h)anthracene	65	< 65 U
TOTBFA	**Total Benzofluoranthenes**	**65**	**130**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	71.6%
2-Fluorobiphenyl	60.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SP7-082213
SAMPLE

Lab Sample ID: XC06D
LIMS ID: 13-17543
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 11:10
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.80 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 2.7%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**64**	**1,100**
218-01-9	**Chrysene**	**64**	**1,700**
50-32-8	**Benzo(a)pyrene**	**64**	**1,200**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**64**	**810**
53-70-3	**Dibenz(a,h)anthracene**	**64**	**400**
TOTBFA	**Total Benzofluoranthenes**	**64**	**2,200**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	76.4%
2-Fluorobiphenyl	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SP9-082213
SAMPLE

Lab Sample ID: XC06E
LIMS ID: 13-17544
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 11:44
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.85 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 2.5%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**64**	**530**
218-01-9	**Chrysene**	**64**	**1,200**
50-32-8	**Benzo(a)pyrene**	**64**	**600**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**64**	**330**
53-70-3	**Dibenz(a,h)anthracene**	**64**	**150**
TOTBFA	**Total Benzofluoranthenes**	**64**	**1,200**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	74.4%
2-Fluorobiphenyl	64.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-082313
METHOD BLANK

Lab Sample ID: MB-082313
LIMS ID: 13-17540
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/23/13
Date Analyzed: 08/23/13 20:47
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	87.6%
2-Fluorobiphenyl	66.8%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-082313	87.6%	66.8%	0
LCS-082313	82.4%	62.8%	0
LCSD-082313	84.4%	66.0%	0
RMLF-SP1-082213	67.2%	63.6%	0
RMLF-SP3-082213	73.2%	68.4%	0
RMLF-SP3-082213 DL	74.6%	66.6%	0
RMLF-SP5-082213	71.6%	60.4%	0
RMLF-SP7-082213	76.4%	62.8%	0
RMLF-SP9-082213	74.4%	64.0%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-17540 to 13-17544

FORM-II SW8270 PNA

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-082313
LCS/LCSD

Lab Sample ID: LCS-082313
LIMS ID: 13-17540
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/22/13

Date Extracted LCS/LCSD: 08/23/13

Date Analyzed LCS: 08/23/13 21:21
LCSD: 08/23/13 21:55
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: Yes
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1350	1670	80.8%	1380	1670	82.6%	2.2%
Chrysene	1330	1670	79.6%	1370	1670	82.0%	3.0%
Benzo(a)pyrene	1330	1670	79.6%	1370	1670	82.0%	3.0%
Indeno(1,2,3-cd)pyrene	1340	1670	80.2%	1370	1670	82.0%	2.2%
Dibenz(a,h)anthracene	1350	1670	80.8%	1350	1670	80.8%	0.0%
Total Benzofluoranthenes	2800	3330	84.1%	2890	3330	86.8%	3.2%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	82.4%	84.4%
2-Fluorobiphenyl	62.8%	66.0%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method: SW3546

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-082313	Method Blank	08/23/13	08/23/13	1.00	Diesel Range	5.0	< 5.0 U
13-17540	HC ID: ---		FID3B	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		94.5%
XC06A	RMLF-SP1-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**5.0**	**150**
13-17540	HC ID: **DIESEL/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**10**	**360**
					o-Terphenyl		54.9%
XC06B	RMLF-SP3-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**5.2**	**31**
13-17541	HC ID: **DIESEL/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**10**	**41**
					o-Terphenyl		79.0%
XC06C	RMLF-SP5-082213	08/23/13	08/23/13	1.00	Diesel Range	5.1	< 5.1 U
13-17542	HC ID: ---		FID3B	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		85.0%
XC06D	RMLF-SP7-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**5.1**	**19**
13-17543	HC ID: **DIESEL/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**10**	**23**
					o-Terphenyl		77.3%
XC06E	RMLF-SP9-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**5.0**	**9.9**
13-17544	HC ID: **DIESEL**		FID3B	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		80.6%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-082313**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-082313 QC Report No: XC06-Landau Associates, Inc.
LIMS ID: 13-17540 Project: Kaiser IA
Matrix: Soil 118033.100.104
Data Release Authorized: Date Sampled: 08/22/13
Reported: 08/26/13 Date Received: 08/22/13

Date Extracted LCS/LCSD: 08/23/13 Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Date Analyzed LCS: 08/23/13 16:31 Final Extract Volume LCS: 1.0 mL
LCSD: 08/23/13 16:56 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.0
LCSD: FID/JLW LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	129	150	86.0%	122	150	81.3%	5.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	93.8%	84.6%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XC06-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
MB-082313	94.5%	0
LCS-082313	93.8%	0
LCSD-082313	84.6%	0
RMLF-SP1-082213	54.9%	0
RMLF-SP3-082213	79.0%	0
RMLF-SP5-082213	85.0%	0
RMLF-SP7-082213	77.3%	0
RMLF-SP9-082213	80.6%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-17540 to 13-17544

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XC06
Matrix: Soil Project: Kaiser IA
Date Received: 08/22/13 118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-17540-082313MB1	Method Blank	10.0 g	1.00 mL	-	08/23/13
13-17540-082313LCS1	Lab Control	10.0 g	1.00 mL	-	08/23/13
13-17540-082313LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/23/13
13-17540-XC06A	RMLF-SP1-082213	10.0 g	1.00 mL	D	08/23/13
13-17541-XC06B	RMLF-SP3-082213	9.69 g	1.00 mL	D	08/23/13
13-17542-XC06C	RMLF-SP5-082213	9.84 g	1.00 mL	D	08/23/13
13-17543-XC06D	RMLF-SP7-082213	9.81 g	1.00 mL	D	08/23/13
13-17544-XC06E	RMLF-SP9-082213	9.92 g	1.00 mL	D	08/23/13

Basis: D=Dry Weight W=As Received

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 26, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XC07

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted six soil samples on August 22, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ _____

X007

Date 8-22-13
Page 1 of 1

Chain-of-Custody Record

Project Name Kaiser IA Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name BHB, DAR
Project Contact Dave Pischer
Send Results To Anne Halvorsen, Bill Evans, Dave Pischer, Jessica Stone, Sierra Mott

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAH-8270D	NWTPH-Dx
RMLF-EWB-082213	8-22-13	0810	Soil	1	X	X
RMLF-EWT-082213	8-22-13	0815	Soil	1	X	X
RMLF-NWT-082213	8-22-13	0825	Soil	1	X	X
RMLF-NWB-082213	8-22-13	0830	Soil	1	X	X
RMLF-WWT-082213	8-22-13	0840	Soil	1	X	X
RMLF-WWB-082213	8-22-13	0845	Soil	1	X	X

Testing Parameters

Observations/Comments

_X_ Allow water samples to settle, collect aliquot from clear portion

_X_ NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements: On ice

Method of Shipment: Courier

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature:	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name: Rich Hudson	Printed Name:	Printed Name:
Company: LAI	Company: ARI	Company:	Company:
Date: 8-22-13 Time: 1245	Date: 8/22/13 Time: 1245	Date: Time:	Date: Time:

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

X007 : 8/22/13

Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client LAI

Project Name Kaiser ID

COC No(s) _____ (NA)

Delivered by Fed-Ex UPS Courier Hand Delivered Other _____

Assigned ARI Job No XC07

Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? .... YES NO

Were custody papers properly filled out (ink, signed, etc.) .. YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry) 8.2

If cooler temperature is out of compliance ~~fill out form00070F~~ Temp Gun ID#: 12241 2224

Cooler Accepted by: _____ Date: 8/22/13 Time: 1245

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES (NO)

