East Bay Site: Interim Action Work Plan

Public Comment Draft

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This document was prepared under my direction. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

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ACRONYMS AND ABBREVIATIONS

Acronym	Explanation
AO	Agreed Order No. DE5471
CMP	Compliance Monitoring Plan
COPC	Constituents of Potential Concern
cPAHs	Carcinogenic Polycyclic Aromatic Hydrocarbons
Dioxins/Furans	Chlorinated Dibenzo-p-dioxins and Chlorinated Dibenzofurans
Ecology	Washington State Department of Ecology
ECs	Engineering Controls
EDR	Engineering Design Report
FS	Feasibility Study
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IA	Interim Action
IACLs	Interim Action Cleanup Levels
IARUPLs	Interim Action Reuse Under Pavement Levels
IAWP	Interim Action Work Plan
MTCA	Model Toxics Control Act
NPDES	National Pollutant Discharge Elimination System
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PIONEER	PIONEER Technologies Corporation
Port	Port of Olympia
PPE	Personal Protective Equipment
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
SAP	Sampling and Analysis Plan
Site	East Bay Site
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons in the Diesel Range
TPH-G	Total Petroleum Hydrocarbons in the Gasoline Range
TPH-HO	Total Petroleum Hydrocarbons in the Heavy Oil Range
VCP	Voluntary Cleanup Program
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act

SECTION 1 – INTRODUCTION

1.1 Purpose

The purpose of this Interim Action Work Plan (IAWP) is to present the required planning documentation to support an Interim Action (IA) at the Port of Olympia's (Port's) East Bay Site (Site) in accordance with Agreed Order No. DE5471 (AO) and Model Toxics Control Act (MTCA) regulations in Washington Administrative Code (WAC) 173-340-430(7). This IAWP only applies to soil in the portions of the Site in which utility and road infrastructure improvements are planned in 2009.

1.2 Infrastructure Improvements Project Background

The Port, in conjunction with a wide variety of public and private partners (e.g., State of Washington, City of Olympia, LOTT Alliance, and Hands On Children's Museum), is redeveloping the approximately 14-acre Site located in Olympia, Washington (see Figure 1-1). This urban redevelopment project is very important to the Port, its partners, and the Olympia community due to the project's role in revitalizing downtown Olympia. It is expected that a new Hands On Children's Museum facility, public plaza, and a variety of mixed-use, urban buildings will be constructed at the Site in the near future.

Before these amenities can be built, a civil engineering construction project will be completed in 2009 to improve the existing infrastructure (e.g., underground utilities and roads) within the approximately 2.5-acres of public right-of-ways. The approximate location and layout of these right-of-ways (referred to in this document as the infrastructure corridor) are shown in Figure 1-1. These infrastructure improvements are necessary so that the property can be platted and prepared for redevelopment, and so that the project can receive state funding from the Public Facilities District. In summary, infrastructure improvement activities (Skillings-Connolly 2009b, Skillings-Connolly 2009c) will include:

- Demolition and reuse of unnecessary concrete and asphalt
- Decommissioning of unnecessary public utilities
- Installation of new public utilities (i.e., water, reclaimed water, sewer, storm water)
- Installation of new private utilities (e.g., electricity, natural gas, telephone, cable)
- Redevelopment of existing paved streets, including addition of bike lines and sidewalks
- Construction of new paved streets, bike lanes, and sidewalks

Since this is a designated MTCA Site and the infrastructure improvements will disturb subsurface soil, the infrastructure improvements project must satisfy the requirements of the MTCA IA described in this IAWP. In other words, this IAWP is designed to ensure the subsurface soil disturbances resulting from the infrastructure improvement project comply with applicable MTCA regulations and are protective of human health and the environment.

1.3 NPDES Permit Application

Since the depth of the utility excavations in some locations is expected to be below the depth to groundwater, dewatering of excavations will be conducted as necessary. This IAWP does not address any of the technical or administrative requirements associated with dewatering and associated wastewater disposal since those requirements are being addressed separately in accordance with the Port's National Pollutant Discharge Elimination System (NPDES) permit application. Likewise, this IAWP does not address issues related to stormwater control, which are also being addressed in the NPDES permit application. The Port's technical approach for addressing dewatering and stormwater control is presented in a dewatering engineering design report (EDR) (Skillings-Connolly 2009a). Rather than reiterate the technical and administrative requirements associated with construction dewatering and stormwater control, this IAWP simply references the NPDES permit application and/or EDR as appropriate.

SECTION 2 – SITE BACKGROUND

2.1 Site Description

The Site is located in the southeast corner of the Port Peninsula adjacent to the East Bay of Budd Inlet, Olympia, Washington (see Figure 1-1). The Site is relatively flat, with ground surface elevations ranging from approximately 10 to 12 feet above mean sea level. The Site has been used for commercial and light industrial purposes (e.g., wood processing and milling operations from the late 1800s to mid 1900s; warehouse and storage operations since circa 1970) from the late 1800s to 2008. The Site is situated on fill material deposited during a series of fill events over the past 100 to 150 years. More detailed information about Site history, features, and land uses are presented in the Remedial Investigation (RI) Work Plan (RIWP) (GeoEngineers and PIONEER 2008).

2.2 Regulatory Context

The Site originally entered into the Washington State Department of Ecology's (Ecology) Voluntary Cleanup Program (VCP) in 2007. Subsequently, the Port and Ecology entered an AO for the Site on October 3, 2008. In the AO, the Port agreed to submit the following deliverables to Ecology:

- RIWP (draft and final)
- IAWP (draft and final)
- IA Report (draft and final)
- RI Report (draft and final)
- Supplemental RIWP (draft and final), if necessary
- Supplemental RI Report (draft and final), if necessary

The RIWP was submitted to Ecology on October 22, 2008. This IAWP is the second major milestone document required by the AO.

2.3 Chronology of Investigations Applicable to IAWP

A number of environmental investigations were conducted at the Site prior to the AO effective date (and prior to Phase 1 of the RI). The results of these investigations are summarized in a VCP RI/Feasibility Study (FS) and Conceptual Cleanup Action Plan (GeoEngineers 2007) and the AO RIWP (GeoEngineers and PIONEER 2008). In general, most of the soil data collected prior to the Phase 1 RI was located outside of the infrastructure corridor, with the following exceptions. The following eight pre-RI soil sampling locations were located within or immediately adjacent to the infrastructure corridor: Boring 7, Boring 8, Boring 9, DP07, DP22, MW02, MW05, and TP03. Figure 1-1 shows the locations of the eight pre-RI soil sampling locations. A total of 10 discrete primary soil samples (and one duplicate) collected from these eight sampling locations were analyzed for metals, total petroleum hydrocarbons (TPH) in the diesel range (TPH-D), TPH in the heavy oil range (TPH-HO), TPH in the gasoline range (TPH-G), polychlorinated biphenyls (PCBs), semi-volatile organic compounds, volatile organic compounds, and/or

chlorinated dibenzo-p-dioxins / chlorinated dibenzofurans (dioxins/furans). A summary of the analytical results and the boring logs for these sample locations are included in Appendix A.

In November 2008, PIONEER Technologies Corporation (PIONEER) conducted Phase 1 of the RI in accordance with the RIWP (GeoEngineers and PIONEER, 2008) in order to provide soil data to support this IAWP. Eight soil borings (designated as DP32, DP33, DP40, DP36, DP38, DP30, DP27, and DP34) located within the infrastructure corridor were advanced and sampled during the Phase 1 RI. Figure 1-1 shows the locations of the eight Phase 1 RI borings. A total of 25 discrete soil samples collected from these eight borings were analyzed for metals, TPH-D, TPH-HO, polycyclic aromatic hydrocarbons (PAHs), TPH-G, benzene, toluene, ethylbenzene, xylenes, and/or dioxins/furans. Appendix B summarizes the methodology used and results from soil samples collected during the Phase 1 RI.

SECTION 3 – IA OBJECTIVES AND CLEANUP LEVELS

3.1 IA Objectives

The objectives of this IA are to:

- Protect human health and the environment
- Comply with IA cleanup levels
- Comply with applicable state and federal laws and regulations
- Provide for compliance monitoring
- Not preclude reasonable alternatives for a final cleanup action
- Consider public concerns
- Be cost-effective

3.2 Constituents of Potential Concern

The following constituents, which are the Site-wide constituents of potential concern (COPCs) (GeoEngineers and PIONEER 2008), are also the COPCs for the IA:

- Arsenic
- Cadmium
- Lead
- Total carcinogenic PAHs (cPAHs)
- Total dioxins/furans
- Total naphthalenes
- TPH-D
- TPH-HO
- TPH-G

In addition, the following will be considered COPCs if TPH-G is encountered during the IA:

- Benzene
- Toluene
- Ethylbenzene
- Total xylenes

3.3 IA Cleanup Levels

IA Cleanup Levels (IACLs) based on unrestricted land use are presented in Table 3-1 for the COPCs listed in Section 3.2. Also presented in Table 3-1 are IA Reuse Under Pavement Levels (IARUPLs). IARUPLs only apply to soil that is reused as subsurface fill underneath paved surfaces within the infrastructure corridor. Soil excavated from the infrastructure corridor that has concentrations exceeding

IARUPLs will be disposed of off Site. The IACLs and the IARUPLs were calculated as discussed in Appendix C.

Compliance with IARUPLs for soil excavated from the infrastructure corridor and designated for reuse will be determined by evaluating soil samples collected from soil stockpiles in accordance with the Compliance Monitoring Plan (CMP) in Section 8 of this IAWP. A compliance evaluation for soil within the excavation sidewalls of the infrastructure corridor is not expected and will only be conducted if gross contamination is encountered within the infrastructure corridor (see Section 5.2 regarding gross contamination provisions). If gross contamination is encountered, then compliance with IARUPLs will be applied to soil within the excavation sidewalls of the infrastructure corridor (and under pavement) from a depth of ground surface to 15 feet below the ground surface, unless groundwater is encountered at a shallower depth. If shallower groundwater is encountered in the gross contamination scenario, then compliance with IARUPLs will be applied to a depth of two feet deeper than the necessary depth for infrastructure construction or two feet deeper than the depth at which groundwater was encountered, whichever is deeper.

No other applicable state and federal laws or regulations based on the type of IA or location of the IA have been identified that would require modifications to the IACLs or IARUPLs.

SECTION 4 – PLANS AND SPECIFICATIONS FOR INFRASTRUCTURE CONSTRUCTION

4.1 Plans and Specifications

The construction requirements for the infrastructure improvement activities listed in Section 1.2 are fully defined in the construction plans (Skillings-Connolly 2009b) and specifications (Skillings-Connolly 2009c), with one exception. The plans and specifications for installation of new private utilities (e.g., electricity, natural gas, telephone, cable) are still in development. However, the development timeline for the private utility plans and specifications is essentially inconsequential to the IAWP since the private utility plans and specifications will be incorporated with the primary plans and specifications (Skillings-Connolly 2009b, Skillings Connolly 2009c) prior to contract bid selection, and private utility lines will be placed within the public utility excavation footprint governed by the primary plans and specifications (Skillings-Connolly 2009b, Skillings Connolly 2009c).

4.2 Relation to IA

This MTCA-driven IA is fully integrated with the civil engineering plans and specifications (Skillings-Connolly 2009b, Skillings-Connolly 2009c). Specifically, this IAWP is included within the special provisions of the construction specifications (Skillings-Connolly 2009c) in Section 01560. In other words, the infrastructure construction contractor must satisfy the requirements of this IAWP in addition to the non-cleanup requirements included in the plans and specifications. It should also be noted that the infrastructure construction plans and specifications were designed to minimize the volume of soil disturbed and excavated during infrastructure construction due to environmental concerns related to MTCA regulations and the NPDES permit application.

4.3 Construction Contractor Selection

The Port will competitively bid the planned infrastructure improvements and related environmental work (i.e., work pursuant to this IAWP and the NPDES permit). The Port will advertise a public notice soliciting bid proposals from potential contractors by a certain date and time. A complete set of plans and specifications will be made available for public review. Each bidding contractor will prepare a cost estimate based on the plans and specifications. The Port will collect bid proposals on the time and date advertised. The Port will review each bid proposal for consistency with the plans and specifications. Following its review, the Port intends to award and enter into a public works contract (per Chapter 39.04 of the Revised Code of Washington) with the lowest bidder whose proposal satisfies the plans and specifications. Construction is expected to proceed shortly after the public works contract is in force.

SECTION 5 – IA DESIGN

5.1 Design Basis

IARUPLs are conservatively protective of all receptors who could be exposed to soil within the infrastructure corridor during and following construction and are conservatively protective of potential surface water receptors (see Appendix C). The maximum soil concentrations of COPCs detected to date within the infrastructure corridor are below the IARUPLs as shown in Table 5-1, with the exception of cadmium in a single sample. In addition, it should be noted that exposure risks are typically based on average concentrations or 95th upper confidence levels on the average concentrations rather than maximum concentrations. As a result, it is unlikely that COPC concentrations in soil exceeding the IARUPLs will be encountered during infrastructure construction.

5.2 Description of Engineering Controls (ECs)

Even though COPC concentrations exceeding IARUPLs are not expected in the infrastructure corridor, the Port and its contractors will implement and maintain the following engineering controls (ECs) during infrastructure construction:

- **Site Control**: The construction contractor will:
  - Install and maintain a continuous perimeter fence with a height of approximately five feet to limit access to the Site interior (e.g., area bounded by Marine Drive, State Avenue, and Jefferson Street) for the duration of subsurface construction activities.
  - Implement and maintain appropriate traffic and pedestrian control measures to restrict public access (e.g., road closures, traffic diversions, pedestrian detours, signs/barricades) to right-of-ways with open excavations.
- **Excavation Width Control**: The construction contractor will utilize trench boxes or similar approaches, to the extent practical, to minimize the width of utility excavations.
- **Dust Control**: The construction contractor will utilize best management practices (e.g., Washington State Department of Transportation 2008, Ecology 2005) to suppress dust (e.g., watering of dry soil as necessary) for all earthwork within the infrastructure corridor. In addition, protection monitoring for dust will be conducted as discussed in the CMP.
- **Soil Segregation**: The construction contractor will segregate soil excavated during infrastructure construction in accordance with the zones shown in Figure 5-1. For soil excavated within a particular zone, the construction contractor will further segregate soils from that zone into separate stockpiles as follows:
  - Soil that is geotechnically suitable for reuse within the utility corridor.
  - Soil that is geotechnically unsuitable for reuse within the utility corridor.
  - Soil that is grossly contaminated (if encountered). See provisions below for addressing any gross contamination in the unlikely event that it is encountered.

  It should be noted that soils excavated from a particular zone do not need to necessarily be stored within the zone from which the soil was generated.

- **Temporary Storage**: The construction contractor will conduct the following actions for all stockpiled soil:
    - Place all excavated soil in stockpiles on an impervious surface such as concrete, asphalt, polyethylene liner (e.g. Visqueen) with a thickness of at least 10-mils, or equivalent.
    - Establish and maintain a tracking (e.g., placards) and recordkeeping system to indicate the original locations of soil that comprise a given stockpile.
    - Cover all stockpiles with a polyethylene liner with a thickness of at least 10-mils (or equivalent material) and secure the liner with ropes and sandbags or equivalent.
    - Uncover only the working face of a stockpile when adding, removing, or sampling a stockpile, and recover and secure the entire stockpile at the end of each work day.
    - Perform maintenance as necessary to keep the bottom impervious surface and cover liner intact.
- **Stormwater Control**: The construction contractor will address all stormwater control requirements associated with the soil stockpiles in accordance with the NPDES permit application (Skillings-Connolly 2009a).
- **Reuse/Disposal**: The construction contractor will reuse or dispose of soil excavated from the infrastructure corridor as follows:
    - Soil that is geotechnically suitable for reuse within the utility corridor and that has concentrations below IARUPLs (per stockpile performance monitoring per the CMP) will be reused underneath paved surfaces within the utility corridor.
    - Soil that is geotechnically unsuitable for reuse within the utility corridor and that has concentrations below IARUPLs (per stockpile performance monitoring in the CMP) will be reused underneath paved surfaces within the utility corridor if it can be reconditioned or modified with amendments to meet the applicable geotechnical criteria for its intended use. If this soil cannot be reconditioned or modified, it will be transported to and disposed of at an off-Site Resource Conservation and Recovery Act (RCRA) Subtitle D facility.
    - Any soil that has concentrations exceeding IARUPLs (per stockpile performance monitoring in the CMP), regardless of geotechnical suitability, will be transported to and disposed of at an off-Site RCRA Subtitle D facility.
    - Soil that is grossly contaminated (if encountered) that has concentrations exceeding IARUPLs (per gross contamination characterization sampling in CMP) will be transported to and disposed of at an off-Site RCRA Subtitle D facility.
- **Compliance Monitoring**: A third party Port contractor(s) will conduct all compliance monitoring per the CMP in Section 8 and the Sampling and Analysis Plan (SAP) / Quality Assurance Project Plan (QAPP) in Appendix D.
- **Health and Safety**: The construction contractor, organizations/contractors installing private utilities, and on-Site third party organization(s)/contractor(s) providing oversight will prepare and implement Health and Safety Plans (HASPs) as discussed in Section 9. As discussed in Section 9, the HASPs will include use of personal protective equipment (PPE) to minimize dermal contact with soil and groundwater.

- **Documentation**: The construction contractor will be responsible for preparing and maintaining daily reports. In addition, the construction contractor will be responsible for preparing and maintaining detailed field notes and photographs to document all soil management activities (e.g., excavation, segregation, stockpiling, reuse, disposal) conducted by the construction contractor. The construction contractor will provide copies of the daily reports, field notes, and photographs to those conducting oversight (see below) and PIONEER. Those conducting oversight (see below) will also prepare and maintain field notes and photographs to document their oversight activities.
- **Oversight**: The Port, Port contractors, City of Olympia, and/or City of Olympia contractors will conduct general construction oversight of the construction contactor to ensure all contract specifications are satisfied. A third party Port contractor and/or PIONEER will provide oversight support for environmental soil issues related to implementation of this IAWP. Likewise, a third party Port contractor will support those conducting general oversight for environmental water issues related to the NPDES permit application.
- **Gross Contamination Provisions**: As discussed previously, COPC concentrations encountered during excavation of the infrastructure corridor are not expected to exceed IARUPLs. However, if visual or olfactory evidence of gross contamination (e.g., free product, heavy sheen) is observed by the construction contractor or others performing oversight during any portion of the excavation work, the following provisions will be implemented:
    - The construction contractor will segregate any soil excavated from the location of suspected gross contamination from other soil (as mentioned previously).
    - The third party Port contractor providing oversight support for environmental soil issues will utilize visual observations, olfactory observations, water sheen screening, and/or headspace vapor screening as described in the RIWP (GeoEngineers and PIONEER 2008) to confirm the presence of suspected gross contamination.
    - If field screening results confirm the presence of suspected gross contamination, then the third party Port contractor providing oversight support for environmental soil issues will collect soil samples from worst case locations (e.g., excavation sidewall and/or stockpile of grossly contaminated soil) to characterize the suspected gross contamination as necessary and in consultation with Ecology (see CMP and SAP).
    - If the analytical results of the characterization sample(s) exceed IARUPLs, then the following actions will be implemented as necessary and in consultation with Ecology:
        - The construction contractor will overexcavate soil to a maximum width of 10 feet beyond the planned edge of the infrastructure corridor.
        - The construction contractor will transport grossly contaminated soil exceeding IARUPLs to a RCRA Subtitle D facility for disposal.
        - The third party Port contractor providing oversight support for environmental soil issues will collect excavation sidewall and bottom samples (see CMP and SAP) following overexcavation to confirm grossly contaminated soil has been removed.