What kind of packing material was used? . . Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ..... NA YES (NO)

Were all bottles sealed in individual plastic bags? ..... (YES) NO

Did all bottles arrive in good condition (unbroken)? ..... (YES) NO

Were all bottle labels complete and legible? ..... (YES) NO

Did the number of containers listed on COC match with the number of containers received? ..... (YES) NO

Did all bottle labels and tags agree with custody papers? ..... (YES) NO

Were all bottles used correct for the requested analyses? ..... (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) .. (NA) YES NO

Were all VOC vials free of air bubbles? ..... (NA) YES NO

Was sufficient amount of sample sent in each bottle? ..... (YES) NO

Date VOC Trip Blank was made at ARI ..... (NA) _____

Was Sample Split by ARI: (NA) YES Date/Time _____ Equipment _____ Split by: _____

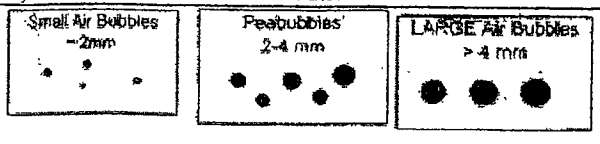
Samples Logged by: AV Date: 8/22/13 Time: 1735

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1	Temperature(°C): 8.2	
Sample ID	**Bottle Count**	**Bottle Type**
All Samples received above 6°C		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: AV Date: 8/22/13 Time: 1735

XC07 : 00004

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XC07
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-EWB-082213	XC07A	13-17534	Soil	08/22/13 08:10	08/22/13 12:45
2.	RMLF-EWT-082213	XC07B	13-17535	Soil	08/22/13 08:15	08/22/13 12:45
3.	RMLF-NWT-082213	XC07C	13-17536	Soil	08/22/13 08:25	08/22/13 12:45
4.	RMLF-NWB-082213	XC07D	13-17537	Soil	08/22/13 08:30	08/22/13 12:45
5.	RMLF-WWT-082213	XC07E	13-17538	Soil	08/22/13 08:40	08/22/13 12:45
6.	RMLF-WWB-082213	XC07F	13-17539	Soil	08/22/13 08:45	08/22/13 12:45

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method: SW3546

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-082313	Method Blank	08/23/13	08/23/13	1.00	Diesel Range	5.0	< 5.0 U
13-17534	HC ID: ---		FID3B	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		94.5%
XC07A	RMLF-EWB-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**6.5**	**11**
13-17534	HC ID: **DIESEL**		FID3B	1.0	Motor Oil Range	13	< 13 U
					o-Terphenyl		82.0%
XC07B	RMLF-EWT-082213	08/23/13	08/23/13	1.00	Diesel Range	5.3	< 5.3 U
13-17535	HC ID: ---		FID3B	1.0	Motor Oil Range	11	< 11 U
					o-Terphenyl		88.4%
XC07C	RMLF-NWT-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**5.1**	**140**
13-17536	HC ID: **DIESEL/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**10**	**390**
					o-Terphenyl		57.4%
XC07D	RMLF-NWB-082213	08/23/13	08/23/13	1.00	**Diesel Range**	**6.4**	**11**
13-17537	HC ID: **DIESEL**		FID3B	1.0	Motor Oil Range	13	< 13 U
					o-Terphenyl		81.8%
XC07E	RMLF-WWT-082213	08/23/13	08/23/13	1.00	Diesel Range	5.3	< 5.3 U
13-17538	HC ID: ---		FID3B	1.0	Motor Oil Range	11	< 11 U
					o-Terphenyl		87.7%
XC07F	RMLF-WWB-082213	08/23/13	08/23/13	1.00	Diesel Range	5.1	< 5.1 U
13-17539	HC ID: ---		FID3B	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		87.3%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-082313**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-082313
LIMS ID: 13-17534
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted LCS/LCSD: 08/23/13

Date Analyzed LCS: 08/23/13 16:31
LCSD: 08/23/13 16:56
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	129	150	86.0%	122	150	81.3%	5.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	93.8%	84.6%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
MB-082313	94.5%	0
LCS-082313	93.8%	0
LCSD-082313	84.6%	0
RMLF-EWB-082213	82.0%	0
RMLF-EWT-082213	88.4%	0
RMLF-NWT-082213	57.4%	0
RMLF-NWB-082213	81.8%	0
RMLF-WWT-082213	87.7%	0
RMLF-WWB-082213	87.3%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-17534 to 13-17539

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 08/22/13

ARI Job: XC07
Project: Kaiser IA
118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-17534-082313MB1	Method Blank	10.0 g	1.00 mL	-	08/23/13
13-17534-082313LCS1	Lab Control	10.0 g	1.00 mL	-	08/23/13
13-17534-082313LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	08/23/13
13-17534-XC07A	RMLF-EWB-082213	7.74 g	1.00 mL	D	08/23/13
13-17535-XC07B	RMLF-EWT-082213	9.47 g	1.00 mL	D	08/23/13
13-17536-XC07C	RMLF-NWT-082213	9.73 g	1.00 mL	D	08/23/13
13-17537-XC07D	RMLF-NWB-082213	7.80 g	1.00 mL	D	08/23/13
13-17538-XC07E	RMLF-WWT-082213	9.36 g	1.00 mL	D	08/23/13
13-17539-XC07F	RMLF-WWB-082213	9.77 g	1.00 mL	D	08/23/13

Basis: D=Dry Weight W=As Received

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-EWB-082213
SAMPLE

Lab Sample ID: XC07A
LIMS ID: 13-17534
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/23/13 22:29
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.59 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 24.4%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	75.2%
2-Fluorobiphenyl	60.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-EWT-082213
SAMPLE

Lab Sample ID: XC07B
LIMS ID: 13-17535
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/23/13 23:03
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.59 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	76.4%
2-Fluorobiphenyl	61.2%

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: RMLF-NWT-082213
SAMPLE

Lab Sample ID: XC07C
LIMS ID: 13-17536
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/23/13 23:37
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.75 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.2%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	64	< 64 U
218-01-9	Chrysene	64	< 64 U
50-32-8	Benzo(a)pyrene	64	< 64 U
193-39-5	Indeno(1,2,3-cd)pyrene	64	< 64 U
53-70-3	Dibenz(a,h)anthracene	64	< 64 U
TOTBFA	Total Benzofluoranthenes	64	< 64 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	66.8%
2-Fluorobiphenyl	65.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-NWB-082213
SAMPLE

Lab Sample ID: XC07D
LIMS ID: 13-17537
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 00:11
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.71 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 23.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	65	< 65 U
218-01-9	Chrysene	65	< 65 U
50-32-8	Benzo(a)pyrene	65	< 65 U
193-39-5	Indeno(1,2,3-cd)pyrene	65	< 65 U
53-70-3	Dibenz(a,h)anthracene	65	< 65 U
TOTBFA	Total Benzofluoranthenes	65	< 65 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	68.4%
2-Fluorobiphenyl	55.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-WWT-082213
SAMPLE

Lab Sample ID: XC07E
LIMS ID: 13-17538
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 00:45
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 8.31 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 7.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	60	< 60 U
218-01-9	Chrysene	60	< 60 U
50-32-8	Benzo(a)pyrene	60	< 60 U
193-39-5	Indeno(1,2,3-cd)pyrene	60	< 60 U
53-70-3	Dibenz(a,h)anthracene	60	< 60 U
TOTBFA	Total Benzofluoranthenes	60	< 60 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	71.2%
2-Fluorobiphenyl	57.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-WWB-082213
SAMPLE

Lab Sample ID: XC07F
LIMS ID: 13-17539
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 08/22/13
Date Received: 08/22/13

Date Extracted: 08/23/13
Date Analyzed: 08/24/13 01:19
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.64 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	65	< 65 U
218-01-9	Chrysene	65	< 65 U
50-32-8	Benzo(a)pyrene	65	< 65 U
193-39-5	Indeno(1,2,3-cd)pyrene	65	< 65 U
53-70-3	Dibenz(a,h)anthracene	65	< 65 U
TOTBFA	Total Benzofluoranthenes	65	< 65 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	77.2%
2-Fluorobiphenyl	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-082313
METHOD BLANK

Lab Sample ID: MB-082313
LIMS ID: 13-17534
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 08/23/13
Date Analyzed: 08/23/13 20:47
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	87.6%
2-Fluorobiphenyl	66.8%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-082313	87.6%	66.8%	0
LCS-082313	82.4%	62.8%	0
LCSD-082313	84.4%	66.0%	0
RMLF-EWB-082213	75.2%	60.4%	0
RMLF-EWT-082213	76.4%	61.2%	0
RMLF-NWT-082213	66.8%	65.6%	0
RMLF-NWB-082213	68.4%	55.6%	0
RMLF-WWT-082213	71.2%	57.2%	0
RMLF-WWB-082213	77.2%	60.0%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-17534 to 13-17539

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-082313
LCS/LCSD

Lab Sample ID: LCS-082313
LIMS ID: 13-17534
Matrix: Soil
Data Release Authorized:
Reported: 08/26/13

QC Report No: XC07-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 08/22/13

Date Extracted LCS/LCSD: 08/23/13

Date Analyzed LCS: 08/23/13 21:21
LCSD: 08/23/13 21:55
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: Yes
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1350	1670	80.8%	1380	1670	82.6%	2.2%
Chrysene	1330	1670	79.6%	1370	1670	82.0%	3.0%
Benzo(a)pyrene	1330	1670	79.6%	1370	1670	82.0%	3.0%
Indeno(1,2,3-cd)pyrene	1340	1670	80.2%	1370	1670	82.0%	2.2%
Dibenz(a,h)anthracene	1350	1670	80.8%	1350	1670	80.8%	0.0%
Total Benzofluoranthenes	2800	3330	84.1%	2890	3330	86.8%	3.2%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	82.4%	84.4%
2-Fluorobiphenyl	62.8%	66.0%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 19, 2013

Jessica Stone
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XF45 I

Dear Jessica:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted seven soil samples on September 17, 2013 in good condition. Samples; RML-1-20130917, RML-13-20130917, BF-I-20130917, bf-2-20130917, and BF-3-20130917 were reported under XF45 I. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

XE451:00002

[redacted]

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ ____

Date 9/17/13
Page 1 of 1

Chain-of-Custody Record

Project Name: Kaiser IA Project No. 118033.100.104
Project Location/Event: Kaiser Port of Tacoma
Sampler's Name: DAR / DAM
Project Contact: Dave Pischer
Send Results To: Anne Halvorsen, Bill Evans, Dave Pischer, Jessica Stone, Sierra Mott

Testing Parameters: CPAH 8270D; NWTPH-Dx

Sample I.D.	Date	Time	Matrix	No. of Containers	CPAH 8270D	NWTPH-Dx
RML-1-20130917	9/17/13	1244	SOIL	1	x	x
RML-13-20130917	↓	1227	↓	↓	↓	↓
BF-1-20130917	↓	1340	↓	↓	↓	↓
BF-2-20130917	↓	1250	↓	↓	↓	↓
BF-3-20130917	↓	1306	↓	↓	↓	↓

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 day TAT for RML-1-20130917 and RML-13-20130917
3 day TAT for BF-1-20130917, BF-2-20130917 and BF-3-20130917

Observations/Comments
X Allow water samples to settle, collect aliquot from clear portion
X NWTPH-Dx - run acid wash/silica gel cleanup
___ run samples standardized to ____ product
___ Analyze for EPH if no specific product identified
VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered
Other ____

Special Shipment/Handling or Storage Requirements: Ice

Method of Shipment: Courier

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: Dan Malkemus	Printed Name: Rich Hudson	Printed Name	Printed Name
Company: LAI	Company: ARI	Company	Company
Date: 9/17/13 Time: 1355	Date: 9/17/13 Time: 1355	Date ___ Time ___	Date ___ Time ___

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XF45
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RML-1-20130917	XF45A	13-19664	Soil	09/17/13 12:44	09/17/13 13:55
2.	RML-13-20130917	XF45B	13-19665	Soil	09/17/13 12:27	09/17/13 13:55
3.	BF-1-20130917	XF45C	13-19666	Soil	09/17/13 13:40	09/17/13 13:55
4.	BF-2-20130917	XF45D	13-19667	Soil	09/17/13 12:50	09/17/13 13:55
5.	BF-3-20130917	XF45E	13-19668	Soil	09/17/13 13:06	09/17/13 13:55
6.	SPL-21-20130917	XF45F	13-19669	Soil	09/17/13 11:35	09/17/13 13:55
7.	SPL-22-20130917	XF45G	13-19670	Soil	09/17/13 11:25	09/17/13 13:55

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Kaiser, IA

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: XF45

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	4.1	

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 12241222 9

Cooler Accepted by: _____ Date: 9/17/13 Time: 1355

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ...	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		_____

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 9/17/13 Time: 1536

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to <4 mm)
Large → "lg" (4 to <6 mm)
Headspace → "hs" (>6 mm)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method: SW3546

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-091813	Method Blank	09/18/13	09/18/13	1.00	Diesel Range	5.0	< 5.0 U
13-19664	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		86.9%
XF45A	RML-1-20130917	09/18/13	09/18/13	1.00	Diesel Range	7.9	< 7.9 U
13-19664	HC ID: ---		FID9	1.0	Motor Oil Range	16	< 16 U
					o-Terphenyl		64.7%
XF45B	RML-13-20130917	09/18/13	09/18/13	1.00	**Diesel Range**	**7.9**	**34**
13-19665	HC ID: **DIESEL**		FID9	1.0	Motor Oil Range	16	< 16 U
					o-Terphenyl		70.4%
XF45C	BF-1-20130917	09/18/13	09/18/13	1.00	**Diesel Range**	**5.2**	**320 E**
13-19666	HC ID: **DRO/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**10**	**660 E**
					o-Terphenyl		59.9%
XF45C DL	BF-1-20130917	09/18/13	09/19/13	1.00	**Diesel Range**	**52**	**340**
13-19666	HC ID: **DRO/MOTOR OIL**		FID9	10	**Motor Oil Range**	**100**	**680**
					o-Terphenyl		61.3%
XF45D	BF-2-20130917	09/18/13	09/18/13	1.00	Diesel Range	5.2	< 5.2 U
13-19667	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		90.1%
XF45E	BF-3-20130917	09/18/13	09/18/13	1.00	Diesel Range	5.3	< 5.3 U
13-19668	HC ID: ---		FID9	1.0	Motor Oil Range	11	< 11 U
					o-Terphenyl		90.2%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
MB-091813	86.9%	0
LCS-091813	86.7%	0
LCSD-091813	91.7%	0
RML-1-20130917	64.7%	0
RML-13-20130917	70.4%	0
BF-1-20130917	59.9%	0
BF-1-20130917 DL	61.3%	0
BF-2-20130917	90.1%	0
BF-3-20130917	90.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-19664 to 13-19668

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-091813**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-091813 QC Report No: XF45-Landau Associates, Inc.
LIMS ID: 13-19664 Project: Kaiser IA
Matrix: Soil 118033.100.104
Data Release Authorized: Date Sampled: 09/17/13
Reported: 09/19/13 Date Received: 09/17/13