SECTION 6 – IA EVALUATION

As described in Section 5, the MTCA-based IA remedy is ECs. The appropriateness of the IA design (i.e., ECs) was evaluated using the IA Objectives presented in Section 3.1 and the submittal requirements for IAs in WAC 173-340-430(7) as described in the following subsections.

6.1 Evaluation Using IA Objectives

The IA design (i.e., ECs) was evaluated using the IA Objectives presented in Section 3.1. The IA design of ECs satisfies the IA Objectives for the following reasons:

- The IA is anticipated to protect human health and the environment since none of the exposures associated with the infrastructure corridor are anticipated to pose an unacceptable risk. In addition, the ECs will provide added measures of safety and certainty for construction-phase receptors and potential future receptors. It is recognized that institutional controls may eventually be required for soil left in place under paved roads if final cleanup levels are based on direct contact by child residents and/or terrestrial ecological organisms.
- The IAWP was designed so that the IA can comply with IA cleanup levels and all applicable state and federal laws and regulations (e.g., MTCA regulations, Washington Industrial Safety and Health Act [WISHA] regulations, RCRA regulations for soil disposal at Subtitle D facility, NPDES permit application for dewatering/stormwater).
- The IAWP provides for compliance monitoring during the IA as discussed in Section 8.
- The IA is not anticipated to preclude a final action since the primary purpose of the IA is to remove soil with concentrations greater than IARUPLs. It is unlikely that the IA will preclude further RI work or Site-wide remedial alternatives given the relatively small area taken up by the infrastructure corridor and the fact that investigation and remediation infrastructure can be installed through paved surfaces. Nonetheless, the Port understands that it may need to remove or alter infrastructure improvements as part of the final Site-wide cleanup action and that any removal/alternation costs should not be included in the disproportionate cost analysis under WAC 173-340-360(3).
- Public concerns will be considered before the IA is implemented with public participation on this IAWP in accordance with WAC 173-340-600 and the AO.
- Although a formal cost evaluation has not been performed beyond a draft FS submitted to Ecology under the VCP (GeoEngineers 2007), the IA is the most cost-effective possible remedial alternative given the regulatory context.

6.2 Evaluation Using WAC 173-340-430(7) Criteria

The IA design (i.e., ECs) was evaluated using the submittal requirements for IAs in WAC 173-340-430(7). The IA design of ECs satisfies WAC 173-340-430(7) for the following reasons:

- The IA meets the criteria in WAC 173-340-430(1)(a) since there are complete exposure pathways associated with infrastructure construction.

- The IA meets the criteria in WAC 173-340-430(2)(a) since the IA is expected to achieve applicable standards for a portion of the Site.
- The IA meets the criteria in WAC 173-340-430(3)(b) since the IA will not foreclose reasonable alternatives for the final cleanup action as discussed in Section 6.1.
- The IAWP summarizes the existing Site conditions and available RI data related to the IA in Section 2. There is no appropriate information from an appropriate FS to include in the IAWP.
- The road and utility construction plans and specifications (Skillings-Connolly 2009b, Skillings-Connolly 2009c) are appropriate engineering submittals per WAC 173-340-400 given the nature of the EC remedy being implemented in the IA.
- A CMP meeting the requirements of WAC 173-340-410 is included in Section 8.
- Appendix E includes a HASP satisfying WAC 173-340-810, while Section 9 identifies the requirement for the construction contractor and on-Site third party organization(s)/contractor(s) providing oversight to prepare their own HASPs.
- A SAP / QAPP meeting the requirements of WAC 173-340-820 is included as Appendix D.

SECTION 7 – IA IMPLEMENTATION

This section summarizes the details of IA implementation that are known at this time (see also Section 8 for CMP and Section 9 for HASP requirements). Additional details will be developed once the construction contractor is selected and oversight roles are defined.

7.1 Roles and Responsibilities

The project planning and design team consists of representatives from:

- The Port
- Skillings-Connolly
- PIONEER
- Ecology

The project implementation and reporting team consists of representatives from:

- The Port
- To be determined construction contractor
- To be determined organizations/contractors installing private utilities
- To be determined organization(s) conducting general construction oversight
- To be determined third party Port contractor providing oversight support for environmental soil issues (which may be PIONEER)
- PIONEER (who at a minimum will be providing limited oversight support and writing the IA Report)
- To be determined third party Port contractor providing oversight support for environmental water issues
- To be determined analytical laboratory
- To be determined RCRA Subtitle D facility (if necessary)
- Ecology

Table 7-1 shows anticipated roles and responsibilities for the project.

7.2 Prior Coordination

A significant amount of prior coordination will need to be completed after the construction contractor is selected, but before any excavation associated with this IA begins. Although other prior coordination tasks will likely be identified, the following are major prior coordination actions that have been identified at this time:

- The Port will formalize agreements and contracts as necessary in order to select the organization(s) and third party Port contractor(s) providing oversight services. The Port will also further define the roles, responsibilities, and lines of communication for those conducting oversight.

- An environmental-specific kickoff meeting to be attended by representatives of the Port, the construction contractor, organizations/contractors installing private utilities, all organizations and third party Port contractors conducting oversight activities, PIONEER, and Ecology will be held.
- The construction contractor will coordinate and contract as necessary for possible transportation and disposal of waste at a RCRA Subtitle D facility.
- The Port and/or the third party Port contractor providing oversight support for environmental soil issues will coordinate and contract as necessary with an analytical laboratory certified by Ecology.
- The construction contractor will provide a detailed construction schedule to the Port, all organizations and third party Port contractors conducting oversight activities, PIONEER, and Ecology.

7.3 IA Reporting

After completing the IA, PIONEER will prepare a draft IA Report for Ecology review in accordance with the AO. The report will include:

- A description of construction contractor's field activities related to IA soil management (e.g., excavation, segregation, stockpiling, reuse, disposal)
- A description of EC implementation
- A description of compliance monitoring methodology
- A discussion and justification of any deviations from this IAWP
- A discussion of observed ability of ECs to satisfy IA objectives
- A discussion comparing quantitative performance monitoring results for soil samples collected from stockpiles designated for reuse with IACLs and IARUPLs
- A discussion of quality assurance/quality control (QA/QC) review and verification process including implications for project data as described in the QAPP
- A figure showing final excavation locations and dimensions
- A figure showing soil stockpile locations
- A figure showing compliance monitoring sampling locations
- A summary table of compliance monitoring results
- Copy of the construction contractor's daily reports, field notes, and photographs
- Copy of field notes and photographs from the third party Port contractor providing oversight support for environmental soil issues
- Copy of waste disposition documentation (e.g., manifests and disposal receipts)
- Copy of laboratory certificates of analysis with chain-of-custodies

7.4 IA Schedule

The current schedule for completing the IAWP, infrastructure construction, and IA Report is presented in Table 7-2. A more detailed infrastructure construction schedule will be developed by the construction contractor following contract award.

SECTION 8 – COMPLIANCE MONITORING PLAN

The purpose of this section is to describe the general approach of the IA CMP in accordance with the requirements of WAC 173-340-410. There are three types of compliance monitoring defined in WAC 173-340-410: protection monitoring, performance monitoring, and confirmational monitoring. The application of each type of compliance monitoring during the IA is described below. The applicable sampling and QA/QC details associated with the CMP are presented in the SAP / QAPP in Appendix D. Quantitative data collected pursuant to the CMP will be analyzed and evaluated for compliance in accordance with WAC 173-340-740(7). The third party Port contractor providing oversight support for environmental soil issues will implement the CMP.

8.1 Protection Monitoring

The purpose of IA protection monitoring is to confirm that human health and the environment are adequately protected during infrastructure construction. Even though existing data indicate that human health and the environment will be adequately protected during infrastructure construction as discussed previously, the third party Port contractor providing oversight support for environmental soil issues will conduct the following protection monitoring during infrastructure construction:

- Conduct airborne dust monitoring with a particulate matter field monitor and compare results with Airborne Dust Action Levels presented in Appendix F in order to ensure the safety of on-Site workers in accordance with WISHA regulations.

8.2 Performance Monitoring

The purpose of IA performance monitoring is to confirm that the IA has satisfied the IA design, IA cleanup levels, and applicable IA objectives. The third party Port contractor providing oversight support for environmental soil issues will conduct the following performance monitoring during infrastructure construction:

- Provide periodic on-Site construction-oversight support and periodic review of documentation from the construction contractor (e.g., daily reports and field notes) in order to qualitatively assess the effectiveness of ECs.
- Collect and analyze soil samples from stockpiles designated for off-Site disposal and compare results with criteria in RCRA and Chapter 173-303 WAC regulations in order to confirm the appropriateness of disposing the soil at a RCRA Subtitle D facility.
- Collect and analyze soil samples from stockpiles designated for on-Site reuse and compare results with IARUPLs in order to confirm the appropriateness of on-Site reuse of the soil in the stockpiles. If COPC concentrations in a stockpile performance monitoring sample exceed IARUPLs, it is not anticipated that additional re-sampling will take place. Rather, the stockpile represented by the soil sample exceedance will be disposed of off-Site.
- If necessary in the event that suspected gross contamination is encountered, collect and analyze soil samples from worst case locations (e.g., excavation sidewall and/or stockpile) and compare

results with IACLs and IARUPLs in order to characterize soil with suspected gross contamination.

- If necessary in the event that gross contamination is encountered that has concentrations exceeding IARUPLs, collect and analyze excavation sidewall and bottom samples following overexcavation, and compare results with IARUPLs in order to confirm that soil with COPC concentrations exceeding IARUPLs has been successfully removed.

In addition, it should be noted that performance monitoring will also be conducted for water discharges pursuant to the NPDES permit (Skillings-Connolly 2009a).

8.3 Confirmational Monitoring

The purpose of confirmational monitoring per WAC 173-340-410(1)(c) is to "confirm the long-term effectiveness of the interim action or cleanup action once cleanup standards and, if appropriate, remediation levels or other performance standards have been attained." Since the RI is still on-going and a final cleanup action is not known, it is premature to propose confirmational monitoring at this time. However, the final cleanup action will take into account any necessary confirmational monitoring associated with the IA.

SECTION 9 – HEALTH AND SAFETY PLANS

This infrastructure construction project is being conducted at a designated MTCA Site. Thus, Occupational Safety and Health Act and WISHA regulations for hazardous waste operations apply to infrastructure construction in accordance with WAC 173-340-810 and WAC 246-843-100. As a result, appropriate HASPs must be prepared for the IA.

9.1 Construction Contractor HASP

Once the construction contract is awarded, the primary construction contractor and other organizations/contractors with on-Site workers (e.g., organizations/contractors installing private utilities, those conducting construction oversight) will:

- Prepare and maintain a HASP in accordance with WAC 173-340-810 and WAC 296-843-100.
- Utilize Hazardous Waste Operations and Emergency Response (HAZWOPER) trained workers in accordance with WAC 296-843-20010 as necessary in accordance with the nature of the work being conducted.
- Use PPE in accordance with the HASP(s) to minimize dermal contact with soil and groundwater.

9.2 PIONEER HASP

At a minimum, PIONEER will be providing construction-oversight support related to implementation of this IAWP in accordance with its current contract. In addition, if the existing contract is modified, then PIONEER may be conducting all of the field activities currently assigned to the "third-party Port contractor providing oversight support for environmental soil issues." A HASP specific to PIONEER's known and possible IA activities is included in Appendix E.

REFERENCES

Ecology 2005. "BMP C140: Dust Control" in Stormwater Management Manual for Western Washington: Volume II Construction Stormwater Pollution Prevention, February.

GeoEngineers 2007. Remedial Investigation/Feasibility Study and Conceptual Cleanup Action Plan, East Bay Redevelopment, Port of Olympia, December 20.

GeoEngineers and PIONEER 2008. Remedial Investigation Work Plan, East Bay Redevelopment, Port of Olympia, October 22.

Skillings-Connolly 2009a. East Bay Infrastructure Project, Groundwater Pump and Treat, Interim Action, Engineering Design Report, January 2009.

Skillings-Connolly 2009b. Construction plans titled "East Bay Infrastructure Project," January 2009.

Skillings-Connolly 2009c. Port of Olympia Contract No. 2008-1057 Specifications, East Bay Infrastructure, Project No. PR0704, pending.

Washington State Department of Transportation 2008. Section 2-07 of Standard Specifications for Road, Bridge, and Municipal Construction 2008, January.

TABLES

TABLE 3-1
INTERIM ACTION CLEANUP LEVELS AND INTERIM ACTION REUSE UNDER PAVEMENT LEVELS

Constituent of Potential Concern	Interim Action Cleanup Level (Based on Unrestricted Land Use) (mg/kg)	Interim Action Reuse Under Pavement Level (mg/kg)
Arsenic	20	20
Cadmium	2	2
Lead	250	250
Total cPAHs	0.095	1.4
Total dioxins/furans	9.8E-06	5.1E-04
Total naphthalenes	160	160
TPH-D	2,000	2,000
TPH-HO	2,000	2,000
TPH-G	100	100
Benzene	0.22	0.22
Toluene	240	240
Ethylbenzene	43	43
Total xylenes	23	23

TABLE 5-1
COMPARISON OF INFRASTRUCTURE CORRIDOR SOIL DATA WITH INTERIM ACTION REUSE UNDER PAVEMENT LEVELS

Constituent of Potential Concern	Number of Soil Samples Collected Within Infrastructure Corridor	Maximum Concentration Detected in Infrastructure Corridor (mg/kg)	Interim Action Reuse Under Pavement Level (mg/kg)	Maximum Concentration Above Interim Action Reuse Under Pavement Level?
Arsenic	30	14	20	No
Cadmium	30	3.7	2	Yes [(1)]
Lead	30	170	250	No
Total cPAHs	23	0.33	1.4	No
Total dioxins/furans	26	6.2E-05	5.1E-04	No
Total naphthalenes	23	0.32	160	No
TPH-D	17	91	2,000	No
TPH-HO	17	610	2,000	No
TPH-G	15	31	100	No
Benzene	15	0.25 U	0.22	No
Toluene	15	0.12 U	240	No
Ethylbenzene	15	0.12 U	43	No
Total xylenes	15	0.24 U	23	No

Notes:
U = Not detected at the shown concentration
[(1)] It should be noted that only one of the 30 cadmium samples is above 2 mg/kg. The 95th upper confidence limit on the mean cadmium concentration (assuming a lognormal distribution and non-detects are equal to half the practical quantitation limit) is 0.4 mg/kg. It should also be noted that the Interim Action Reuse Under Pavement Level for cadmium is based on protection of potential surface water receptors and that cadmium was not detected in either of the two groundwater samples collected from the location where cadmium was detected in soil at 3.7 mg/kg.

TABLE 7-1
PROJECT ROLES AND RESPONSIBILITIES

Project Role	Contact Name, Phone Number, and Email	Project Responsibilities
Port Engineering Director	Jeff Lincoln, P.E. (360) 528-8061 JeffL@portolympia.com	Communication and coordination with Port Executive Director, Port Commissioners, and Port engineering staff.
Port Project Manager	Kevin Dragon, P.E. (360) 528-8022 KevinD@portolympia.com	Overall engineering management of road and utility construction. Reports to Port Engineering Director.
Port Environmental Program Manager	Joanne Snarski (360) 528-8020 JoanneS@portolympia.com	Overall environmental management of project. Communication and coordination with Ecology. Reports to Port Engineering Director.
Skillings-Connolly Project Manager	Steve Thomas, P.E. (360) 491-3399 sthomas@skillings.com	Prepare construction plans and specifications. Prepare EDR for NPDES permit application.
PIONEER Project Manager	Troy Bussey, P.E., L.HG. (360) 570-1700 busseyt@uspioneer.com	Prepare IAWP. Provide oversight support in accordance with existing contract. Prepare IA Report.
Ecology Site Manager	Steve Teel, L.HG. (360) 407-6362	Regulatory review and approval of IAWP and IA Report. Complete public notification requirements.
Construction Contractor	To be determined	Construct public utilities, construct roads, and complete rest of infrastructure improvements in accordance with plans and specifications. Implement vast majority of ECs in IAWP.
Install Private Utilities	To be determined	Install private utilities (e.g., electricity, natural gas, telephone, cable).
General Construction Oversight	To be determined	Responsible for all aspects of construction oversight.
Oversight Support for Environmental Soil Issues	To be determined	Support primary organization(s) conducting oversight for environmental soil issues related to implementation of this IAWP. Implement CMP, SAP, and QAPP.
Oversight Support for Environmental Water Issues	To be determined	Support primary organization(s) conducting oversight for environmental water issues related to NPDES permit application and decommissioning of artesian wells.
Analytical Laboratory	To be determined	Analyze soil samples and conduct laboratory QC.
RCRA Subtitle D Facility (if necessary)	To be determined	Facility for disposal of off-Site waste. Assist with waste characterization and transportation to facility as necessary.

Notes:
CMP: Compliance Monitoring Plan
EC: Engineering Control
EDR: Engineering Design Report
IA: Interim Action
IAWP: Interim Action Work Plan
NPDES: National Pollutant Discharge Elimination System
RCRA: Resource Conservation and Recovery Act
SAP: Sampling and Analysis Plan
QAPP: Quality Assurance Project Plan
QC: Quality Control

TABLE 7-2
PROJECT SCHEDULE

Action Items	Estimated Dates
Public comment period on draft IAWP	March 2009 – April 2009
Submit final IAWP to Ecology	Within 30 days after receipt of Ecology's comments
Ecology approval of final IAWP	To be determined
Interim Action / infrastructure construction	May 2009 – January 2010
Submit draft IA Report to Ecology	Within 60 days after field work is completed
Ecology review of draft IA Report	To be determined
Submit final IA Report to Ecology	Within 30 days after receipt of Ecology's comments
Ecology approval of final IA Report	To be determined

Notes:
IA: Interim Action
IAWP: Interim Action Work Plan

FIGURES

Legend

- Proposed Right-of-Way
- Soil sample collected from within proposed right-of-way pre-RI
- Phase 1 RI Boring Location

Note:

RI = Remedial Investigation

N
W E
S

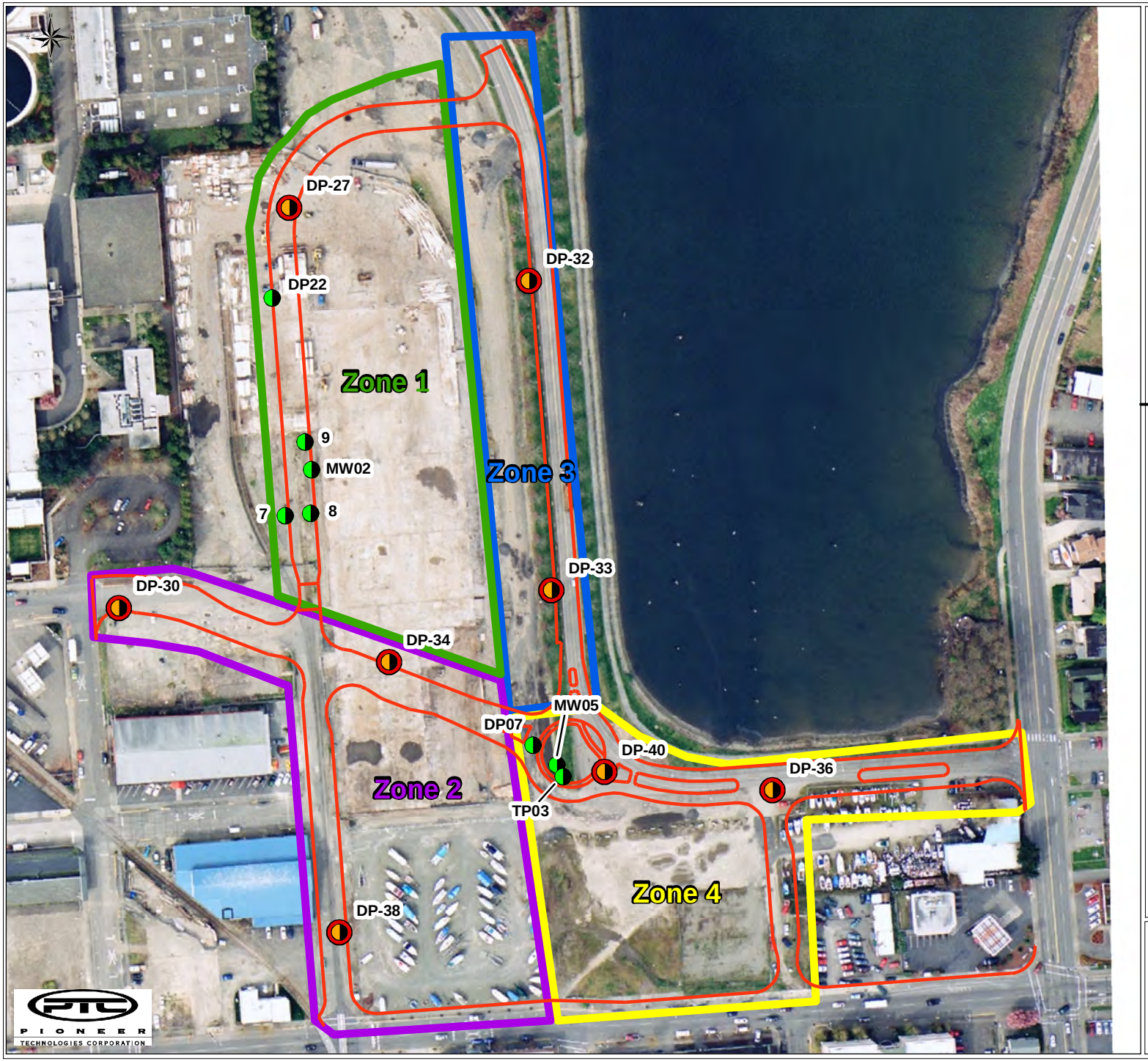
0 50 100 200
Feet

East Bay Interim Action Work Plan
Infrastructure Corridor Soil Sampling Locations

Port of Olympia
March 2009

Figure 1-1

PIONEER TECHNOLOGIES CORPORATION



Legend

- Proposed Right-of-Way
- Soil sample collected from within proposed right-of-way pre-RI
- Phase 1 RI Boring Location

Soil Stockpile Segregation Zone Boundaries

- Zone 1
- Zone 2
- Zone 3
- Zone 4

Note:

RI = Remedial Investigation

N
W E
S

0 50 100 200 Feet

East Bay Interim Action Work Plan
Soil Stockpile Segregation Zones

Port of Olympia
March 2009

Figure 5-1

PIONEER TECHNOLOGIES CORPORATION

Appendix A

SUMMARY OF PRE-RI INFRASTRUCTURE CORRIDOR SOIL DATA

Table A-1 is a summary of the previously reported analytical results for the pre-Remedial Investigation (RI) soil samples collected from the infrastructure corridor (GeoEngineers 2007). Copies of boring logs are included in this Appendix. Please note that there are no boring logs for Borings 7, 8, and 9 because these sample locations were surficial soil samples.

TABLE A-1. Pre-RI Analytical Results for Soil Samples Collected within the Infrastructure Corridor

Boring	Sample Depth (feet bgs)	Sample Date	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Total Xylenes (mg/kg)	VOCs (mg/kg)	TPH-D (mg/kg)	TPH-HO (mg/kg)	Total Naphthalenes (mg/kg)	Total cPAHs[1] (mg/kg)	SVOCs (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Total Dioxins/ Furans [1] (mg/kg)	PCB (mg/kg)
7	0-0.5	2/14/2007							2.3E+01	8.2E+01				7.1E+00	6.6E+01	5.0E-02 U	3.5E+01	7.2E+00	1.0E-02 U	1.6E-01 U	5.0E-02 U		
8	0-0.5	2/14/2007							9.1E+01	6.1E+02				3.9E+00	6.2E+01	5.0E-02 U	2.8E+01	4.9E+00	1.0E-02 U	1.6E-01 U	5.0E-02 U		
9	0-0.5	2/14/2007							4.5E+01	2.9E+02				3.8E+00	6.8E+01	5.0E-02 U	3.4E+01	1.2E+01	1.0E-02 U	1.6E-01 U	5.0E-02 U		
DP07	4.5-6.5	9/26/2006	2.8E+00 J	1.6E-02 U	8.1E-02 U	8.1E-02 U	1.6E-01 U	[2]	2.7E+01 U	5.4E+01 U	7.7E-02 U	1.6E-03	[2]	2.8E+00	2.5E+01	2.3E-02 J	1.5E+01	1.5E+00J	1.1E-02 U	2.1E+00 U	4.2E-01 U		[3]
	4.5-6.5[4]	9/26/2006	1.4E+00 J	1.5E-02 U	7.5E-02 U	7.5E-02 U	1.5E-01 U	[2]	2.7E+01 U	5.4E+01 U	7.0E-02 U	6.8E-03 U	[2]	2.9E+00	1.8E+01	1.9E-01 U	1.7E+01	1.4E+00J	1.1E-02J	4.4E-01J	4.8E-01 U		[3]
DP22	4-6	8/3/2007	8.4E+00 U	1.7E-02 U	8.4E-02 U	8.4E-02 U	1.7E-01 U	[2]	3.1E+01 U	6.4E+01 U	1.4E-01 U	5.4E-02 U	[2]	3.8E+00 U	4.3E+01	6.3E-01 U	2.5E+01	2.2E+00	2.4E-02 U	6.3E+00 U	1.3E+00 U		[3]
	10-12	8/3/2007	1.0E+01 U	1.7E-02 U	1.0E-01 U	1.0E-01 U	2.0E-01 U	[2]	3.3E+01 U	6.6E+01 U	1.7E-01 U	6.0E-02 U	[2]	3.9E+00 U	6.3E+01	6.5E-01 U	2.5E+01	1.1E+01	4.2E-02	6.5E+00 U	1.3E+00 U		[3]
MW02	2-4	1/2/2007	2.5E+00 U	2.5E-01 U	1.2E-01 U	1.2E-01 U	2.4E-01 U	[2]	1.1E+01 U	6.8E+01	6.1E-02 J	3.5E-02	[2]	3.1E+00	4.2E+01J	2.7E-01 U	1.6E+01	8.8E+00	2.8E-02	6.8E-01UJ	5.5E-01 U		[3]
	8-10	1/2/2007	9.8E+00 J	1.7E-02 U	8.7E-02 U	8.7E-02 U	1.7E-01 U	[2]	1.0E+01 U	2.8E+01 J	7.7E-03 U	8.6E-03	[2]	3.6E+00	9.7E+01J	2.5E-01 U	1.6E+01	7.0E+00	2.1E-02 U	2.1E+00J	5.1E-01 U		[3]
MW05	10-12	1/15/2007	3.1E+01	1.7E-02 U	8.5E-02 U	8.5E-02 U	1.7E-01 U	[2]	3.8E+01	1.7E+02	9.8E-03 U	1.4E-01	[2]	9.9E+00	3.2E+02	3.7E+00	2.2E+01	1.7E+02	2.5E-02 U	3.9E+00	6.2E-01		[3]
TP03	3.5-4	10/4/2007																				5.8E-05	

Notes:

All detected concentration results shown to two significant figures.

Blank cells means constituent was not analyzed for the sample.

U = Not detected at shown concentration.

J = Estimated concentration.

[1] Calculated using MTCA toxicity equivalency factors in Washington Administrative Code (WAC) 173-340-708(8).

[2] Sample was analyzed for additional VOCs and SVOCs beyond what is presented in this table. Only VOC and SVOC COPCs (i.e., BTEX, total naphthalenes, total cPAHs) are presented in this table. See Geoengineers Draft December 2007 RI/FS/Conceptual CAP for the complete summary of other VOC and SVOC results.

[3] Sampe was analyzed for PCBs, but no PCB congeners were detected.

[4] Duplicate sample.

Date(s) Drilled	09/26/06	Logged By	AJF	Checked By	KMB
Drilling Contractor	ESN-NW	Drilling Method	Direct Push	Sampling Methods	Macrocore
Auger Data		Hammer Data	156 lb pneumatic	Drilling Equipment	StrataProbe SP-20
Total Depth (ft)	8	Surface Elevation (ft)		Groundwater Level (ft. bgs)	5.5
Vertical Datum		Datum/ System		Easting(x): Northing(y):	

Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV (ppm)	NOTES
0		48	P					CR	Gravel fill (crushed rock)	NS	0.0	
								SM	Brown fine to coarse sand with trace silt and occasional gravel (loose, moist)			
		48	P									
5				045	CA	▼			Gray fine to medium sand with trace silt (loose, wet)			
10												

Note: See Figure A-1 for explanation of symbols.

LOG OF BORING DP07

GeoEngineers

Project: 1022 Marine Drive NE
Project Location: Olympia, Washington
Project Number: 0415-052-01

Figure A-8
Sheet 1 of 1

Date(s) Drilled	08/03/07	Logged By	TSD	Checked By	KMB/EWH
Drilling Contractor	ESN	Drilling Method	Direct Push	Sampling Methods	Continuous
Auger Data	N/A	Hammer Data	N/A	Drilling Equipment	Strataprobe
Total Depth (ft)	12	Surface Elevation (ft)	12	Groundwater Elevation (ft)	8
Vertical Datum	NGVD 29	Datum/ System		Easting(x): Northing(y):	1125865.36037 24711.7092151

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppm)	NOTES
	0								GW	Brown gravel with sand and silt (dense, moist)	NS	0.2	
									SM	Gray sand with silt (dense, moist)	NS	0.3	
10					000								
			12		020				ML	Gray sandy silt (stiff, wet)	NS	1.1	
						CA	▼				NS	1.0	
5	5				040				SW	Gray fine to medium sand with occasional silt and shells (medium dense, wet)	NS	3.1	
			36										
0					060						NS	0.6	
											NS	1.0	
			36		080								
	10					CA			ML	Gray silt with occasional fine sand (soft, wet)	NS	0.1	
					100				WD	Wood chips	NS	0.6	
-5													
	15												
-10													
	20												

Note: See Figure A-1 for explanation of symbols.

LOG OF DIRECT-PUSH BORING DP-22

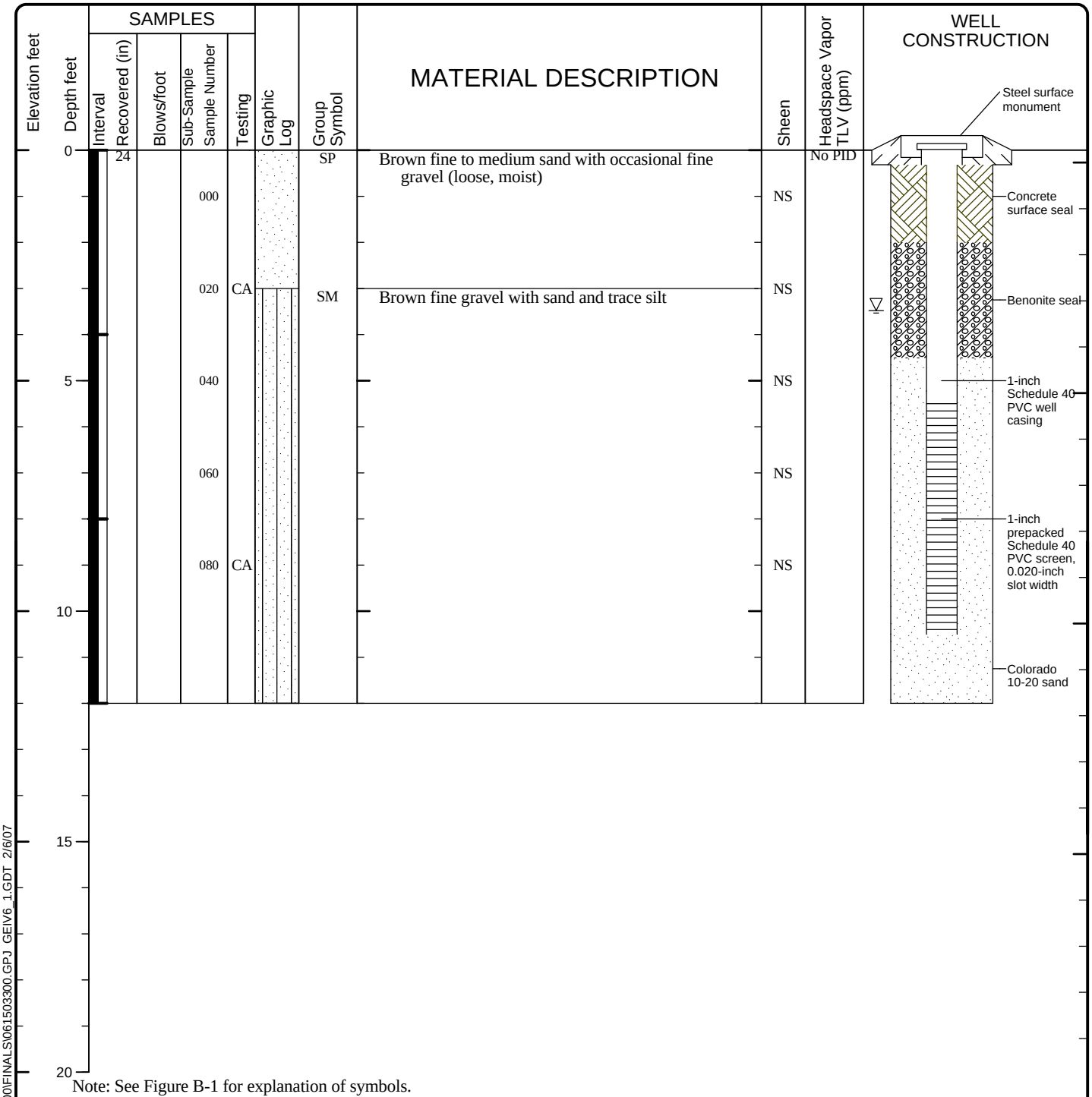
GeoEngineers

Project: Port of Olympia East Bay Redevelopment
Project Location: Olympia, Washington
Project Number: 0615-034-02/03

Figure A-7
Sheet 1 of 1

V6_ENVBORING P:\0\06150340\2\FINALS\0616034O2_03.GPJ GEIV6_1.GDT 11/5/07

Date(s) Drilled	01/02/07	Logged By	TSG	Checked By	KMB
Drilling Contractor	ESN-NW	Drilling Method	Direct Push	Sampling Methods	Grab; 5035A for VOCs
Auger Data	NA	Hammer Data	Pneumatic	Drilling Equipment	Stratoprobe
Total Exploration Depth (ft)	12	Ground Surface Elevation (ft)	100.27	Groundwater Elevation (ft)	96.79
Vertical Datum	Assumed (100')	Datum/ System	GCS - North American - 1983	Easting(x): Northing(y):	47.0481962236 -122.897072584



Note: See Figure B-1 for explanation of symbols.

LOG OF MONITORING WELL MW02 (AGT 115)

GeoEngineers

Project: Phase II ESA/Hands on Children's Museum
Project Location: Olympia, Washington
Project Number: 0615-033-00

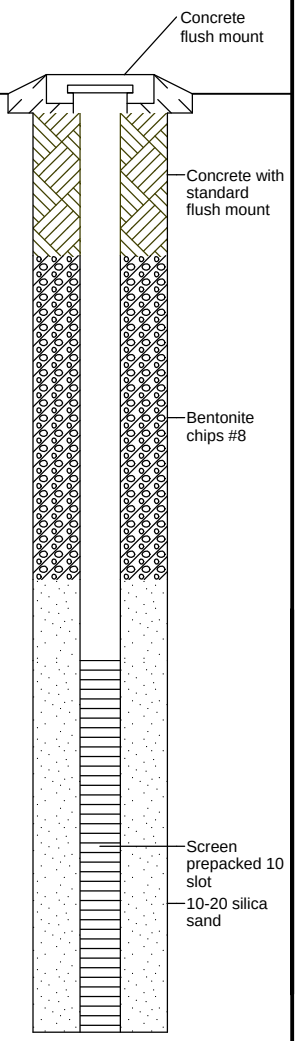
Figure B-5
Sheet 1 of 1

V6_ENVWELL P:\0\0615033\00\FINALS\061503300.GPJ GEIV6_1.GDT 2/6/07

Date(s) Drilled	01/15/07	Logged By	JCD	Checked By	KMB
Drilling Contractor	ESN Northwest	Drilling Method	Direct Push	Sampling Methods	Grab/5035A (VOCs)
Auger Data	4-foot Acetate-Lined Stainless Steel Sampler	Hammer Data	N/A	Drilling Equipment	Push-Probe Rig
Total Well Depth (ft)	11.59	Top of Casing Elevation (ft)	101.66	Groundwater Elevation (ft)	97.45
Vertical Datum	Assumed 100 feet	Datum/ System	WGS 1984	Easting(x): Northing(y):	1126252.22 24078.30508

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Sample Number	Testing	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor TLV (ppm)
	0		30		1			TS	Grass and topsoil		0.0
								SM	Brown to gray fine to coarse sand with gravel and silt (moist)		
	5		32		2			ML	Brown to black silty fine to coarse sand with gravel (wet)	SS	0.0
			14		3			SM	Dark brown to black silty fine to coarse sand with gravel (wet)	SS	0.0
	10					CA					
	15										

WELL CONSTRUCTION



Note: See Figure B-1 for explanation of symbols.