Date Extracted LCS/LCSD: 09/18/13 Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Date Analyzed LCS: 09/18/13 17:24 Final Extract Volume LCS: 1.0 mL
LCSD: 09/18/13 17:46 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.0
LCSD: FID/JLW LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	116	150	77.3%	124	150	82.7%	6.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	86.7%	91.7%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

XF45I : 09097

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XF45
Matrix: Soil Project: Kaiser IA
Date Received: 09/17/13 118033.100.104

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-19664-091813MB1	Method Blank	10.0 g	1.00 mL	-	09/18/13
13-19664-091813LCS1	Lab Control	10.0 g	1.00 mL	-	09/18/13
13-19664-091813LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	09/18/13
13-19664-XF45A	RML-1-20130917	6.31 g	1.00 mL	D	09/18/13
13-19665-XF45B	RML-13-20130917	6.31 g	1.00 mL	D	09/18/13
13-19666-XF45C	BF-1-20130917	9.54 g	1.00 mL	D	09/18/13
13-19667-XF45D	BF-2-20130917	9.63 g	1.00 mL	D	09/18/13
13-19668-XF45E	BF-3-20130917	9.47 g	1.00 mL	D	09/18/13

Basis: D=Dry Weight W=As Received

[redacted]

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RML-1-20130917
SAMPLE

Lab Sample ID: XF45A
LIMS ID: 13-19664
Matrix: Soil
Data Release Authorized: [signature]
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/17/13
Date Received: 09/17/13

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 18:37
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.55 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.5%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	69.6%
2-Fluorobiphenyl	70.0%

FORM I

[redacted]

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RML-13-20130917
SAMPLE

Lab Sample ID: XF45B
LIMS ID: 13-19665
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/17/13
Date Received: 09/17/13

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 19:11
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.56 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	59.6%
2-Fluorobiphenyl	61.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: BF-1-20130917
SAMPLE

Lab Sample ID: XF45C
LIMS ID: 13-19666
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/17/13
Date Received: 09/17/13

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 19:45
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.4%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	62.0%
2-Fluorobiphenyl	76.4%

FORM I

XF45I : 090913

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: BF-2-20130917
SAMPLE

Lab Sample ID: XF45D
LIMS ID: 13-19667
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/17/13
Date Received: 09/17/13

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 20:18
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.69 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	65	< 65 U
218-01-9	Chrysene	65	< 65 U
50-32-8	Benzo(a)pyrene	65	< 65 U
193-39-5	Indeno(1,2,3-cd)pyrene	65	< 65 U
53-70-3	Dibenz(a,h)anthracene	65	< 65 U
TOTBFA	Total Benzofluoranthenes	65	< 65 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	69.6%
2-Fluorobiphenyl	64.8%

FORM I

XF45I : 092412

[redacted]

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: BF-3-20130917
SAMPLE

Lab Sample ID: XF45E
LIMS ID: 13-19668
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/17/13
Date Received: 09/17/13

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 20:52
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	72.4%
2-Fluorobiphenyl	68.4%

FORM I

XF45I:092613

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-091813
METHOD BLANK

Lab Sample ID: MB-091813
LIMS ID: 13-19664
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 09/18/13
Date Analyzed: 09/18/13 16:56
Instrument/Analyst: NT6/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	80.4%
2-Fluorobiphenyl	65.6%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-091813	80.4%	65.6%	0
LCS-091813	84.8%	67.2%	0
LCSD-091813	86.4%	66.0%	0
RML-1-20130917	69.6%	70.0%	0
RML-13-20130917	59.6%	61.2%	0
BF-1-20130917	62.0%	76.4%	0
BF-2-20130917	69.6%	64.8%	0
BF-3-20130917	72.4%	68.4%	0
SPL-21-20130917	70.0%	64.4%	0
SPL-22-20130917	69.6%	62.4%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-19664 to 13-19670

FORM-II SW8270 PNA

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-091813
LCS/LCSD

Lab Sample ID: LCS-091813
LIMS ID: 13-19664
Matrix: Soil
Data Release Authorized:
Reported: 09/19/13

QC Report No: XF45-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 09/17/13

Date Extracted LCS/LCSD: 09/18/13

Date Analyzed LCS: 09/18/13 17:30
LCSD: 09/18/13 18:03
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1340	1670	80.2%	1380	1670	82.6%	2.9%
Chrysene	1350	1670	80.8%	1380	1670	82.6%	2.2%
Benzo(a)pyrene	1360	1670	81.4%	1390	1670	83.2%	2.2%
Indeno(1,2,3-cd)pyrene	1550	1670	92.8%	1610	1670	96.4%	3.8%
Dibenz(a,h)anthracene	1550	1670	92.8%	1600	1670	95.8%	3.2%
Total Benzofluoranthenes	2690	3330	80.8%	2770	3330	83.2%	2.9%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	84.8%	86.4%
2-Fluorobiphenyl	67.2%	66.0%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

FORM III

[redacted]

Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 20, 2013

Dave Pischer
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser IA
ARI Job No: XF63

Dear Dave:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on September 18, 2013 in good condition. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for cPAHs and NWTPH-Dx, as requested on the COC.

No analytical complications were noted.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

XF63

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ ______

Chain-of-Custody Record

Date 9/18/13
Page 1 of 1

Project Name Kaiser IA Project No. 118033.100.104
Project Location/Event Kaiser, Port of Tacoma
Sampler's Name DAR / DAM
Project Contact Dave Pischer
Send Results To Anne Halvorsen, Bill Evans, Dave Pischer, Jessica Stone, Sierra Mott

Turnaround Time
☐ Standard
☐ Accelerated
☒ 1-2 Day TAT

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAH 8270D	NWTPH-Dx									
RMLF - SWT-20130918	9/18/13	8:35	Soil	1	X	X									
RMLF - SWB-20130918	⊥	8:37	⊥	1	X	X									

Testing Parameters

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ______ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other ______

Special Shipment/Handling or Storage Requirements Ice

Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature]	Signature	Signature
Printed Name Don Malkomes	Printed Name Rick Hudson	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 9/18/13 Time 1320	Date 9/18/13 Time 1320	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

XF63 : 00002

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Kaiser IA

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:_____

Assigned ARI Job No: XF63

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	6.7	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#: 90877952	

Cooler Accepted by: _____ Date: 9/18/13 Time: 1320

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:_____			
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time:_____ Equipment:_____ Split by:_____

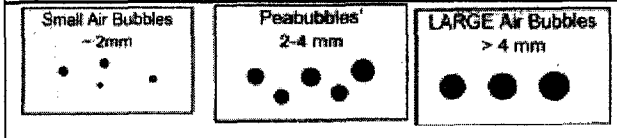
Samples Logged by: AV Date: 9/18/13 Time: 1555

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to <4 mm)
Large → "lg" (4 to <6 mm)
Headspace → "hs" (>6 mm)

XF63 : 00003

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1	Temperature(°C): 6.7	
Sample ID	**Bottle Count**	**Bottle Type**
All samples received above 6°C.		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: AV Date: 9/18/13 Time: 1555

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XF63
Client: Landau Associates, Inc.
Project Event: 118033.100.104
Project Name: Kaiser IA

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	RMLF-SWT-20130918	XF63A	13-19854	Soil	09/18/13 08:35	09/18/13 13:20
2.	RMLF-SWB-20130918	XF63B	13-19855	Soil	09/18/13 08:37	09/18/13 13:20

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: MB-091913
METHOD BLANK

Lab Sample ID: MB-091913
LIMS ID: 13-19854
Matrix: Soil
Data Release Authorized:
Reported: 09/20/13

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: NA

Date Extracted: 09/19/13
Date Analyzed: 09/19/13 16:50
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	67	< 67 U
218-01-9	Chrysene	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
TOTBFA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	88.0%
2-Fluorobiphenyl	64.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SWT-20130918
SAMPLE

Lab Sample ID: XF63A
LIMS ID: 13-19854
Matrix: Soil
Data Release Authorized: MW
Reported: 09/20/13

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/18/13
Date Received: 09/18/13

Date Extracted: 09/19/13
Date Analyzed: 09/19/13 18:20
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.62 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	75.2%
2-Fluorobiphenyl	57.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: RMLF-SWB-20130918
SAMPLE

Lab Sample ID: XF63B
LIMS ID: 13-19855
Matrix: Soil
Data Release Authorized: MW
Reported: 09/20/13

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: 09/18/13
Date Received: 09/18/13

Date Extracted: 09/19/13
Date Analyzed: 09/19/13 18:50
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Alumina: No
Silica Gel: No

Sample Amount: 7.59 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	66	< 66 U
218-01-9	Chrysene	66	< 66 U
50-32-8	Benzo(a)pyrene	66	< 66 U
193-39-5	Indeno(1,2,3-cd)pyrene	66	< 66 U
53-70-3	Dibenz(a,h)anthracene	66	< 66 U
TOTBFA	Total Benzofluoranthenes	66	< 66 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	66.0%
2-Fluorobiphenyl	50.8%

ANALYTICAL RESOURCES INCORPORATED

SW8270 PNA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	TER	FBP	TOT OUT
MB-091913	88.0%	64.8%	0
LCS-091913	82.8%	58.8%	0
LCSD-091913	79.2%	62.8%	0
RMLF-SWT-20130918	75.2%	57.6%	0
RMLF-SWB-20130918	66.0%	50.8%	0

	LCS/MB LIMITS	QC LIMITS
(TER) = d14-p-Terphenyl	(30-160)	(30-160)
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 13-19854 to 13-19855

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: LCS-091913
LCS/LCSD

Lab Sample ID: LCS-091913
LIMS ID: 13-19854
Matrix: Soil
Data Release Authorized: MW
Reported: 09/20/13

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104
Date Sampled: NA
Date Received: 09/18/13

Date Extracted LCS/LCSD: 09/19/13

Date Analyzed LCS: 09/19/13 17:20
LCSD: 09/19/13 17:50
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: No

Sample Amount LCS: 7.50 g-dry-wt
LCSD: 7.50 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1110	1670	66.5%	1080	1670	64.7%	2.7%
Chrysene	1100	1670	65.9%	1010	1670	60.5%	8.5%
Benzo(a)pyrene	1030	1670	61.7%	963	1670	57.7%	6.7%
Indeno(1,2,3-cd)pyrene	1280	1670	76.6%	1230	1670	73.7%	4.0%
Dibenz(a,h)anthracene	1340	1670	80.2%	1280	1670	76.6%	4.6%
Total Benzofluoranthenes	2400	3330	72.1%	2300	3330	69.1%	4.3%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	82.8%	79.2%
2-Fluorobiphenyl	58.8%	62.8%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method: SW3546
Page 1 of 1

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Matrix: Soil
Data Release Authorized: MW
Reported: 09/20/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-091813	Method Blank	09/18/13	09/19/13	1.00	Diesel Range	5.0	< 5.0 U
13-19854	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		90.9%
XF63A	RMLF-SWT-20130918	09/18/13	09/19/13	1.00	Diesel Range	5.2	< 5.2 U
13-19854	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		87.2%
XF63B	RMLF-SWB-20130918	09/18/13	09/19/13	1.00	Diesel Range	5.2	< 5.2 U
13-19855	HC ID: ---		FID9	1.0	Motor Oil Range	10	< 10 U
					o-Terphenyl		88.4%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: XF63-Landau Associates, Inc.
Project: Kaiser IA
118033.100.104

Client ID	OTER	TOT OUT
MB-091813	90.9%	0
LCS-091813	91.4%	0
LCSD-091813	91.2%	0
RMLF-SWT-20130918	87.2%	0
RMLF-SWB-20130918	88.4%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3546
Log Number Range: 13-19854 to 13-19855

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-091813**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-091813 QC Report No: XF63-Landau Associates, Inc.
LIMS ID: 13-19854 Project: Kaiser IA
Matrix: Soil 118033.100.104
Data Release Authorized: Date Sampled: 09/18/13
Reported: 09/20/13 Date Received: 09/18/13

Date Extracted LCS/LCSD: 09/18/13 Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Date Analyzed LCS: 09/19/13 12:10 Final Extract Volume LCS: 1.0 mL
LCSD: 09/19/13 12:33 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.0
LCSD: FID/JLW LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	130	150	86.7%	131	150	87.3%	0.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.4%	91.2%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XF63
Matrix: Soil Project: Kaiser IA
Date Received: 09/18/13 118033.100.104

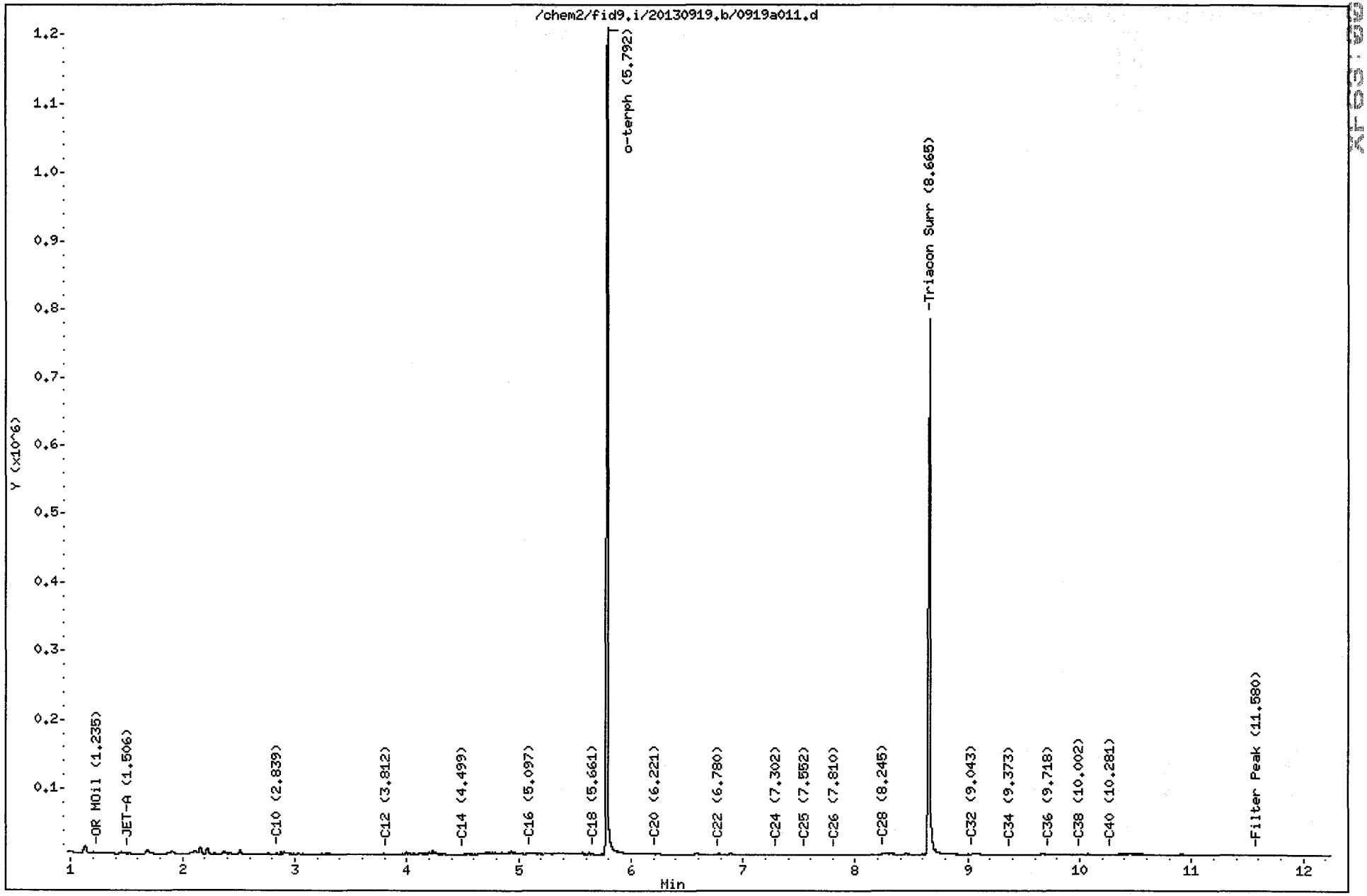
ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
13-19854-091813MB1	Method Blank	10.0 g	1.00 mL	-	09/18/13
13-19854-091813LCS1	Lab Control	10.0 g	1.00 mL	-	09/18/13
13-19854-091813LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	09/18/13
13-19854-XF63A	RMLF-SWT-20130918	9.57 g	1.00 mL	D	09/18/13
13-19855-XF63B	RMLF-SWB-20130918	9.54 g	1.00 mL	D	09/18/13