LOG OF MONITORING WELL MW-05

GeoEngineers

Project: City of Olympia City Hall
Project Location: Olympia, Washington
Project Number: 0415-052-03

Figure B-6
Sheet 1 of 1

V6_ENVWELL P:\0\0415052\03\FINALS\041505203.GPJ GEIV6_1.GDT 4/24/07

Date Excavated: 10/04/07 Logged by: JCD

Equipment: Kubota 121 Excavator Surface Elevation (ft): ~11

Elevation feet / Depth feet	Sample	Sample Number	Analytical Testing	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor ()	OTHER TESTS AND NOTES
0					SW	Brown fine to coarse sand with gravel and silt (medium dense, moist)			
	X		CA		SW	Dark brown to black fine to coarse sand with gavel and silt (medium dense, moist) concrete brick and glass debris			
						Test pit completed at 4 feet on 10/04/07 No groundwater seepage observed No caving observed			
5									

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

LOG OF TEST PIT TP03

GeoEngineers

Project: Port of Olympia
Project Location: Olympia, Washington
Project Number: 0615-034-01

Figure A-4
Sheet 1 of 1

V6_ENVTPIT P:\0\0615034\01\FINALS\061503401.GPJ GEIV6_1.GDT 11/7/07

Appendix B

SUMMARY OF PHASE 1 REMEDIAL INVESTIGATION

TABLE OF CONTENTS

TABLES

ATTACHMENTS

SUMMARY OF PHASE 1 REMEDIAL INVESTIGATION

1.1 Introduction

The purpose of this appendix is to summarize the results from the Port of Olympia's Phase 1 Remedial Investigation (RI) for use in Interim Action (IA) Work Plan (IAWP) at the East Bay Site (Site). The intent of this appendix is not to prepare a full RI Report or to completely document the Phase 1 results in a formal report. The Phase 1 data will still be included in the full RI Report required by Agreed Order No. DE5471 (AO).

The Phase 1 RI tasks were delineated in the RI Work Plan (GeoEngineers and PIONEER 2008) and consisted of soil sampling and analysis from eight soil borings located within the utility infrastructure improvement corridors. The purpose of the Phase 1 RI was to collect soil data to support the IAWP.

1.2 Description of Soil Sampling and Analysis

PIONEER Technologies Corporation (PIONEER), with support from Environmental Services Network (ESN) Northwest, collected the soil samples for the Phase 1 RI on November 4, 2008 in general accordance with the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) contained in the RI Work Plan (GeoEngineers and PIONEER 2008). Eight direct-push soil borings designated as DP32, DP33, DP40, DP36, DP38, DP30, DP27, and DP34 were advanced and sampled. Locations of the eight soil borings are shown in Figure 1-1 of the main text. Copies of the field notes and boring log field forms are included in Attachment B-1 to this appendix.

Continuous soil samples were obtained within each boring for field screening and possible laboratory analyses. Field screening consisted of visual and olfactory observations, water sheen screening, and vapor headspace screening with a photoionization detector. Containerized sample intervals for possible laboratory analyses were determined based on sample intervals specified in the SAP/QAPP (GeoEngineers and PIONEER 2008), field screening results, and the encountered lithology. All soil samples possibly being analyzed for total petroleum hydrocarbons (TPH) in the gasoline range (TPH-G) and benzene, toluene, ethylbenzene, and xylenes (BTEX) were collected first and in accordance with United States Environmental Protection Agency (USEPA) Method SW846-5035A. Soil samples for possible non-volatile analyses that contained coarse soils were sieved with a #10 sieve (two millimeters) and/or a #4 sieve (five millimeters) and homogenized prior to placing in the sample containers. Soil samples for possible non-volatile analyses that were completely comprised of fine-grained soils were homogenized, but not sieved.

All containerized soil samples were held for possible analyses. The initial selection of laboratory analyses was based on what was specified in the SAP/QAPP (GeoEngineers and PIONEER 2008). The constituents and analytical methods used were:

- TPH in the diesel range (TPH-D) and heavy oil range (TPH-HO) by Ecology Method NWTPH-Dx
- TPH-G by Ecology Method NWTPH-G
- BTEX by USEPA Method SW846-8260B

- Resource Conservation and Recovery Act (RCRA) metals by USEPA Method SW846-6020A
- Chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans (CDDs/CDFs) by USEPA Method SW846-8290
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method SW846-8270C

Based on the results from the initial selection of laboratory analyses, the following subsequent analyses were performed on select samples:

- Extractable petroleum hydrocarbons (EPH) by Ecology Method NWEPH
- Total organic carbon (TOC) by United States Department of Agriculture Method HB60
- Chromium VI by USEPA Method SW846-7196 or Standard Method 3500

All analyses were performed by Anatek Labs or Anatek Labs subcontracted laboratories, which included Pace Analytical Services (for CDDs/CDFs), CCI Analytical Laboratories (for EPH and one chromium VI), and SVL Analytical (for TOC and one chromium VI).

PIONEER conducted a global positioning system (GPS) survey of the eight boring locations on November 7, 2008 with a Trimble GeoXH unit.

1.3 Minor Deviations from the SAP/QAPP

Phase 1 of the RI was completed in general accordance with the SAP/QAPP (GeoEngineers and PIONEER 2008). The only minor deviations noted from the SAP/QAPP were:

- PIONEER conducted the investigation instead of GeoEngineers.
- The SAP called for containerized samples to be collected from core intervals of approximately four to six inches in length. Given the gravelly lithology and actual core recovery, in most cases it was impossible to collect sufficient sample volume with a four- to six-inch sample interval. Even with two side-by-side borings (which were employed for all locations except DP32 and DP34), it typically required a one-foot sample interval or longer in order to obtain the minimum required container volume. Despite these limitations related to sample volume, a containerized sample was collected from within each of the sample intervals specified in the SAP.
- DP32 was extended one foot deeper and DP40 was extended two feet deeper than specified in the SAP to verify the encountered lithology.
- Samples specified for metal analyses were analyzed for all RCRA metals rather than just arsenic, cadmium, and lead since the footnote to Table 1 of the SAP was unclear about which samples should be analyzed for all RCRA metals.
- The sample collected from DP33 at a depth of seven to eight feet was analyzed for metals and PAHs analyses even though such analyses were not specified in the SAP. These analyses were performed since this sample location was one of the few locations in which dark sand fill was encountered.
- The three samples with the highest TPH-D and/or TPH-HO concentrations were analyzed for EPH.
- Two of the ten locations specified in the SAP for TOC analysis were replaced with alternate sample locations due to the presence of TPH-D and/or TPH-HO in the originally proposed locations.

- The two samples in which total chromium was detected above the accepted natural background concentration for Puget Sound (i.e., 48 mg/kg) (Ecology 1994) were analyzed for chromium VI. Since the selection of the chromium VI analysis occurred after the follow-on EPH and TOC selections, the chromium VI samples were analyzed by separate laboratories.
- Investigation-derived waste (IDW) was handled as follows. An insignificant volume of decontamination water was generated during the investigation and was discharged on Site. An insignificant volume of unused soil core (approximately five gallons) was generated and added to the existing IDW stockpile near DP34.
- PIONEER slightly revised the proposed sample identification nomenclature (i.e., the suffix that identified the depth of a sample) to improve data usability during subsequent data evaluations.
- The survey was completed with a more accurate GPS unit.

1.4 Results

The encountered lithology was generally consistent with the conceptual site model and geologic cross-sections presented in the RI Work Plan (GeoEngineers and PIONEER 2008). The interpreted lithologic unit for each containerized sample interval is included in Table B-1. There was no obvious evidence of a release detected in the field for any of the soil borings based on field screening results (i.e., visual, olfactory, water sheen, or vapor).

Table B-1 presents all of the analytical results by boring number. Table B-2 presents a summary of the analytical results by constituent for the Phase 1 RI (along with the pre-RI soil data collected within the infrastructure corridor). Attachment B-2 to this appendix contains a data quality review and verification, copies of laboratory certificates of analyses, and chain-of-custody documentation.

REFERENCES

Ecology 1994. Natural Background Soil Metals Concentrations in Washington State, October.

GeoEngineers and PIONEER 2008. Remedial Investigation Work Plan, East Bay Redevelopment, Port of Olympia, Olympia, WA, October 22.

TABLE B-1. PHASE 1 RI ANALYTICAL RESULTS

Boring	Sampe Depth (feet bgs)	Interpreted Lithologic Unit	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Total Xylenes (mg/kg)	TPH-D (mg/kg)	TPH-HO (mg/kg)	EPH (mg/kg)	Total Naphthalenes (mg/kg)	Total cPAHs[1] (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium VI (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Total Dioxins/ Furans[1] (mg/kg)	TOC (%)	Moisture (%)
DP32	1-2	Light Gravel Fill																				1.6E-07	3.5E-01	
	4-5	Light Gravel Fill									1.0E-02 U	7.5E-03 U	2.3E+00	4.1E+01	2.0E-01 U	1.5E+01		2.5E+00	2.4E-02	2.0E-01 U	2.0E-01 U	2.1E-07	2.3E-01	6.4E+00
	8-9	Light Gravel Fill																				4.5E-07		
DP33	1-2	Light Gravel Fill									1.0E-02 U	2.7E-02	1.9E+00	3.6E+01	2.0E-01 U	2.1E+01		2.2E+00	2.0E-02	2.0E-01 U	2.0E-01 U	2.9E-06		8.8E+00
	3-4	Light Sand Fill									1.4E-02	2.6E-01	2.1E+00	5.0E+01	2.0E-01 U	1.9E+01		2.2E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	8.9E-06	2.8E-01	5.7E+00
	5-6	Light Sand Fill									1.0E-02 U	2.4E-02	3.0E+00	5.3E+01	2.0E-01 U	3.4E+01		2.6E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	9.4E-07		5.3E+00
	7-8	Dark Sand Fill									3.2E-01	3.3E-01	2.8E+00	4.5E+01	2.2E-01	1.8E+01		7.7E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	6.3E-06	4.3E+00	1.9E+01
DP40	1-2	Light Gravel Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	2.2E+01	1.1E+02		1.6E-02	3.1E-02	2.7E+00	5.9E+01	2.0E-01 U	1.9E+01		3.8E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	5.2E-06		5.7E+00
	3-4	Light Gravel Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	5.0E+00 U	3.9E+01		2.7E-02	7.5E-03	2.8E+00	5.3E+01	2.0E-01 U	2.1E+01		3.4E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	1.2E-06	3.6E-01	7.6E+00
	5-6	Light Sand Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	1.9E+01	3.0E+02	(2)	1.0E-02 U	3.7E-02	2.4E+00	5.1E+01	2.0E-01 U	8.4E+01	5.0+00 U	2.6E+00	2.0E-02 U	2.0E-01 U	4.1E-01	7.1E-07		6.6E+00
	7-8	Light Sand Fill																						
DP36	1-2	Light Gravel Fill																				2.1E-07		
	3-4	Light Gravel Fill																						
	5-6	Light Gravel Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	1.6E+01	1.6E+02	(2)			2.6E+00	6.2E+01	2.0E-01 U	3.0E+01		2.9E+00	2.0E-02 U	2.0E-01 U	7.4E-01	1.2E-06		4.5E+00
	7-8	Light Gravel Fill																						
	8-9	Light Gravel Fill																				2.6E-07		
DP38	1-2	Light Gravel Fill									2.3E-02	5.2E-02	2.9E+00	6.6E+01	2.0E-01 U	1.8E+01		1.2E+01	2.0E-02 U	2.0E-01 U	2.0E-01 U			1.0E+01
	3-4	Light Gravel Fill																						
	5-6	Dark Sand Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	8.2E+00	1.4E+01		2.9E-01	9.8E-02	6.8E+00	4.3E+01	6.8E-01	3.1E+01		3.2E+01	6.0E-02	2.9E-01	2.0E-01 U	4.2E-06		3.6E+01
	6-7	Coarse Sawdust	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	5.6E+01	4.7E+02	(2)	3.3E-02	8.4E-02	7.5E+00	1.7E+01	4.7E-01	7.7E+00		9.5E+01	3.0E-02	4.1E-01	2.0E-01 U	5.5E-06	3.4E+01	8.0E+01
	9-10	Dark Sand Fill																						
DP30	1-2	Light Sand Fill											3.4E+00	2.7E+01	2.0E-01 U	1.9E+01		6.3E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	1.0E-06		5.8E+00
	3-4	Light Sand Fill									1.0E-02 U	2.8E-02	5.1E+00	5.5E+01	2.0E-01 U	3.1E+01		2.9E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	1.6E-07		2.2E+01
	4-5	Light Sand Fill																						
	7-7.5	Disturbed Native Silt											9.9E+00	6.3E+01	6.9E-01	4.6E+01		5.6E+01	8.6E-02	4.9E-01	2.0E-01 U	6.2E-05		6.1E+01
DP27	0-1	Light Gravel Fill									4.4E-02	1.6E-01	3.0E+00	5.4E+01	2.0E-01 U	1.8E+01		6.6E+00	2.0E-02 U	2.0E-01 U	5.9E-01	3.6E-06		1.0E+01
	3-4	Light Sand Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U				1.0E-02 U	9.7E-03	3.5E+00	8.5E+01	2.1E-01	4.8E+01		5.1E+00	2.8E-02	2.0E-01 U	2.0E-01 U	2.3E-07	4.3E-01	2.5E+01
	4-5	Disturbed Native Silt									2.6E-02	4.3E-02	3.1E+00	6.3E+01	2.5E-01	5.2E+01	1.0E-01 U	4.2E+00	2.0E-02 U	2.0E-01 U	3.3E-01	1.0E-06	4.8E-01	2.0E+01
	6-7	Disturbed Native Sand											2.1E+00	2.2E+01	2.0E-01 U	1.8E+01		1.3E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	1.8E-07		1.4E+01
DP34	1-3	Light Sand Fill																				7.6E-06		
	4-6	Light Sand Fill	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	5.4E+00	1.3E+01		7.4E-02	5.4E-02	3.9E+00	7.1E+01	2.0E-01 U	2.5E+01		4.7E+00	2.0E-02 U	2.0E-01 U	2.0E-01 U	1.6E-06	8.0E-01	1.4E+01
	7.5-9.5	Coarse Sawdust	5.0E+00 U	1.0E-03 U	1.0E-03 U	1.0E-03 U	2.0E-03 U	1.6E+01	3.6E+01		8.1E-02	4.8E-02	1.5E+01	3.7E+01	2.0E-01 U	2.1E+01		5.6E+01	4.6E-02	1.3E+00	2.0E-01 U	3.2E-06	1.5E+01	7.6E+01

Notes:

All detected concentration results shown to two significant figures.

Blank cells means constituent was not analyzed for the sample.

U = Not detected at shown concentration.

[1] Calculated using MTCA toxicity equivalency factors in Washington Administrative Code (WAC) 173-340-708(8).

[2] This sample was analyzed for EPH fractions. See laboratory report for specific results.

TABLE B-2. INFRASTRUCTURE CORRIDOR ANALYTICAL SUMMARY (Pre-RI + Phase 1 RI Data)

Constituent Type	Constituent	No. of Samples	No. of Detections	Minimum Concentation (mg/kg)	Average Concentration[1] (mg/kg)	Maximum Concentration (mg/kg)
Gasoline Range	TPH-G	15	3	2.8J	N/A [2]	31
	Benzene	15	0	0.001U	N/A [2]	0.25U
	Toluene	15	0	0.001U	N/A [2]	0.12U
	Ethyl Benzene	15	0	0.001U	N/A [2]	0.12U
	Total Xylenes	15	0	0.002U	N/A [2]	0.24U
Diesel and Heavy Oil Range	TPH-D	17	11	5.4	23	91
	TPH-HO	17	14	13	140	610
	Total Naphthalenes	23	11	0.016	0.052	0.32
	Total cPAHs[3]	23	20	0.0016	0.067	0.33
Metals	Arsenic	30	28	1.9	4.2	14.5
	Cadmium	30	8	0.023	0.32	3.7
	Lead	30	30	1.3	18	170
Dioxins/Furans	Total Dioxins/Furans[3]	26	26	1.6E-07	6.8E-06	6.2E-05

Notes:

All detected concentration results shown to two significant figures.

U = Not detected at shown concentration.

[1] Assuming non-detects at value equal to half of the practical quantitation limit.

[2] Not applicable because of number of non-detects.

[3] Calculated using MTCA toxicity equivalency factors in Washington Administrative Code (WAC) 173-340-708(8).