Basis: D=Dry Weight W=As Received

XF63 : 090617

Data File: /chem2/fid9.i/20130919.b/0919a011.d
Date : 19-SEP-2013 11:47
Client ID: XF63MBS1
Sample Info: XF63MBS1

Instrument: fid9.i
Operator: JW
Column phase: RTX-1
Column diameter: 0.25



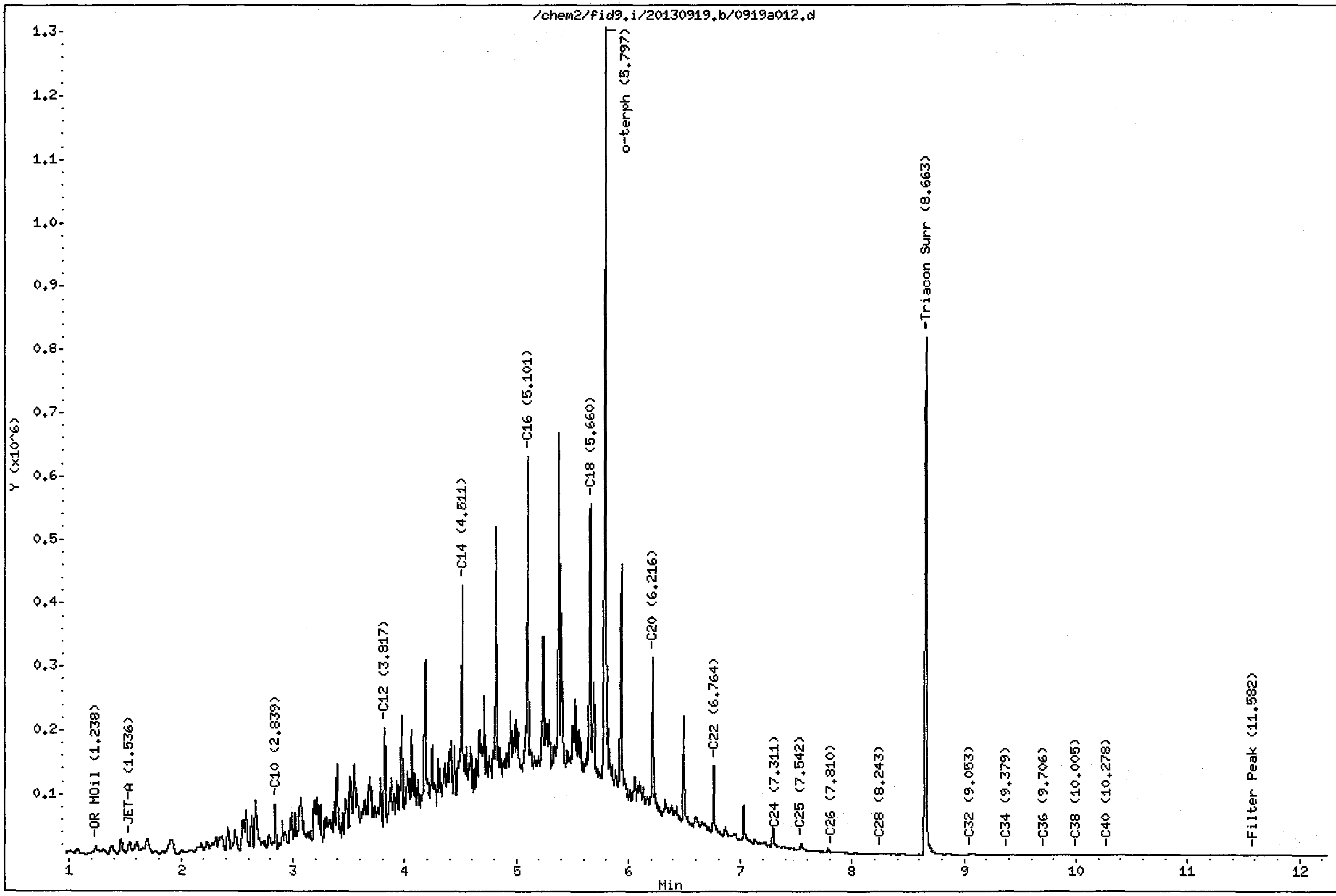
Data File: /chem2/fid9.i/20130919.b/0919a012.d
Date : 19-SEP-2013 12:10
Client ID: XF63LCSS1
Sample Info: XF63LCSS1

Column phase: RTX-1

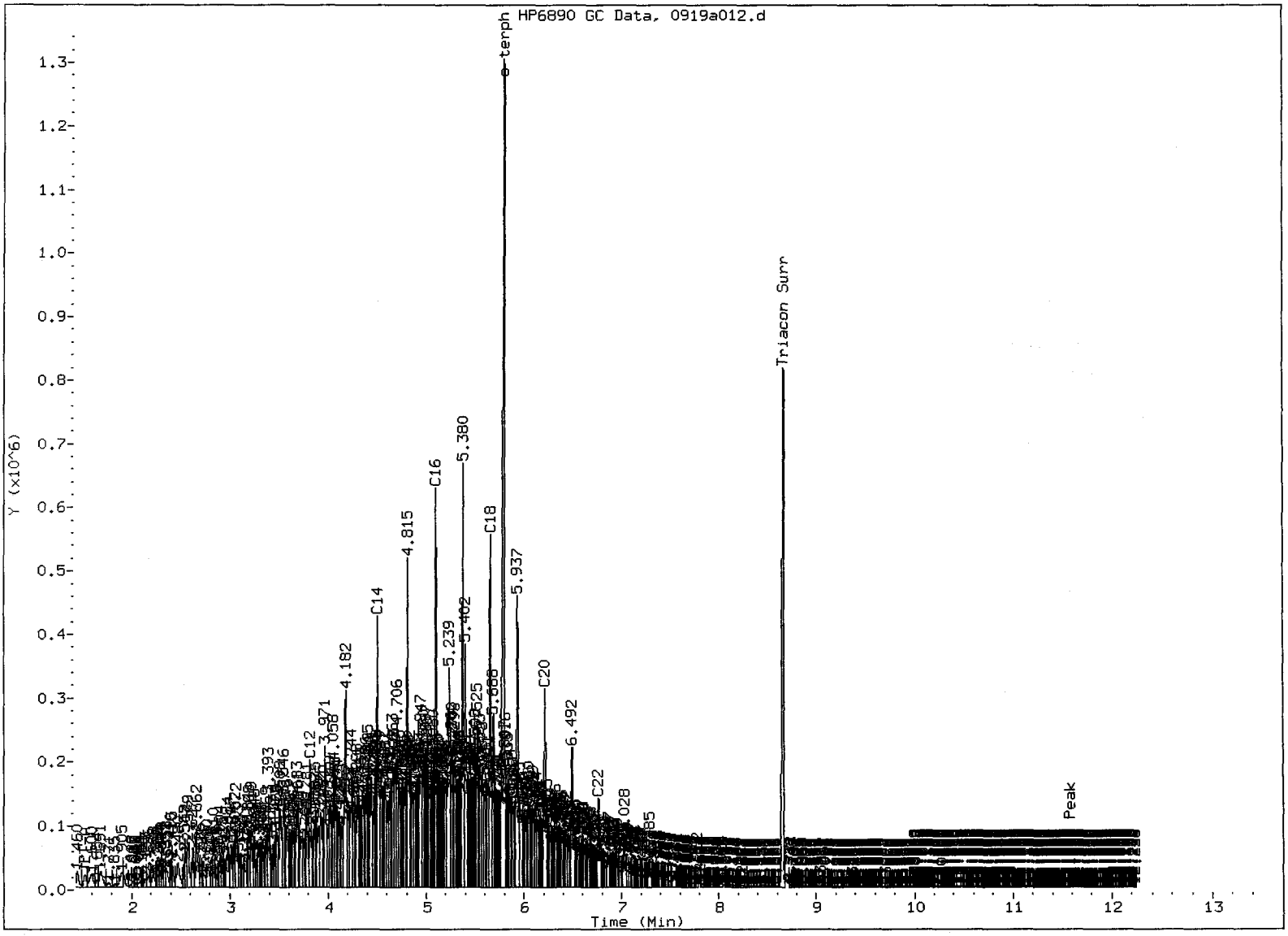
Instrument: fid9.i

Operator: JW
Column diameter: 0.25

JW 9/20/13



FID:9A-2C/RTX-1 XF63LCSS1 FID:9A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: BW Date: 9/20/13

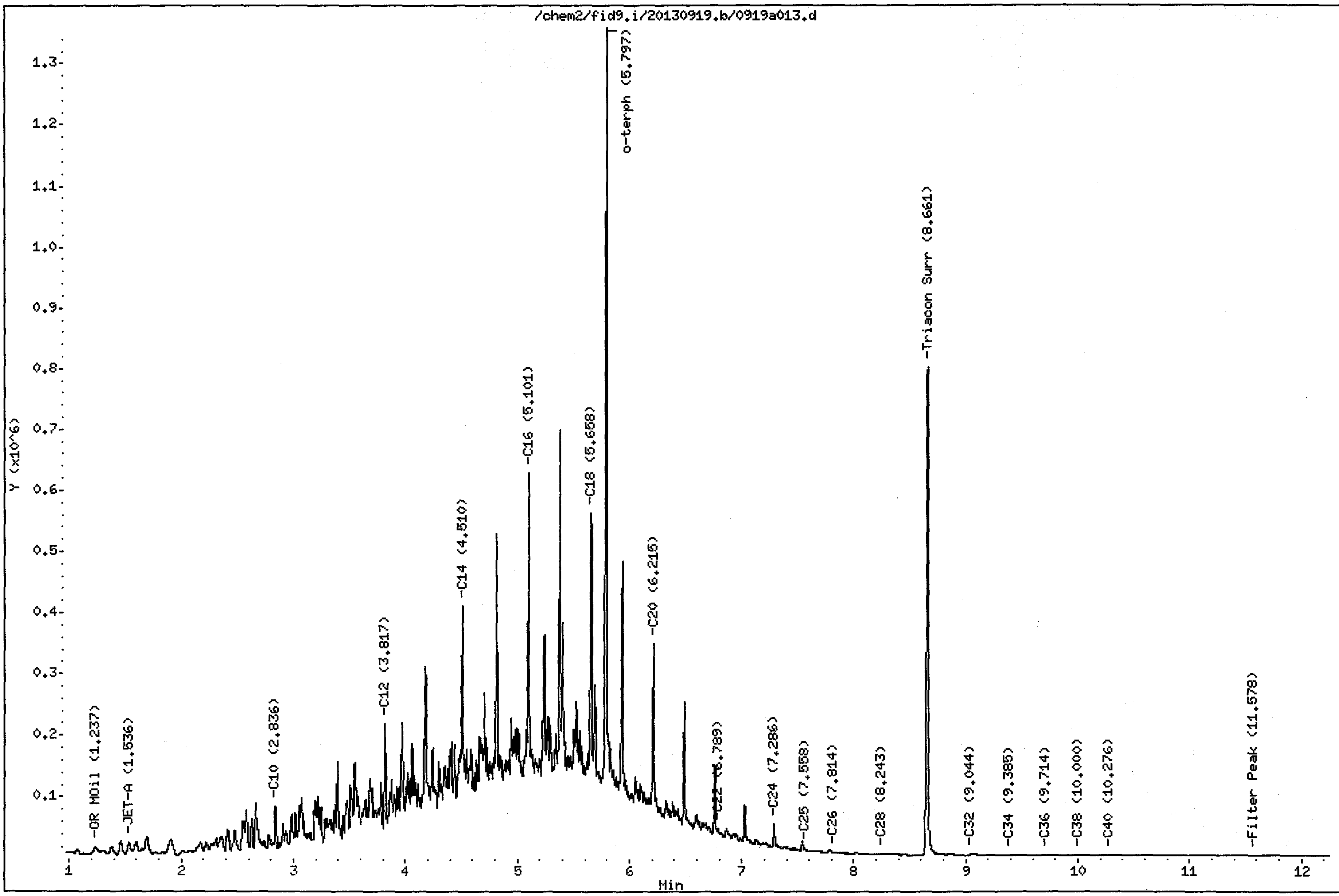
Data File: /chem2/fid9.i/20130919.b/0919a013.d
Date : 19-SEP-2013 12:33
Client ID: XF63LCSDS1
Sample Info: XF63LCSDS1