ATTACHMENT B-1

FIELD NOTES AND BORING LOG FIELD FORMS

PIONEER TECHNOLOGIES CORPORATION (PTC)
FIELD CHECKLIST

Project/Task Name: PHASE 1 RI — Site Location: PORT OF OLYMPIA - EAST BAY

Requested By / Date: TDB / 10/28/08 — Work Deadline: SCHEDULED 11/4/08

SERVICES REQUESTED	COMPLETED
(1) ADVANCE BORINGS AND COLLECT SOIL SAMPLES EVERY 2' FROM DP38, DP40, DP36, DP33, DP27, DP30, DP32, AND DP34 PER SAP TABLE 1	☒ YES ☐ NO
(2) HOLDING ONE SAMPLE FROM EACH 2' INTERVAL FOR POSSIBLE ANALYSIS	☒ YES ☐ NO
(3) SUBMIT INITIAL SAMPLES PER SAP TABLE 1	☒ YES ☐ NO
(4) BTEX BY COLLECTED BY 5035	☒ YES ☐ NO
(5) SCREENING = VISUAL, ODOR, SHEEN, PID	☒ YES ☐ NO
(6) QC = BTEX TRIP BLANKS ONLY	☒ YES ☐ NO
(7) TAKE REPRESENTATIVE PHOTOS	☒ YES ☐ NO
(8) KEVIN GPS & BORING - THURSDAY	☐ YES ☐ NO
	☐ YES ☐ NO
	☐ YES ☐ NO
	☐ YES ☐ NO

ADDITIONAL STANDARD INSTRUCTIONS	COMPLETED		COMPLETED
☒ Review Docs: GOE ENGINEERS SAP/QAPP; PTC HASP	☒ YES ☐ NO	☒ Health & Safety Meeting	☒ YES ☐ NO
☒ Agency NOI (ESN) / Utility Locate / Concrete Coring	☒ YES ☐ NO	☐ Call PM from Site	☐ YES ☐ NO
☒ Coordinate Access: AL KULP 587-6099	☒ YES ☐ NO	☐ Draw Site Map _____	☐ YES ☐ NO
☒ Coordinate Sub / Equip: ESN	☒ YES ☐ NO	☒ Cuttings / Purge Water Characterization & Disposal	
☒ Purchase / Rent Equip: PID, GPS, VAN	☒ YES ☐ NO	☐ Potential HW _____	☐ YES ☐ NO
☒ Client/Agency Coordination: TEEL, SNYASKI	☒ YES ☐ NO	☒ Non-Haz IDW STOCKPILE OR GROUND	☒ YES ☐ NO
☒ Calibrate Equipment: PID	☒ YES ☐ NO	☐ Background _____	☐ YES ☐ NO
COORDINATE ICLS W/ LAB - DONE		DRUM WATER ON GROUND; SOIL TO IDW PILE STOCKPILE (MINIMAL VOLUME) ~ 5 gal	

SAMPLING REQUIREMENTS	
☒ Field Testing: SHEEN, SCREEN, PID	
☒ Lab Testing: TPH-D + HO by NWTPH-DX, TPH-G by NWTPH-G, BTEX by 8260B, RCRA 8 metals, PAHs by 8270 SIM	Laboratory: ANATEK - PORT ANGELES DIRECTORY
☒ Lab Testing: DIOXINS by 1613 or 8290	Laboratory: PACE - MINNEAPOLIS
☒ Lab Testing: TOC AND EPH	Laboratory: ANATEK &/OR SUB

FIELD SUPPLIES NEEDED	
☒ Site Map ☒ Camera ☒ Survey Equip (GPS) ☒ Vehicle	☒ Water Level Indicator / Interface Probe
☒ Std Field Equip (keys, forms, SAP, HASP, PPE, decon, tools)	☐ Water Quality Meter _____ ☐ Field Test Kits _____
☒ Drilling Equip (PID, references, knife, baggies, tape)	☒ Sample Kit / Cooler / COC / Ice _____
☒ Soil Equip (SS bowls, spoon/shovel, hand auger, pick, sieves)	☒ IDW: ☒ Drums (ESN bring) ☐ 5-gal buckets _____
☐ GWM (pump, tubing, gen., compres., bailers, rope/string, PDB)	☐ Other: _____
☐ Pump / Slug Test Equip (GWM Equip, slug, stopwatch)	☐ Other: _____

PIONEER TECHNOLOGIES CORPORATION (PTC)
DAILY FIELD REPORT

Date: 11/4/08 Site Location: Port of Olympia East Bay Site Arrival Time: 0730 Site Departure Time: 1630

WEATHER	Clear Sun	Overcast	Drizzle X	Rain X	Snow
TEMPERATURE	To 32	32-50 X	50-70	70-85	85 Up
WIND	Calm	Med. X	Strong	Severe	

PEOPLE PRESENT ON-SITE

NAME	ASSOCIATION	TIME ON-SITE AND OFF-SITE
TROY BUSSEY	PTC	See above
MARTY of ~~ESN~~ HAW	ESN	0730 - 1545
JASON of JFK CONCRETE	JFK Concrete	0730 - 0945
Kevin Gallagher	PTC	0915 - See above

NOTES ON WORK COMPLETED

#10; #4

COORDINATED SAW & A's WITH ESN ; GOT JFK ORIENTED ON 6 CUTS
SET-UP ON DP37 → SEE BORING LOG ; TOOK PHOTO ; USED SIEVES ~~[illegible]~~ THROUGHOUT w/ GRAVELS
SET-UP ON DP33 @ 0930 → TOOK PHOTO ; STARTED COLLECTING SIDE-BY SIDE BORINGS FOR SAMPLE VOLUME
SET-UP ON DP40 @ 1030
SET-UP ON DP36 @ 1140 → ~~TOOK~~ PHOTO
SET-UP ON DP38 @ 1240 → ~~TOOK PHOTO~~

[illegible]

GRAVELLY FILL IS ~~[illegible]~~ HAMPERING RECOVERIES AND SAMPLE VOLUMES ~~[illegible]~~ MATERIAL IS ~~MORE GRAVELLY~~
ALSO DIFFICULT TO DISTINGUISH BETWEEN GRAY TO BROWN GRAVELLY SAND FILL AND SANDY GRAVEL FILL (LUMP TOGETHER?) ; ONLY CLEAR DISTINCTION IS DARKER, CLEANER SAND/GRAVEL

DP30 @ 1345 → TOOK PHOTO
DP27 @ 1430 → PHOTO → DIDN'T NEED 2nd boring due to grain size & recovery
DP34 @ 1515 → COULDN'T DO 2nd boring due to concrete

ADVANCED ALL BORINGS AS PLANNED

ADDED ONE EXTRA ~~[illegible]~~ SAMPLE FOR ANALYSIS
→ DP33 7-8 SINCE ONLY LOCATION W/ DARK SAND FILL

IN SUMMARY, NO OBVIOUS VISUAL, ODOR, SHEEN, OR PID EVIDENCE OF IMPACT IN ANY BORINGS
TWO SIDE BY SIDE CORES COLLECTED FROM ALL BORINGS EXCEPT DP32 (1st) and DP34 (last)

MOST OF SHALLOW ENCOUNTERED FILL WAS MUCH MORE GRAVELLY THAN DESCRIBED BY GEOENGINEERS

SIGNATURE: [signature] DATE: 11/4/08

1

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID: DP3 2
Project/Site Name: PORT OF OLYMPIA - EAST BAY
Field Professional: TROY BUSSEY
Start Date/Time: 11/4/08 0815
Stop Date/Time: 11/4/08 0845
Drilling Co.: GSW
Lisc. Driller: MARTY HAUN
Drilling Method: DP
Drill Rig: TRUCK MOUNT
Drill Bit: N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' MACRO CORE W/ LINER	N/A / /	60	See descriptions	GRAY AND BLACK SILTY GRAVEL WITH FINE SAND, LOOSE, MOIST. (BROWN SILT AND SAND)	1	2	0	Y 0900
	4	8		/ /	50		SAME AS ABOVE WITH MORE MEDIUM SAND, MEDIUM DENSE	4	5	0	Y 0905
	8	10		/ /	75		SAME AS ABOVE W/ GW @ ~9'	8	9	0	Y 0910
				/ /			NO VISUAL, ODOR, OR SHEEN CUES IN ANY INTERVAL				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	4"		DARK BROWN SANDY SILT LOAM [TOPSOIL]
4"	10'	GM	GRAY, BROWN (FINES) AND BLACK SILTY GRAVEL WITH FINE AND MEDIUM SAND, LOOSE TO MEDIUM DENSE, MOIST TO WET (BELOW GW) [GRAVEL FILL]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~9'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

2

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID: DP33
Project/Site Name: POO – EAST BAY
Field Professional: TB
Start Date/Time: 11/4/08 0930
Stop Date/Time: 11/4/08 1000
Drilling Co.: ESN
Lisc. Driller: MARTY HANN
Drilling Method: DP
Drill Rig: TRUCK MOUNT
Drill Bit: N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' macro core w/ liner	N/A	60	See desc. pg.	4"-3': GRAY SILTY GRAVEL WITH OCCASSIONAL FINE SAND, MEDIUM DENSE, DRY TO MOIST (Brown silt and Sand)	1	2	ϕ	Y 0950
							3'-4': BROWN SILTY MEDIUM SAND WITH FREQUENT WHITEISH GRAY OR BLACK GRAVELS, MEDIUM DENSE, MOIST	3	4	ϕ	Y 0955
	4	8			60		4'-7': SAME AS 3-4' ABOVE	5	6	ϕ	Y 1000
							7'-8' DARK BROWN TO BLACK SILTY COARSE SAND TO FINE GRAVEL, LOOSE, MOIST TO WET, WITH SOME WOOD DEBRIS	7	8	ϕ	Y 1005
							NO VISUAL CUES, ODOR, OR SHEEN IN ANY INTERVAL →				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	4"		DARK BROWN SANDY SILT LOAM [TOPSOIL]
4"	3'	GM/GW	GRAY TO BROWN (FINES) SILTY GRAVEL WITH OCCASSIONAL FINE SAND, MEDIUM DENSE, DRY TO MOIST [LIGHT GRAVEL FILL]
3'	7'	SM/SW	BROWN SILTY MEDIUM SAND WITH FREQUENT WHITEISH GRAY OR BLACK GRAVELS, MED. DENSE, MOIST [LIGHT SAND FILL]
7'	8'	SM/SP	DARK BROWN TO BLACK SILTY COARSE SAND AND FINE GRAVEL, LOOSE, MOIST TO WET, WITH SOME WOOD DEBRIS [DARK SAND FILL]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~7'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

3

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID	DP40	Drilling Co.	ESN
Project/Site Name	RO - EAST BAY	Lisc. Driller	MARTY HAWN
Field Professional	TJB	Drilling Method	DP
Start Date/Time	11/4/08 1030	Drill Rig	TRUCK-MOUNT
Stop Date/Time	11/4/08 1115	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' MACRO CORE w/ LINER	N/A	75	See description	GRAY SILTY GRAVEL WITH FINE AND MEDIUM SAND, LOOSE TO MEDIUM DENSE, DRY TO MOIST (brown silt and sand)	1	2	0	Y 1110
								3	4	0	Y 1115
	4	8			75		4'-5': SAME AS ABOVE				
							5'-8': BROWN SILTY FINE AND MEDIUM SAND WITH OCCASSIONAL GRAY OR BLACK COARSE GRAVEL, LOOSE TO MEDIUM DENSE, MOIST TO WET (below 7.5')	5	6	0	Y 1120
								7	8	0	Y 1125
						NO	DARK SAND FILL ENCOUNTERED!				
							NO VISUAL, ODOR, OR SHEEN IN ANY INTERVALS				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	2"		ASPHALT WITH ~~LITT~~ MINIMAL BASECOURSE
2"	5'	GM	GRAY TO BROWN (FINES) SILTY GRAVEL WITH FINE AND MEDIUM SAND, LOOSE TO MEDIUM DENSE, DRY TO MOIST [LIGHT GRAVEL FILL]
5'	8'	SM/SW	BROWN SILTY FINE AND MEDIUM SAND WITH OCCASSIONAL GRAY OR BLACK COARSE GRAVEL, LOOSE TO MEDIUM DENSE, MOIST TO WET [LIGHT SAND FILL]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~ 7.5'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

4

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION			
Boring/MW ID	DP36	Drilling Co.	ESN
Project/Site Name	P.O - EAST BAY	Lisc. Driller	MARTY KAHN
Field Professional	TB	Drilling Method	DP
Start Date/Time	11/4/08 1140	Drill Rig	TRUCK-MOUNT
Stop Date/Time	11/4/08 1210	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' MACRO CORE W/ LINER	N/A / /	75	SEE DESCRIPTION	GRAY SILTY GRAVEL WITH FINE TO MEDIUM SAND, LOOSE TO MEDIUM DENSE, DRY TO MOIST (MOSTLY DRY) (brown silt and sand)	1	2	0	Y 1150
				/ /				3	4	0	Y 1200
	4	8		/ /	60		SAME AS ABOVE	5	6	0	Y 1210
				/ /				7	8	0	Y 1220
	8	10		/ /	75		SAME AS ABOVE, EXCEPT WET BELOW 9'	8	9	0	Y 1230
				/ /			NO VISUAL CUES, ODOR, OR SHEEN IN ANY INTERVAL				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	2"		ASPHALT WITH MINIMAL BASECOURSE
2"	10'	GM	GRAY TO BROWN (FINES) SILTY GRAVEL WITH FINE TO MEDIUM SAND, LOOSE TO MEDIUM DENSE, DRY TO WET [LIGHT GRAVEL FILL]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~ 9'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

5

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID	DP38	Drilling Co.	ESN
Project/Site Name	Ro - East Bay	Lisc. Driller	Marty Adam
Field Professional	AB	Drilling Method	DP
Start Date/Time	11/4/08 1240	Drill Rig	Truck-mount
Stop Date/Time	11/4/08 1310	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' macro core w/ liner	N/A	50	see descript.	~~Gray to dark brown~~ silty gravel with fine to	1	2	ϕ	~~8~~
				/			medium sand, medium dense, dry				1250
				/			to ~~moist~~ wet, 3"-long solid wood chunk	3	4	ϕ	Y
				/ /			in 2nd sorry ~~for~~ in 3.5'-4' interval				1300
				/ /			(~~dark brown~~ silt and sand)				
	4	8		/ /	50		4'-5': same as above				
				/			5'-6': Dark gray clayey ~~very~~ fine sand	5	6	ϕ	Y
				/			with silt, medium dense, moist to				1310
				/			wet, with some bark sized wood				
				/			debris				
				/			6-8': Reddish brown fine shredded	6	7	ϕ	Y
				/			wood debris → coarse sawdust				1320
	8	10		/	25/100		8'-9': same as 6-8'				
				/ /	↑ 1st sorry	↑ 2nd sorry	9'-10': Brown gravelly fine sand, medium dense, moist to wet	9	10	ϕ	Y
				/ /			No visual lues, odor, or sheen				1330
				/ /			in any interval →				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	3"		Loose coarse gravel / decomposing asphalt
3"	5'	GM	Gray to dk brown (fines) silty gravel with fine to medium sand, medium dense, dry to wet,
			with wood ~~debris~~ construction debris or piling? [Light gravel fill]
5'	6'	SC/SM	Dark ~~gray~~ clayey ~~very~~ fine sand with silt, medium dense, moist to wet, with wood debris [Dark sand fill?]
6'	9'		Reddish brown fine shredded wood debris [coarse sawdust]
9'	10'	SP	Brown gravelly fine sand, medium dense, moist to wet [Dark sand fill?]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~3'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

6

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID	DP30	Drilling Co.	FSN
Project/Site Name	POD - EAST BAY	Lisc. Driller	MARTY MANN
Field Professional	TB	Drilling Method	DP
Start Date/Time	11/4/09 1345	Drill Rig	TRUCK - MOUNT
Stop Date/Time	11/4/09 1410	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' MACRO CORE W/ LINER	N/A	40	See closeup	GRAY SILTY FINE SAND WITH OCCASSIONAL COARSE GRAVEL, MOIST	1	2	0	Y 1350
								3	4	0	Y 1400
	4	8			100		SAME AS ABOVE TO 7', EXCEPT WET BELOW 5'	4	5	0	Y 1410
							7-7.5': GRAY TO BLACK CLAYEY SILT WITH SOME FINE SAND, MEDIUM STIFF, MOIST	7	7.5	0	Y 1420
							7.5-8': REDDISH BROWN FINE SHREDDED WOOD DEBRIS → SAME AS DP38				
							NO VISUAL OILS, ODOR, OR SHEEN IN ANY INTERVAL				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	2"		ASPHALT WITH MINIMAL BASECOURSE
2"	7'	SM	GRAY SILTY FINE SAND WITH OCCASSIONAL COARSE GRAVEL, MOIST TO WET [LIGHT SAND FILL?]
7'	7.5'	ML	GRAY TO BLACK CLAYEY SILT WITH SOME FINE SAND, MEDIUM STIFF, MOIST [DISTURBED SILT? NATIVE?]
7.5'	8'		REDDISH BROWN FINE SHREDDED WOOD DEBRIS [COARSE SAWDUST]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ 5'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

7

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION			
Boring/MW ID	DP27	Drilling Co.	ESN
Project/Site Name	BD FAST BAY	Lisc. Driller	MARTY HAHN
Field Professional	TB	Drilling Method	DP
Start Date/Time	11/4/08 1430	Drill Rig	TRUCK-MOUNT
Stop Date/Time	11/4/08 1500	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4' MACRO CORE W LINER	N/A	75	SEE DESCRIPT	0 TO 2.5': BROWN TO GRAY SANDY GRAVEL, MEDIUM DENSE, DRY TO MOIST	0	1	0	Y 1440
							2.5'-4': GRAY CLAYEY FINE SAND WITH SILT, MEDIUM DENSE, MOIST	3	4	0	Y 1450
	4	8			90		4'-5': GRAYISH BROWN CLAYEY SILT WITH SOME FINE SAND, MEDIUM STIFF, MOIST	4	5	0	Y 1500
							5'-7.5': GRAY FINE SAND (WELL SORTED), WITH SOME SHELLS PRESENT, WET	6	7	0	Y 1570
							7.5'-8': REDDISH BROWN FINE STRANDED WOOD DEBRIS → SAME AS DP38				
							NO VISUAL CUES, ODOR, OR SHEEN IN ANY INTERVAL →				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	2"		ASPHALT WITH MINIMAL BASE COURSE
2"	2.5'	GP	BROWN TO GRAY SANDY GRAVEL, MEDIUM DENSE, DRY TO MOIST [LIGHT GRAVEL FILL]
2.5'	4'	SC/SM	GRAY CLAYEY FINE SAND WITH SILT, MEDIUM DENSE, MOIST [LIGHT SAND FILL?]
4'	5'	ML	GRAYISH BROWN CLAYEY SILT WITH SOME FINE SAND, MEDIUM STIFF, MOIST [DISTURBED NATIVE SILT?]
5'	7.5'	SP	GRAY FINE SAND (WELL SORTED), WITH SOME SHELLS PRESENT, WET [DISTURBED NATIVE SAND?]
7.5'	8'		REDDISH BROWN FINE STRANDED WOOD DEBRIS [COARSE SAWDUST]

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~5'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

8

PIONEER TECHNOLOGIES CORPORATION (PTC)
BORING LOG FORM

GENERAL INFORMATION

Boring/MW ID	DP34	Drilling Co.	ESN
Project/Site Name	PDO - EAST BAY	Lisc. Driller	MARTY HAWN
Field Professional	TB	Drilling Method	DP
Start Date/Time	11/4/08 1515	Drill Rig	TRUCK-MOUNT
Stop Date/Time	11/4/08 1540	Drill Bit	N/A

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
	0	4	4" MACRO CORE w/ LINER	N/A	60	See descript	BROWN TO GRAY GRAVELLY SAND WITH SILT, MEDIUM DENSE, DRY TO MOIST	1	3	0	Y 1530
	4	8			50		SAME AS ABOVE TO 7.5'	4	6	0	Y 1540
							7.5'-8': REDDISH BROWN FINE SHREDDED WOOD DEBRIS - SAME AS DP38				
								7.5	9.5	0	Y 1550
	8	10			100		~~SAME~~ 8-9.5' IS SAME AS 7.5'-8'				
							9.5'-10' REDDISH BROWN WOOD (BARK SIZED)				
							NO VISUAL CUES, ODOR, OR SHEEN IN ANY INTERVAL →				

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description
0	6"		CONCRETE
6"	7.5'	SW/SM	BROWN TO GRAY GRAVELLY SAND WITH SILT, MEDIUM DENSE, DRY TO MOIST [LIGHT SAND FILL]
7.5'	9.5'		REDDISH BROWN FINE SHREDDED WOOD DEBRIS [COARSE SAWDUST]
9.5'	10'		REDDISH BROWN ~~WOOD DEBRIS~~ BARK-SIZED WOOD DEBRIS

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]
Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position): GW @ ~ 6'

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

ATTACHMENT B-2

DATA QUALITY REVIEW AND VERIFICATION, LABORATORY CERTIFICATES OF ANALYSES, AND CHAIN-OF-CUSTODIES

Data Quality Review and Verification
East Bay Phase 1 RI – November 2008

1. Precision
Precision was assessed via the relative percent difference (RPD) for matrix spike duplicates. As shown in the analytical reports, all matrix spike duplicate RPDs were within the acceptable range, with one exception. The RPD for 1,2,3,4,6,7,8,9-octachloro dibenzo-p-dioxin in one matrix spike duplicate was low due to variable background-subtracted results in the two matrix spikes as discussed in the Pace Analytical Services case narrative. Further data qualification beyond what was reported by the laboratories was not necessary. It should be noted that the QAPP (GeoEngineers, 2008) did not specify expectations for constituents to be spiked or for RPDs.

2. Accuracy
Accuracy was assessed by analysis of laboratory method and trip blanks as well as recoveries in blank spikes, matrix spikes, and surrogates. As shown in the analytical reports, no constituents were detected in the trip blank or any of the laboratory method blanks, with the following exception. Several CDD/CDF congeners were detected in the laboratory method blanks, which can be attributed to background conditions. As shown in the analytical reports, recoveries for all blank spikes, matrix spikes, and surrogates were within the acceptable range, with the following exceptions. The surrogate recoveries for all CDD/CDF congeners in DP38-081104-6-7 and the surrogate recovery for one CDD/CDF congener in DP36-081104-5-6 were outside of the surrogate control limits. It is standard protocol to re-extract and re-analyze a sample with poor surrogate recoveries such as DP38-081106-6-7, however, not enough sample volume was left to re-extract DP38-081104-6-7. Further J-flag qualification of the sample results with poor surrogate recovery was not necessary in accordance with the Pace Analytical Services case narrative. It should be noted that the QAPP (GeoEngineers 2008) did not specify expectations for constituents to be spiked or for expected recoveries.

3. Representativeness
Representativeness was assessed by evaluating the sample collection, sample handling, and sample analysis procedures. All samples were collected, handled, and analyzed in accordance with the SAP/QAPP (GeoEngineers, 2008), which was designed to obtain representative samples. In addition, all samples were extracted and analyzed within appropriate holding times.

4. Comparability
Comparability was assessed by comparing current sample collection and analysis procedures with standard procedures. The samples were collected and analyzed with standard procedures and were comparable with other data as qualified by the laboratories.

5. Sensitivity
Sensitivity was assessed by comparing actual practical quantification limits (PQLs) with the PQL expectations in the QAPP (GeoEngineers, 2008). The actual PQL was equal to or less than the expected PQL listed in the QAPP, with the following exceptions. The actual PQLs for 2,3,7,8-tetrachloro dibenzo-p-dioxin in DP36-081104-5-6, 1,2,3,4,7,8,9-heptachloro dibenzofuran in DP33-081104-7-8, and most CDD/CDF congeners in DP38-081104-6-7 were slightly above the PQL expectations listed in the QAPP. However, these actual PQLs were still acceptable for use. Thus, no further data qualification beyond what was reported by the laboratories was necessary. It should be noted that the QAPP (GeoEngineers 2008) did not specify PQL expectations for EPH, TOC, and metals other than arsenic, cadmium, and lead.

6. Completeness
Completeness was assessed by calculating the percentage of acceptable sample results to all sample results. A total of 104 analyses were performed (nine NWTPH-G, nine BTEX, eight NWTPH-Dx, 17 PAHs, 21 metals, 25 CDDs/CDFs, two chromium VI, three EPH, 10 TOC). All of the sample results were acceptable as qualified by the laboratories. Thus, the completeness of the analytical data is 100 percent.

7. Conclusions
This data is deemed acceptable for use as presented by the laboratory. As a result, no corrective action or further data qualification is necessary.

ANATEK LABS REPORT

CASE NARRATIVE November 12, 2008

Lab Name: Anatek Labs, Inc. 1282 Alturas Drive, Moscow, ID 83843 www.anateklabs.com *FL NELAP E87893, NV ID13-2004-31, WA DOE C126, OR ELAP ID200001, MT 0028, ID, CO, NM*

Project Tracking No.: EAST BAY RI PHASE 1
Anatek Batch: 081105018

Project Summary: Thirty-Three (33) soil samples were received on 11/5/2008. All samples were received with the appropriate chain of custody Samples were received at 7.9C. The requested analyses are summarized below. The TOC and EPH samples were held pending results of the initial round of analyses per the client request

Client Sample ID	Anatek Sample ID	TPHDx	TPHGx	BTEX	RCRA8	PAH	TOC	EPH	HOLD
DP32-081104-1-2	0811050118-001								x
DP32-081104-4-5	0811050118-002				x	x			
DP32-081104-8-9	0811050118-003								x
DP33-081104-1-2	0811050118-004				x	x			
DP33-081104-3-4	0811050118-005				x	x			
DP33-081104-5-6	0811050118-006				x	x			
DP33-081104-7-8	0811050118-007				x	x			
DP40-081104-1-2	0811050118-008	x	x	x	x	x			
DP40-081104-3-4	0811050118-009	x	x	x	x	x			
DP40-081104-5-6	0811050118-010	x	x	x	x	x			
DP40-081104-7-8	0811050118-011								x
DP36-081104-1-2	0811050118-012								x
DP36-081104-3-4	0811050118-013								x
DP36-081104-5-6	0811050118-014	x	x	x	x				
DP36-081104-7-8	0811050118-015								x
DP36-081104-8-9	0811050118-016								x
DP38-081104-1-2	0811050118-017				x	x			
DP38-081104-3-4	0811050118-018								x
DP38-081104-5-6	0811050118-019	x	x	x	x	x			
DP38-081104-6-7	0811050118-020	x	x	x	x	x			
DP38-081104-9-10	0811050118-021								x
DP30-081104-1-2	0811050118-022				x				
DP30-081104-3-4	0811050118-023				x	x			
DP30-081104-4-5	0811050118-024								x
DP30-081104-7-7.5	0811050118-025				x				
DP27-081104-0-1	0811050118-026				x	x			
DP27-081104-3-4	0811050118-027		x	x	x	x			
DP27-081104-4-5	0811050118-028				x	x			
DP27-081104-6-7	0811050118-029				x				
DP34-081104-1-3	0811050118-030								x
DP34-081104-4-6	0811050118-031	x	x	x	x	x			
DP34-081104-7.5-9.5	0811050118-032	x	x	x	x	x			
TRIP BLANK	0811050118-033		x	x					

QA/QC Checks

Parameters	Yes / No	Exceptions / Deviations
Sample Holding Time Valid?	Y	NA
Surrogate Recoveries Valid?	Y	NA
QC Sample(s) Recoveries Valid?	Y	NA
Method Blank(s) Valid?	Y	NA
Tune(s) Valid?	Y	NA
Internal Standard Responses Valid?	Y	NA
Initial Calibration Curve(s) Valid?	Y	NA
Continuing Calibration(s) Valid?	Y	NA
Comments:	Y	NA

1. Holding Time Requirements

Samples were received above the recommended temperature range of 0-6C and were stored at 4C after arrival at the laboratory. This is not expected to negatively impact the results.

2. GC/MS Tune Requirements

No problems encountered

3. Calibration Requirements

No problems encountered.

4. Surrogate Recovery Requirements

No problems encountered.

5. QC Sample (LCS/MS/MSD) Recovery Requirements

No problems encountered.

6. Method Blank Requirements

The method blanks were non-detect (<MDL) for all analytes. No problems encountered.

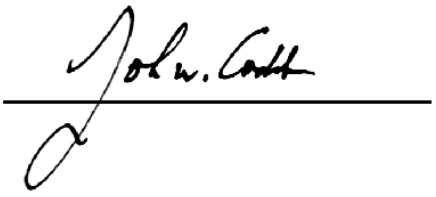
7. Internal Standard(s) Response Requirements

No problems encountered.

8. Comments

No problems encountered.

I certify that this data package is in compliance with the terms and conditions of the contract. Release of the data contained in this data package has been authorized by the Laboratory Manager or his designee.

Approved by: 

81105 018 PITC Last Due 11/12/2008

st SAMP 11/4/2008 1st RCVD 11/5/2008

AST BAY RI PHASE 1

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Company Name: PIONEER TECHNOLOGIES CORPORATION	Project Manager: TROY BUSSEY
Address: 2617 YELM HWY SE, SUITE B	Project Name & #: EAST BAY RI PHASE 1
City: OLYMPIA State: WA Zip: 98501	Email Address: bussey+@ustpioneer.com
Phone: 360-570-1700	Purchase Order #: TO BE PAID BY PORT OF OLYMPIA
Fax:	Sampler Name & phone: SAME

Turn Around Time & Reporting

Please refer to our normal turn around times at:
http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail FAX
__Fax
X Email

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	TPH-D w/ silica gel	TPH-G by NWTPH-Gx	BTEX by 8260B	Rush 8 day TAT	PAHs 8270 SIM	TOC
	Preservative:					—	—	—	—	—	—
1	DP32-081104-1-2	11/4/08 0900	SOIL	2	1						X
2	DP32-081104-4-5	0905							X	X	X
3	DP32-081104-8-9	0910									
4	DP33-081104-1-2	0950							X	X	
5	DP33-081104-3-4	0955							X	X	X
6	DP33-081104-5-6	1000							X	X	
7	DP33-081104-7-8	1005							X	X	
8	DP40-081104-1-2	1110				X	X	X	X	X	
9	DP40-081104-3-4	1115				X	X	X	X	X	X
10	DP40-081104-5-6	1120				X	X	X	X	X	X
11	DP40-081104-7-8	1125									
12	DP36-081104-1-2	1150									
13	DP36-081104-3-4	1200									

Note Special Instructions/Comments

MWBS
SW ~~8015~~ - TOC 9060

HOLD ALL SAMPLES FOR POSSIBLE SUBSEQUENT ANALYSES

* RUN EPH ON 3 HIGHEST TPH-D + TPH-HO CONCENTRATIONS

SEE PQL EXPECTATIONS SENT TO JOHN CODDINGTON PREVIOUSLY

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
VOC Head Space?	Y	N

UPS
Temperature (°C): 7.9
Preservative: MeOH
Date & Time:
Inspected By:

	Printed Name	Signature	Company	Date	Time
Relinquished by	TROY BUSSEY JR		PTC	11/4/08	1630
Received by	Kamilla Mooney		Anatek	11-5-08	10:45
Relinquished by					
Received by					
Relinquished by					
Received by					

2

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In #

Company Name: PTC	Project Manager: Troy Bussey
Address: 2612 Yelm Hwy SE, Suite B	Project Name & #: East Bay RE Phase 1
City: Olympia State: WA Zip: 98501	Email Address: busseyt@ptcpioneer.com
Phone: (360) 570-1700	Purchase Order #: To be paid by Port of Olympia
Fax:	Sampler Name & phone: Same

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail Final
__Fax
X Email

Provide Sample Description / List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	TPHD & TPH-HO by NWTPH-Dx	TPH-G by NWTPH-G	BTEX by 8260	RCRA 8 metals (6020/7000)	PAHs 8270 SIM	TOC			
Preservative:						—	—	—	—	—	—			
14	DP36-081104-5-6	11/4/08 1210	SOIL	2	1 8oz 2 VOA	X	X	X	X					
15	DP36-081104-7-8	↓ 1220	↓	↓	↓									
16	DP36-081104-8-9	1230												
17	DP38-081104-1-2	1250							X	X				
18	DP38-081104-3-4	1300												
19	DP38-081104-5-6	1310				X	X	X	X	X	X			
20	DP38-081104-6-7	1320				X	X	X	X	X	X			
21	DP38-081104-9-10	1330												
22	DP30-081104-1-2	1350							X					
23	DP30-081104-3-4	1400							X	X				
24	DP30-081104-4-5	1410												
25	DP30-081104-7-7.5	1420							X					

Note Special Instructions/Comments

Hold all samples for possible subsequent analysis

	Printed Name	Signature	Company	Date	Time
Relinquished by	Troy Bussey Jr.	[signature]	PTC	11/4/08	1630
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by					

Inspection Checklist

Received Intact? Y N
Labels & Chains Agree? Y N
Containers Sealed? Y N
VOC Head Space? Y N

Temperature (°C):
Preservative:
Date & Time:
Inspected By:

3 32

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In #

Company Name: PTC	Project Manager: TROY BUSSEY
Address: 2612 YELM HWY SE, SUITE B	Project Name & #: EAST BAY RT PHASE 1
City: OLYMPIA State: WA Zip: 98501	Email Address: bussey t @ uspioneer. com
Phone: 360 570-1700	Purchase Order #: TO BE PAID BY PORT OF OLYMPIA
Fax:	Sampler Name & phone: SAME

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail FINAL
__Fax
X Email

Provide Sample Description / List Analyses Requested

Preservative: — — — — — —

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	NWTPH-D & TPH-HO by NWTPH-Dx	TPH-G by NWTPH-G	BTEX by 8260	RCRA 8 metals (total)	PAHs 8270 SIM	TOC
26	DP27-081104-0-1	11/4/08 1440	SOIL	2	1 8OZ / 1 VOL				X	X	
27	DP27-081104-3-4	↓ 1450	↓	↓	↓		X	X	X	X	X
28	DP27-081104-4-5	1500							X	X	X
29	DP27-081104-6-7	1510							X		
30	DP34-081104-1-3	1530									
31	DP34-081104-4-6	1540				X	X	X	X	X	X
32	DP34-081104-7.5-9.5	1550				X	X	X	X	X	
33	TRIP BLANK	N/A	N/A	1	1 VOA		X	X			

Note Special Instructions/Comments

HOLD ALL SAMPLES FOR POSSIBLE SUBSEQUENT ANALYSIS

Inspection Checklist

Received Intact? Y N
Labels & Chains Agree? Y N
Containers Sealed? Y N
VOC Head Space? Y N

Temperature (°C):
Preservative:
Date & Time:
Inspected By:

	Printed Name	Signature	Company	Date	Time
Relinquished by	TROY BUSSEY STC	[signature]	PTC	11/4/08	1630
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by					

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Login Report

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY

Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-001 **Customer Sample #:** DP32-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***

Sample #: 081105018-002 **Customer Sample #:** DP32-081104-4-5

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY

Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-003 **Customer Sample #:** DP32-081104-8-9

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-004 **Customer Sample #:** DP33-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-005 **Customer Sample #:** DP33-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-006 **Customer Sample #:** DP33-081104-5-6

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-007 **Customer Sample #:** DP33-081104-7-8

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-008 **Customer Sample #:** DP40-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-009 **Customer Sample #:** DP40-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-010 **Customer Sample #:** DP40-081104-5-6

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY

Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-011 **Customer Sample #:** DP40-081104-7-8

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-012 **Customer Sample #:** DP36-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-013 **Customer Sample #:** DP36-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-014 **Customer Sample #:** DP36-081104-5-6

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-015 **Customer Sample #:** DP36-081104-7-8

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-016 **Customer Sample #:** DP36-081104-8-9

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-017 **Customer Sample #:** DP38-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-018 **Customer Sample #:** DP38-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-019 **Customer Sample #:** DP38-081104-5-6

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY
Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-020 **Customer Sample #:** DP38-081104-6-7

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-021 **Customer Sample #:** DP38-081104-9-10

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-022 **Customer Sample #:** DP30-081104-1-2

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-023 **Customer Sample #:** DP30-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-024 **Customer Sample #:** DP30-081104-4-5

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY
Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-025 **Customer Sample #:** DP30-081104-7-7.75

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-026 **Customer Sample #:** DP27-081104-0-1

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY
Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-027 **Customer Sample #:** DP27-081104-3-4

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-028 **Customer Sample #:** DP27-081104-4-5

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-029 **Customer Sample #:** DP27-081104-6-7

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-030 **Customer Sample #:** DP34-081104-1-3

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
HOLD		hold	11/12/2008	***5 Days***

Sample #: 081105018-031 **Customer Sample #:** DP34-081104-4-6

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION **Order ID:** 081105018

2612 YELM HWY SE **Order Date:** 11/5/2008

OLYMPIA WA 98001

Contact Name: TROY BUSSEY **Project Name:** EAST BAY RI PHASE 1

Comment:

TOC - EPA 9060mod PSEP		EPA 9060mod	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Sample #: 081105018-032 **Customer Sample #:** DP34-081104-7.5-9.5

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008

Quantity: 2 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A

Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
PAH 8270 LOW		EPA 8270C	11/12/2008	***5 Days***
TPHDX-NW		NWTPHDX	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***
Arsenic	Total 8	EPA 6020A	11/12/2008	***5 Days***
Barium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Cadmium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Chromium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Lead	Total 8	EPA 6020A	11/12/2008	***5 Days***
Mercury-ICPMS	Total 8	EPA 6020A	11/12/2008	***5 Days***
Selenium	Total 8	EPA 6020A	11/12/2008	***5 Days***
Silver	Total 8	EPA 6020A	11/12/2008	***5 Days***
TOTAL 8	TOTAL 8	N/A	11/12/2008	***5 Days***

Customer Name: PIONEER TECHNOLOGIES CORPORATION
2612 YELM HWY SE
OLYMPIA WA 98001

Order ID: 081105018
Order Date: 11/5/2008

Contact Name: TROY BUSSEY

Project Name: EAST BAY RI PHASE 1

Comment:

Sample #: 081105018-033 **Customer Sample #:** TRIP BLANK

Recv'd: ☑ **Collector:** TROY **Date Collected:** 11/4/2008
Quantity: 1 **Matrix:** Soil **Date Received:** 11/5/2008 10:45:00 A
Comment:

Test	Test Group	Method	Due Date	Priority
%Moisture		%moisture	11/12/2008	***5 Days***
BTEX 8260		EPA 8260B	11/12/2008	***5 Days***
TPHG-NW		NWTPHG	11/12/2008	***5 Days***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	7.9
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

Anatek Labs, Inc.