Column phase: RTX-1

Instrument: fid9.i

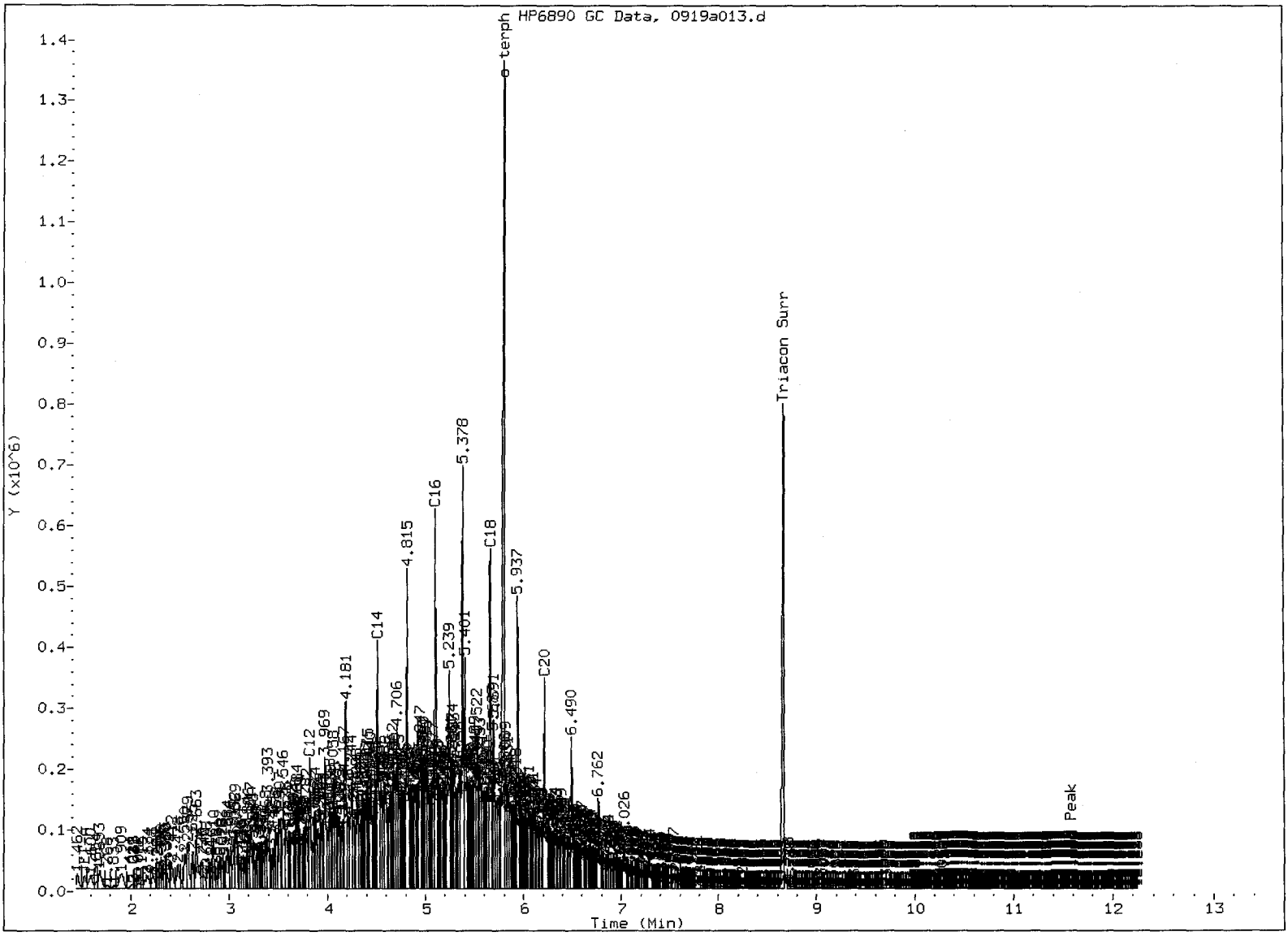
Operator: JW
Column diameter: 0.25

JW 9/20/13



XF63:00021

FID:9A-2C/RTX-1 XF63LCSDS1 FID:9A SIGNAL



MANUAL INTEGRATION

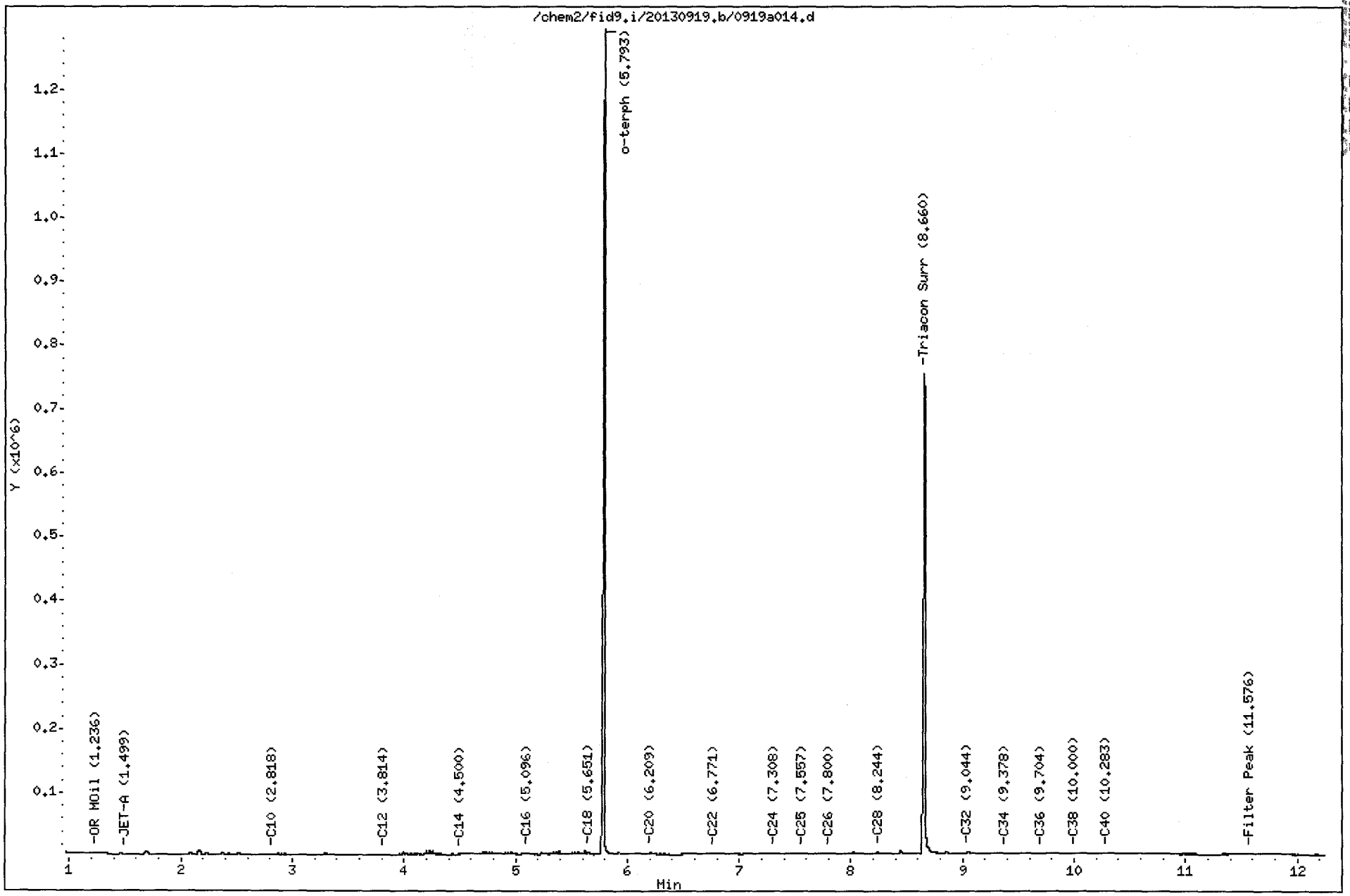
1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Surrogate Skimmed

Analyst: JW Date: 9/20/12

Data File: /chem2/fid9.i/20130919.b/0919a014.d
Date : 19-SEP-2013 12:55
Client ID: RMLF-SWT-20130918
Sample Info: XF63A

Instrument: fid9.i
Operator: JW
Column diameter: 0.25

Column phase: RTX-1



Data File: /chem2/fid9.i/20130919.b/0919a015.d

Date : 19-SEP-2013 13:18

Client ID: RMLF-SWB-20130918

Sample Info: XF63B

Column phase: RTX-1

Instrument: fid9.i

Operator: JW

Column diameter: 0.25