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-008	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-1-2	**Sampling Time**	11:10 AM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	21.7	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	113	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-008

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	66.0	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-009	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-3-4	**Sampling Time**	11:15 AM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	ND	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	39.2	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-009

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	70.2	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-010	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-5-6	**Sampling Time**	11:20 AM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	19.2	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	295	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-010

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	79.4	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-014	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP36-081104-5-6	**Sampling Time**	12:10 PM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	15.7	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	163	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-014

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	73.8	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-019	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP38-081104-5-6	**Sampling Time**	1:10 PM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	8.15	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	14.3	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-019

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	78.6	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-020	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP38-081104-6-7	**Sampling Time**	1:20 PM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	56.3	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	470	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-020

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	81.4	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-031	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-4-6	**Sampling Time**	3:40 PM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	5.36	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	12.6	mg/kg	10	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-031

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	77.6	50-150

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-032	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-7.5-9.5	**Sampling Time**	3:50 PM	**Extraction Date**	11/07/2008
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	16.2	mg/kg	5	11/8/2008	MAH	NWTPHDX	
Lube Oil	36.1	mg/kg	50	11/8/2008	MAH	NWTPHDX	

Surrogate Data

Sample Number 081105018-032

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	71.4	50-150

Authorized Signature

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Diesel	74.2	mg/kg	100	74.2	50-150	11/7/2008	11/9/2008

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081107002-002	Diesel	ND	83.6	mg/kg	100	83.6	50-150	11/7/2008	11/9/2008

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Diesel	78.0	mg/kg	100	78.0	6.9	0-50	11/7/2008	11/9/2008

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Diesel	ND	mg/Kg	5	11/7/2008	11/9/2008
Lube Oil	ND	mg/Kg	10	11/7/2008	11/9/2008

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-008 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP40-081104-1-2 **Sampling Time** 11:10 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-008

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	80.4	50-150

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-009	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-3-4	**Sampling Time**	11:15 AM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-009

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	70.8	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-010	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-5-6	**Sampling Time**	11:20 AM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-010

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	71.2	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-014	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP36-081104-5-6	**Sampling Time**	12:10 PM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/11/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-014

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	100.4	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-019 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-5-6 **Sampling Time** 1:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/11/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-019

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	99.2	50-150

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-020	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP38-081104-6-7	**Sampling Time**	1:20 PM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-020

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	71.6	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-027	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP27-081104-3-4	**Sampling Time**	2:50 PM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-027

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	75.6	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-031	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-4-6	**Sampling Time**	3:40 PM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-031

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	72.4	50-150

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Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-032	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-7.5-9.5	**Sampling Time**	3:50 PM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-032

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	84.8	50-150

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-033	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	TRIP BLANK	**Sampling Time**			
Matrix	Soil				
Comments					

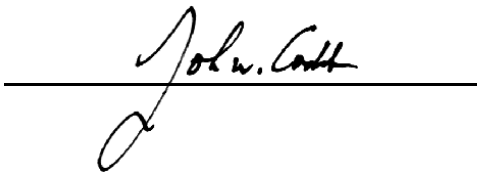
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Gasoline	ND	mg/Kg	5	11/6/2008	CAS	NWTPHG	

Surrogate Data

Sample Number 081105018-033

Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	NWTPHG	75.2	50-150

Authorized Signature



MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Gasoline	1.04	mg/kg	1	104.0	70-130	11/11/2008	11/11/2008
Gasoline	1.16	mg/kg	1	116.0	70-130	11/6/2008	11/6/2008

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081105018-014	Gasoline	ND	55.3	mg/kg	50	110.6	60-140	11/11/2008	11/11/2008

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Gasoline	47.7	mg/kg	50	95.4	14.8	0-25	11/11/2008	11/11/2008

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Gasoline	ND	mg/Kg	5	11/11/2008	11/11/2008
Gasoline	ND	mg/Kg	5	11/6/2008	11/6/2008

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-008
Client Sample ID DP40-081104-1-2
Matrix Soil
Comments

Sampling Date 11/4/2008
Sampling Time 11:10 AM

Date/Time Received 11/5/2008 10:45 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-008

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	98.8	70-130
4-Bromofluorobenzene	EPA 8260B	102.4	70-130
Toluene-d8	EPA 8260B	98.4	70-130

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Analytical Results Report

Sample Number 081105018-009 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP40-081104-3-4 **Sampling Time** 11:15 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-009

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	101.2	70-130
4-Bromofluorobenzene	EPA 8260B	102.8	70-130
Toluene-d8	EPA 8260B	98.4	70-130

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Analytical Results Report

Sample Number 081105018-010 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP40-081104-5-6 **Sampling Time** 11:20 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-010

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	99.2	70-130
4-Bromofluorobenzene	EPA 8260B	102.0	70-130
Toluene-d8	EPA 8260B	98.4	70-130

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-014 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP36-081104-5-6 **Sampling Time** 12:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-014

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	100.8	70-130
4-Bromofluorobenzene	EPA 8260B	103.2	70-130
Toluene-d8	EPA 8260B	99.2	70-130

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-019 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-5-6 **Sampling Time** 1:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-019

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	100.0	70-130
4-Bromofluorobenzene	EPA 8260B	102.8	70-130
Toluene-d8	EPA 8260B	98.8	70-130

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Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-020 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-6-7 **Sampling Time** 1:20 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/11/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/11/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/11/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/11/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-020

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	101.2	70-130
4-Bromofluorobenzene	EPA 8260B	94.0	70-130
Toluene-d8	EPA 8260B	101.2	70-130

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-027 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP27-081104-3-4 **Sampling Time** 2:50 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-027

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	100.8	70-130
4-Bromofluorobenzene	EPA 8260B	102.8	70-130
Toluene-d8	EPA 8260B	98.8	70-130

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-031 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP34-081104-4-6 **Sampling Time** 3:40 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-031

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	101.2	70-130
4-Bromofluorobenzene	EPA 8260B	103.2	70-130
Toluene-d8	EPA 8260B	98.8	70-130

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-032 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP34-081104-7.5-9.5 **Sampling Time** 3:50 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-032

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	98.8	70-130
4-Bromofluorobenzene	EPA 8260B	101.2	70-130
Toluene-d8	EPA 8260B	97.6	70-130

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-033 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID TRIP BLANK **Sampling Time**
Matrix Soil
Comments

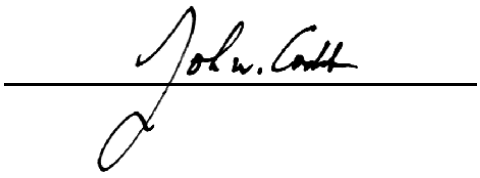
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Toluene	ND	mg/Kg	0.001	11/10/2008	CAS	EPA 8260B	
Total Xylene	ND	mg/Kg	0.002	11/10/2008	CAS	EPA 8260B	

Surrogate Data

Sample Number 081105018-033

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichloroethane-d4	EPA 8260B	98.8	70-130
4-Bromofluorobenzene	EPA 8260B	102.4	70-130
Toluene-d8	EPA 8260B	98.4	70-130

Authorized Signature



MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Toluene	0.00477	mg/kg	0.005	95.4	70-130	11/10/2008	11/10/2008
Ethylbenzene	0.00502	mg/kg	0.005	100.4	70-130	11/10/2008	11/10/2008
Benzene	0.00508	mg/kg	0.005	101.6	70-130	11/10/2008	11/10/2008

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081105018-008	Toluene	ND	0.502	mg/kg	0.5	100.4	70-130	11/10/2008	11/10/2008
081105018-008	Ethylbenzene	ND	0.522	mg/kg	0.5	104.4	70-130	11/10/2008	11/10/2008
081105018-008	Benzene	ND	0.545	mg/kg	0.5	109.0	70-130	11/10/2008	11/10/2008

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Toluene	0.553	mg/kg	0.5	110.6	9.7	0-25	11/10/2008	11/10/2008
Ethylbenzene	0.588	mg/kg	0.5	117.6	11.9	0-25	11/10/2008	11/10/2008
Benzene	0.593	mg/kg	0.5	118.6	8.4	0-25	11/10/2008	11/10/2008

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	ND	mg/Kg	0.001	11/10/2008	11/10/2008
Ethylbenzene	ND	mg/Kg	0.001	11/10/2008	11/10/2008
Toluene	ND	mg/Kg	0.001	11/10/2008	11/10/2008
Total Xylene	ND	mg/Kg	0.002	11/10/2008	11/10/2008

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-002
Client Sample ID DP32-081104-4-5
Matrix Soil
Comments

Sampling Date 11/4/2008
Sampling Time 9:05 AM

Date/Time Received 11/5/2008 10:45 AM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.27	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	40.8	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	14.9	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.51	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0236	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-004 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP33-081104-1-2 **Sampling Time** 9:50 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	1.89	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	35.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	21.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.18	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0202	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-005 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP33-081104-3-4 **Sampling Time** 9:55 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.14	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	50.4	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	19.0	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.19	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-006	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP33-081104-5-6	**Sampling Time**	10:00 AM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.95	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	52.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	34.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.61	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-007 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP33-081104-7-8 **Sampling Time** 10:05 AM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.84	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	44.6	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.219	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	17.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	7.67	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-008	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008	10:45 AM
Client Sample ID	DP40-081104-1-2	**Sampling Time**	11:10 AM			
Matrix	Soil					
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.66	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	59.2	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	18.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	3.81	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-009	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008	10:45 AM
Client Sample ID	DP40-081104-3-4	**Sampling Time**	11:15 AM			
Matrix	Soil					
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.76	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	52.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	21.2	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	3.42	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-010	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-5-6	**Sampling Time**	11:20 AM		
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.42	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	51.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	84.4	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.63	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	0.405	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-014 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP36-081104-5-6 **Sampling Time** 12:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.59	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	62.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	29.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.90	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	0.743	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-017 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-1-2 **Sampling Time** 12:50 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.90	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	65.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	17.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	11.6	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-019 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-5-6 **Sampling Time** 1:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	6.75	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	42.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.681	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	30.9	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	32.2	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0600	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	0.286	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-020 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP38-081104-6-7 **Sampling Time** 1:20 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	7.53	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	17.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.473	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	7.74	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	95.4	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0296	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	0.412	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-022 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP30-081104-1-2 **Sampling Time** 1:50 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	3.41	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	26.8	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	19.0	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	6.28	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-023 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP30-081104-3-4 **Sampling Time** 2:00 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	5.08	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	54.6	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	31.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	2.91	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-025 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP30-081104-7-7.75 **Sampling Time** 2:20 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	9.87	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	63.4	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.691	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	45.9	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	55.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0863	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	0.489	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-026 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP27-081104-0-1 **Sampling Time** 2:40 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.97	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	53.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	18.2	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	6.59	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	0.587	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-027 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP27-081104-3-4 **Sampling Time** 2:50 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	3.53	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	85.1	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.209	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	47.9	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	5.07	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0281	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-028 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP27-081104-4-5 **Sampling Time** 3:00 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	3.07	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	63.1	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	0.245	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	51.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	4.16	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	0.332	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-029 **Sampling Date** 11/4/2008 **Date/Time Received** 11/5/2008 10:45 AM
Client Sample ID DP27-081104-6-7 **Sampling Time** 3:10 PM
Matrix Soil
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	2.10	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	21.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	17.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	1.28	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-031	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008	10:45 AM
Client Sample ID	DP34-081104-4-6	**Sampling Time**	3:40 PM			
Matrix	Soil					
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	3.88	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	70.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	24.8	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	4.72	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-032	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008	10:45 AM
Client Sample ID	DP34-081104-7.5-9.5	**Sampling Time**	3:50 PM			
Matrix	Soil					
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	14.5	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Barium	36.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Cadmium	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Chromium	21.3	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Lead	55.7	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Mercury-ICPMS	0.0457	mg/Kg	0.02	11/12/2008	ETL	EPA 6020A	
Selenium	1.34	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	
Silver	ND	mg/Kg	0.2	11/12/2008	ETL	EPA 6020A	

Authorized Signature

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Silver	0.0519	mg/kg	0.05	103.8	85-115	11/11/2008	11/12/2008
Selenium	0.0506	mg/kg	0.05	101.2	85-115	11/11/2008	11/12/2008
MERCURY-ICPMS	0.00304	mg/kg	0.00308	98.7	85-115	11/11/2008	11/12/2008
Lead	0.0517	mg/kg	0.05	103.4	85-115	11/11/2008	11/12/2008
Chromium	0.0523	mg/kg	0.05	104.6	85-115	11/11/2008	11/12/2008
Cadmium	0.0519	mg/kg	0.05	103.8	85-115	11/11/2008	11/12/2008
Barium	0.0508	mg/kg	0.05	101.6	85-115	11/11/2008	11/12/2008
Arsenic	0.0515	mg/kg	0.05	103.0	85-115	11/11/2008	11/12/2008

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081105018-002	Silver	ND	10.8	mg/kg	10.7	100.9	75-125	11/11/2008	11/12/2008
081105018-002	Selenium	ND	10.3	mg/kg	10.7	96.3	75-125	11/11/2008	11/12/2008
081105018-002	MERCURY-ICPMS	0.0236	0.623	mg/kg	0.659	90.9	75-125	11/11/2008	11/12/2008
081105018-002	Lead	2.51	12.9	mg/kg	10.7	97.1	75-125	11/11/2008	11/12/2008
081105018-002	Chromium	14.9	26.1	mg/kg	10.7	104.7	75-125	11/11/2008	11/12/2008
081105018-002	Cadmium	ND	10.9	mg/kg	10.7	101.9	75-125	11/11/2008	11/12/2008
081105018-002	Barium	40.8	51.5	mg/kg	10.7	100.0	75-125	11/11/2008	11/12/2008
081105018-002	Arsenic	2.27	13.0	mg/kg	10.7	100.3	75-125	11/11/2008	11/12/2008

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Silver	10.9	mg/kg	10.7	101.9	0.9	0-20	11/11/2008	11/12/2008
Selenium	10.8	mg/kg	10.7	100.9	4.7	0-20	11/11/2008	11/12/2008
MERCURY-ICPMS	0.669	mg/kg	0.65912	97.9	7.1	0-20	11/11/2008	11/12/2008
Lead	13.0	mg/kg	10.7	98.0	0.8	0-20	11/11/2008	11/12/2008
Chromium	26.3	mg/kg	10.7	106.5	0.8	0-20	11/11/2008	11/12/2008
Cadmium	11.1	mg/kg	10.7	103.7	1.8	0-20	11/11/2008	11/12/2008
Barium	52.0	mg/kg	10.7	104.7	1.0	0-20	11/11/2008	11/12/2008
Arsenic	13.0	mg/kg	10.7	100.3	0.0	0-20	11/11/2008	11/12/2008

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Arsenic	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Barium	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Cadmium	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Chromium	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Lead	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Mercury-ICPMS	ND	mg/Kg	0.02	11/11/2008	11/12/2008
Selenium	ND	mg/Kg	0.2	11/11/2008	11/12/2008
Silver	ND	mg/Kg	0.2	11/11/2008	11/12/2008

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-002
Client Sample ID DP32-081104-4-5
Matrix Soil
Comments

Sampling Date 11/4/2008
Sampling Time 9:05 AM

Date/Time Received 11/5/2008 10:45 AM
Extraction Date 11/06/2008

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-002

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	100.4	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-004	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP33-081104-1-2	**Sampling Time**	9:50 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0090	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0232	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0182	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0172	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0188	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0158	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0106	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0211	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0114	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0073	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0215	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0109	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0121	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-004

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	105.4	18-137

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Analytical Results Report

Sample Number	081105018-005	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP33-081104-3-4	**Sampling Time**	9:55 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0142	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.425	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0892	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.435	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0618	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.492	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.169	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.143	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.184	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.507	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0292	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	2.41	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.345	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0514	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	2.93	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	2.31	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-005

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	95.9	18-137

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Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-006	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP33-081104-5-6	**Sampling Time**	10:00 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	0.0529	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	0.0086	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	0.0227	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0110	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0279	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0160	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0174	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0128	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	0.0287	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0074	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	0.102	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	0.0306	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0088	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	0.128	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	0.103	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-006

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	93.0	18-137

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Analytical Results Report

Sample Number	081105018-007	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP33-081104-7-8	**Sampling Time**	10:05 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0916	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.178	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0507	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.144	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0801	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.432	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.215	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.313	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.232	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.484	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0766	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	2.88	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0907	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0797	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.228	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.270	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	1.89	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-007

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	86.5	18-137

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-008	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-1-2	**Sampling Time**	11:10 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0051	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0107	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0230	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0170	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0211	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0297	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0136	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0244	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0149	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0179	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0165	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.0113	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0156	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0473	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-008

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	104.9	18-137

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Analytical Results Report

Sample Number	081105018-009	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-3-4	**Sampling Time**	11:15 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0069	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0107	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0051	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0051	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	0.0113	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	0.0197	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	0.0156	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	0.0123	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-009

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	97.7	18-137

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Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-010	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP40-081104-5-6	**Sampling Time**	11:20 AM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0061	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0279	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0244	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0266	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0339	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0134	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0692	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0123	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.125	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0050	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0125	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0175	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0259	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-010

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	91.0	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-017
Client Sample ID DP38-081104-1-2
Matrix Soil
Comments

Sampling Date 11/4/2008
Sampling Time 12:50 PM

Date/Time Received 11/5/2008 10:45 AM
Extraction Date 11/06/2008

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0103	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.0073	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0121	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0472	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0276	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0355	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0393	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0510	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0497	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0196	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0308	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0094	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0258	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.0126	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0244	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0303	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-017

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	92.4	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-019	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP38-081104-5-6	**Sampling Time**	1:10 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0668	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.0469	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0311	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0605	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0432	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0719	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0705	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0724	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0560	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0947	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0245	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.222	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0693	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0400	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.226	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.300	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.203	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-019

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	98.9	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-020	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP38-081104-6-7	**Sampling Time**	1:20 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0097	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.0084	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0104	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0162	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0575	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0773	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0565	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0620	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0416	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0941	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0354	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0643	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0218	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0465	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.0233	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0447	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0926	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-020

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	96.4	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number 081105018-023
Client Sample ID DP30-081104-3-4
Matrix Soil
Comments

Sampling Date 11/4/2008
Sampling Time 2:00 PM

Date/Time Received 11/5/2008 10:45 AM
Extraction Date 11/06/2008

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0089	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0258	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0206	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0177	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0200	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0162	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0115	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0203	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0133	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0079	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0230	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0134	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0140	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-023

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	104.6	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-026	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP27-081104-0-1	**Sampling Time**	2:40 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0131	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	0.0064	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0241	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0254	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0557	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0989	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.120	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0876	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0736	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.101	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0293	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.190	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0127	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0548	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.0312	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0863	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.223	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-026

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	101.8	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-027	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP27-081104-3-4	**Sampling Time**	2:50 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0069	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0092	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0067	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0085	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0055	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	0.0136	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	0.0291	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	0.0127	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	0.0250	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-027

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	98.1	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-028	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP27-081104-4-5	**Sampling Time**	3:00 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0131	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Acenaphthylene	0.0060	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Anthracene	0.0090	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0243	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0293	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0314	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0296	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0159	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Chrysene	0.0228	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0159	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluoranthene	0.0363	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Fluorene	0.0056	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0221	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Naphthalene	0.0131	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Phenanthrene	0.0242	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	
Pyrene	0.0435	mg/Kg	0.005	11/9/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-028

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	107.2	18-137

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Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-031	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-4-6	**Sampling Time**	3:40 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0414	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	0.0100	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	0.0146	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0297	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0369	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0393	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0314	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0331	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	0.0341	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0172	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	0.0606	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	0.0111	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0250	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	0.0326	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	0.0402	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	0.0687	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-031

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	98.3	18-137

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Sample Number	081105018-032	**Sampling Date**	11/4/2008	**Date/Time Received**	11/5/2008 10:45 AM
Client Sample ID	DP34-081104-7.5-9.5	**Sampling Time**	3:50 PM	**Extraction Date**	11/06/2008
Matrix	Soil				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0161	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthene	0.0122	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Acenaphthylene	0.0060	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Anthracene	0.0144	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo(ghi)perylene	0.0325	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]anthracene	0.0328	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[a]pyrene	0.0340	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.0306	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Benzo[k]fluoranthene	0.0226	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Chrysene	0.0196	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Dibenz[a,h]anthracene	0.0184	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluoranthene	0.0489	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Fluorene	0.0170	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	0.0335	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Naphthalene	0.0653	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Phenanthrene	0.0564	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	
Pyrene	0.0483	mg/Kg	0.005	11/10/2008	EMP	EPA 8270C	

Surrogate Data

Sample Number 081105018-032

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270C	92.6	18-137

Authorized Signature

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

Anatek Labs, Inc.

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Chrysene	0.788	mg/kg	1	78.8	30-140	11/6/2008	11/10/2008
Acenaphthene	1.01	mg/kg	1	101.0	30-140	11/6/2008	11/10/2008
Acenaphthylene	1.02	mg/kg	1	102.0	30-140	11/6/2008	11/10/2008
Anthracene	0.899	mg/kg	1	89.9	30-140	11/6/2008	11/10/2008
Benzo(ghi)perylene	1.02	mg/kg	1	102.0	30-140	11/6/2008	11/10/2008
Benzo[a]anthracene	0.872	mg/kg	1	87.2	30-140	11/6/2008	11/10/2008
Benzo[a]pyrene	1.01	mg/kg	1	101.0	30-140	11/6/2008	11/10/2008
2-Methylnaphthalene	1.09	mg/kg	1	109.0	30-140	11/6/2008	11/10/2008
Benzo[k]fluoranthene	0.960	mg/kg	1	96.0	30-140	11/6/2008	11/10/2008
Pyrene	0.853	mg/kg	1	85.3	30-140	11/6/2008	11/10/2008
Dibenz[a,h]anthracene	0.995	mg/kg	1	99.5	30-140	11/6/2008	11/10/2008
Fluoranthene	0.877	mg/kg	1	87.7	30-140	11/6/2008	11/10/2008
Fluorene	0.952	mg/kg	1	95.2	30-140	11/6/2008	11/10/2008
Indeno[1,2,3-cd]pyrene	1.00	mg/kg	1	100.0	30-140	11/6/2008	11/10/2008
Naphthalene	0.953	mg/kg	1	95.3	30-140	11/6/2008	11/10/2008
Phenanthrene	0.900	mg/kg	1	90.0	30-140	11/6/2008	11/10/2008
Benzo[b]fluoranthene	1.02	mg/kg	1	102.0	30-140	11/6/2008	11/10/2008

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081105018-023	Chrysene	0.0115	0.863	mg/kg	1	85.2	30-140	11/6/2008	11/10/2008
081105018-023	Acenaphthene	ND	1.09	mg/kg	1	109.0	30-140	11/6/2008	11/10/2008
081105018-023	Acenaphthylene	ND	1.09	mg/kg	1	109.0	30-140	11/6/2008	11/10/2008
081105018-023	Anthracene	0.0089	0.979	mg/kg	1	97.0	30-140	11/6/2008	11/10/2008
081105018-023	Benzo(ghi)perylene	0.0258	1.18	mg/kg	1	115.4	30-140	11/6/2008	11/10/2008
081105018-023	Benzo[a]anthracene	0.0206	0.984	mg/kg	1	96.3	30-140	11/6/2008	11/10/2008
081105018-023	Benzo[a]pyrene	0.0177	1.10	mg/kg	1	108.2	30-140	11/6/2008	11/10/2008
081105018-023	2-Methylnaphthalene	ND	1.16	mg/kg	1	116.0	30-140	11/6/2008	11/10/2008
081105018-023	Benzo[k]fluoranthene	0.0162	1.04	mg/kg	1	102.4	30-140	11/6/2008	11/10/2008
081105018-023	Pyrene	0.0140	0.940	mg/kg	1	92.6	30-140	11/6/2008	11/10/2008
081105018-023	Dibenz[a,h]anthracene	0.0203	1.13	mg/kg	1	111.0	30-140	11/6/2008	11/10/2008
081105018-023	Fluoranthene	0.0133	0.973	mg/kg	1	96.0	30-140	11/6/2008	11/10/2008
081105018-023	Fluorene	0.0079	1.04	mg/kg	1	103.2	30-140	11/6/2008	11/10/2008
081105018-023	Indeno[1,2,3-cd]pyrene	0.0230	1.15	mg/kg	1	112.7	30-140	11/6/2008	11/10/2008

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
081105018-023	Naphthalene	ND	0.960	mg/kg	1	96.0	30-140	11/6/2008	11/10/2008
081105018-023	Phenanthrene	0.0134	0.947	mg/kg	1	93.4	30-140	11/6/2008	11/10/2008
081105018-023	Benzo[b]fluoranthene	0.0200	1.02	mg/kg	1	100.0	30-140	11/6/2008	11/10/2008

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Chrysene	0.822	mg/kg	1	81.1	4.9	0-50	11/6/2008	11/10/2008
Acenaphthene	1.05	mg/kg	1	105.0	3.7	0-50	11/6/2008	11/10/2008
Acenaphthylene	1.07	mg/kg	1	107.0	1.9	0-50	11/6/2008	11/10/2008
Anthracene	0.932	mg/kg	1	92.3	4.9	0-50	11/6/2008	11/10/2008
Benzo(ghi)perylene	1.06	mg/kg	1	103.4	10.7	0-50	11/6/2008	11/10/2008
Benzo[a]anthracene	0.943	mg/kg	1	92.2	4.3	0-50	11/6/2008	11/10/2008
Benzo[a]pyrene	1.07	mg/kg	1	105.2	2.8	0-50	11/6/2008	11/10/2008
2-Methylnaphthalene	1.11	mg/kg	1	111.0	4.4	0-50	11/6/2008	11/10/2008
Benzo[k]fluoranthene	1.01	mg/kg	1	99.4	2.9	0-50	11/6/2008	11/10/2008
Pyrene	0.929	mg/kg	1	91.5	1.2	0-50	11/6/2008	11/10/2008
Dibenz[a,h]anthracene	1.05	mg/kg	1	103.0	7.3	0-50	11/6/2008	11/10/2008
Fluoranthene	0.942	mg/kg	1	92.9	3.2	0-50	11/6/2008	11/10/2008
Fluorene	0.981	mg/kg	1	97.3	5.8	0-50	11/6/2008	11/10/2008
Indeno[1,2,3-cd]pyrene	1.07	mg/kg	1	104.7	7.2	0-50	11/6/2008	11/10/2008
Naphthalene	0.924	mg/kg	1	92.4	3.8	0-50	11/6/2008	11/10/2008
Phenanthrene	0.927	mg/kg	1	91.4	2.1	0-50	11/6/2008	11/10/2008
Benzo[b]fluoranthene	1.04	mg/kg	1	102.0	1.9	0-50	11/6/2008	11/10/2008

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
2-Methylnaphthalene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Acenaphthene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Acenaphthylene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Anthracene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Benzo(ghi)perylene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Benzo[a]anthracene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Benzo[a]pyrene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Benzo[b]fluoranthene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Benzo[k]fluoranthene	ND	mg/Kg	0.005	11/6/2008	11/10/2008

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

Anatek Labs, Inc.

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Client: PIONEER TECHNOLOGIES CORPORATION
Address: 2612 YELM HWY SE
OLYMPIA, WA 98001
Attn: TROY BUSSEY

Batch #: 081105018
Project Name: EAST BAY RI PHASE 1

Analytical Results Report

Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Chrysene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Dibenz[a,h]anthracene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Fluoranthene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Fluorene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Naphthalene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Phenanthrene	ND	mg/Kg	0.005	11/6/2008	11/10/2008
Pyrene	ND	mg/Kg	0.005	11/6/2008	11/10/2008

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C1320
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C1287

PACE ANALYTICAL SERVICES REPORT

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

John Coddington
Anatek Labs, Inc.
1282 Alturas Drive
Moscow ID 83843

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

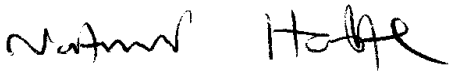
Pace Project #: 1083915
Sample Receipt Date: 11/05/2008
Client Project #: East Bay RI Phase I
Client Sub PO #: N/A
State Cert #: Idaho

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed and prepared by:



Nate Habte, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
natnael.habte@pacelabs.com

Report Prepared Date:
December 2, 2008

Report of Laboratory Analysis

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on twenty-five samples submitted by a representative of Anatek Labs, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise measurements. The samples received on 11/05/2008 were outside of the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts generally ranged from 29-108%. All of the labeled standard recoveries obtained for sample DP38-081104-6-7 were below the 40-135% target range specified in Method 8290 and were flagged "P" on the results tables. Also, one low recovery was obtained for sample DP36-081104-5-6. Since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. Pace Analytical Services will perform a repeat analysis of sample DP38-081104-6-7 at no charge if additional sample material is submitted within 30-days of this report.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory and matrix spike samples were also prepared using clean sand or sample matrix that had been fortified with native standard materials. The spiked native compounds were generally recovered at 72-130%, with relative percent differences of 0.5-18.2%. Somewhat variable background-subtracted results were obtained for the spiked native OCDD in the matrix spike samples due to the levels of this congener in the sample materials. Matrix spikes were prepared with the 11/19/2008 sample batch using sample material from a separate project; results from these analyses will be provided upon request.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

The responses obtained for the labeled OCDD and/or HpCDD in calibration standard analyses D81112B01 and D81112B02 were outside the target range. As specified in the method, the averages of the daily response factors for these compounds were used in the calculations for the samples from these runshifts. The affected values were flagged "Y" on the results tables. It should be noted that the accuracy of the native congener determinations was not impacted by these deviations.

Appendix A

Sample Management

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In # 1083915

Company Name: ANATEK	Project Manager: TROY BUSSEY / JOHN CODDINGTON
Address: 1282 ALTURAS DRIVE	Project Name & #: EAST BAY RE PHASE 1
City: MOSCOW State: ID Zip: 83843	Email Address :
Phone: 208 883-2839	Purchase Order #: TO BE PAID BY ANATEK – SEND RESULTS TO ANATEK
Fax:	Sampler Name & phone: TROY BUSSEY (360) 570-1700

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail FINAL
__Fax
X Email

Provide Sample Description / **List Analyses Requested**

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative: C								
	DP32-081104-1-2	11/4/08 0900	SOIL	1	4oz.	X								001
	DP32-081104-4-5	0905				X								002
	DP32-081104-8-9	0910				X								003
	DP33-081104-1-2	0950				X								004
	DP33-081104-3-4	0955				X								005
	DP33-081104-5-6	1000				X								006
	DP33-081104-7-8	1005				X								007
	DP40-081104-1-2	1110				X								008
	DP40-081104-3-4	1115				X								009
	DP40-081104-5-6	1120				X								010
	DP40-081104-7-8	1125				X								011
	DP36-081104-1-2	1150				X								012
	DP36-081104-3-4	1200				X								013

Note Special Instructions/Comments

1) HOLD ALL SAMPLES FOR POSSIBLE SUBSEQUENT ANALYSES

2) BILL ANALYSES & SEND RESULTS TO ANATEK LABS

	Printed Name	Signature	Company	Date	Time
Relinquished by	TROY BUSSEY JR		PTE	11/4/08	1630
Received by	JS		Pace	11-5-08	9:20
Relinquished by					
Received by					
Relinquished by					
Received by					

Inspection Checklist

Received Intact?	(Y)	N
Labels & Chains Agree?	(Y)	N
Containers Sealed?	(Y)	N
VOC Head Space?	Y	(N)

Temperature (°C): 9.1
Preservative:
Date & Time:
Inspected By:

B

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In # 1083915

Company Name: ANATEK
Address: 1282 ALTURAS DR
City: MOSCOW State: ID Zip: 83843
Phone: 208 883-2839
Fax:

Project Manager: TROY BUSSEY / JOHN COCHRAN
Project Name & #: EAST BAY PI Phase 1
Email Address :
Purchase Order #: TO BE PAID BY ANATEK
Sampler Name & phone: TROY BUSSEY (360) 570-1700

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail FAX
__Fax
X Email

Provide Sample Description

List Analyses Requested

Preservative: (

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Dioxins/Furans 8290A/1613									
	DP36-081104-5-6	11/4/08 1240	SOIL		4oz.	X									14
	DP36-081104-7-8	1220													15
	DP36-081104-89	1230				X									16
	DP38-081104-1-2	1250													17
	DP38-081104-3-4	1300													18
	DP38-081104-5-6	1310				X									19
	DP38-081104-6-7	1320				X									20
	DP38-081104-9-10	1330													21
	DP30-081104-1-2	1350				X									22
	DP30-081104-3-4	1400				X									23
	DP30-081104-4-5	1410													24
	DP30-081104-7-7.5	1420				X									25
															26

Note Special Instructions/Comments

1) HOLD ALL SAMPLES FOR POSSIBLE SUBSEQUENT ANALYSES
2) BILL TO ANATEK & SEND RESULTS TO ANATEK LABS

Inspection Checklist

Received Intact?	(Y)	N
Labels & Chains Agree?	(Y)	N
Containers Sealed?	(Y)	N
VOC Head Space?	Y	(N)

NA 11/5/08

Temperature (°C): 9.1
Preservative:
Date & Time:
Inspected By:

	Printed Name	Signature	Company	Date	Time
Relinquished by	TROY BUSSEY OR		PTC	11/4/08	1630
Received by	JS		Pace	11.5.08	0920
Relinquished by					
Received by					
Relinquished by					
Received by					

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Anatek Log-In #: 1083915

Company Name: ANATEK	Project Manager: TROY BUSSEY / JOHN COOMBS
Address: 1282 ALTURAS DR	Project Name & #: EAST BAY RE PHASE 1
City: MOSCOW State: ID Zip: 83843	Email Address:
Phone: 208 883-2839	Purchase Order #: TO BE PAID BY ANATEK
Fax:	Sampler Name & phone: TROY BUSSEY (360) 570-1700

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

__Normal
__Next Day*
__2nd Day*
X Other* 5 DAY TAT

*All rush order requests must be prior approved.

__Phone
X Mail FINAL
X Fax
__Email

Provide Sample Description / List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	DIOXINS/FURANS 8290/1613									115088
	DP27-081104-0-1	11/4/08 1446	SOIL	1	4OZ.	X								026	27
	DP27-081104-3-4	1450	↓	↓	↓	X								027	28
	DP27-081104-4-5	1500				X								028	29
	DP27-081104-6-7	1510				X								029	30
	DP34-081104-1-3	1530				X								032	33
	DP34-081104-4-6	1540				X								030	31
	DP34-081104-7.5-8.5	1550				X								031	32

Note Special Instructions/Comments

1) HOLD ALL SAMPLES FOR POSSIBLE SUBSEQUENT ANALYSES
2) BILL TO ANATEK & SEND RESULTS TO ANATEK

	Printed Name	Signature	Company	Date	Time
Relinquished by	TROY BUSSEY JR	[signature]	ATZ	11/4/08	1630
Received by	JS.	[signature]	Pace	11-5-08	9:20
Relinquished by					
Received by					
Relinquished by					
Received by					

Inspection Checklist

Received Intact? (Y) N
Labels & Chains Agree? (Y) N
Containers Sealed? (Y) N
VOC Head Space? Y (N)

Temperature (°C): 9.1
Preservative:
Date & Time:
Inspected By:

Sample Condition Upon Receipt

Pace Analytical

Client Name: Anatek

Project # 1083915

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 8613 7182 8992

Optional
Proj. Due Date:
Proj. Name:

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____ Temp Blank: Yes ____ No ✓

Thermometer Used 80344042, (179425) Type of Ice: Wet (Blue) None ☐ Samples on ice, cooling process has begun

Cooler Temperature 9.1 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: 11-5-08

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes ☐No ☐N/A	7. 5 DAY TAT
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☑No ☐N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SL		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Kathy Sattler Date/Time: 11/5/08 @ 13:00

Comments/ Resolution: John Coddington

— 8d90, T=0, 10Ds, Rush 5WD TAT, ~~5 day Excel EDD~~ ~~Level 4~~

— Proceed despite temp exceedance

— No Level 4 package required

— Place non checked samples on hold.

— Report & Invoice to John Coddington @ Moscow lab.

Project Manager Review: NAH Date: 11/5/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Sample Condition Upon Receipt

Pace Analytical

Client Name: AnateK   Project # 1083915

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ______

Tracking #: 9713 2074-3536

Optional
Proj. Due Date:
Proj. Name:

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

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other ______   Temp Blank: Yes ____ No ✓

Thermometer Used: 80344042, 179425   Type of Ice: Wet Blue None   ☐ Samples on ice, cooling process has begun

Cooler Temperature: 3.9   Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: [initials] 11/18/08

				Comments:
Chain of Custody Present:	☐Yes	☒No	☐N/A	1.
Chain of Custody Filled Out:	☐Yes	☒No	☐N/A	2.
Chain of Custody Relinquished:	☐Yes	☒No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☒Yes	☐No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes	☒No		Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): ______				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: ______ Date/Time: ______

Comments/ Resolution: Sample 1083915005 resubmitted for re-extraction

Project Manager Review: NAH   Date: 11/19/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP32-081104-1-2		
Lab Sample ID	1083915001		
Filename	D81112A10		
Injected By	SMT		
Total Amount Extracted	13.1 g	Matrix	Soil
% Moisture	6.8	Dilution	NA
Dry Weight Extracted	12.2 g	Collected	11/04/2008
ICAL ID	D81031GC2	Received	11/05/2008
CCal Filename(s)	D81112A02 & D81112B02	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 16:51

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	0.041		2,3,7,8-TCDF-13C	2.00	82	
Total TCDF	ND	-----	0.041		2,3,7,8-TCDD-13C	2.00	72	
					1,2,3,7,8-PeCDF-13C	2.00	92	
2,3,7,8-TCDD	ND	-----	0.077		2,3,4,7,8-PeCDF-13C	2.00	93	
Total TCDD	ND	-----	0.077		1,2,3,7,8-PeCDD-13C	2.00	91	
					1,2,3,4,7,8-HxCDF-13C	2.00	80	
1,2,3,7,8-PeCDF	-----	0.074	0.028	I	1,2,3,6,7,8-HxCDF-13C	2.00	70	
2,3,4,7,8-PeCDF	ND	-----	0.039		2,3,4,6,7,8-HxCDF-13C	2.00	75	
Total PeCDF	ND	-----	0.034		1,2,3,7,8,9-HxCDF-13C	2.00	92	
					1,2,3,4,7,8-HxCDD-13C	2.00	78	
1,2,3,7,8-PeCDD	ND	-----	0.082		1,2,3,6,7,8-HxCDD-13C	2.00	68	
Total PeCDD	ND	-----	0.082		1,2,3,4,6,7,8-HpCDF-13C	2.00	86	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	96	
1,2,3,4,7,8-HxCDF	-----	0.069	0.030	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	84	Y
1,2,3,6,7,8-HxCDF	-----	0.100	0.033	I	OCDD-13C	4.00	76	Y
2,3,4,6,7,8-HxCDF	-----	0.067	0.021	I				
1,2,3,7,8,9-HxCDF	0.045	-----	0.028	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	0.140	-----	0.028	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	0.045	0.043	I	2,3,7,8-TCDD-37Cl4	0.20	83	
1,2,3,6,7,8-HxCDD	ND	-----	0.045					
1,2,3,7,8,9-HxCDD	0.130	-----	0.050	J				
Total HxCDD	0.130	-----	0.046	J				
1,2,3,4,6,7,8-HpCDF	0.260	-----	0.072	BJ	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	0.150	-----	0.097	BJ	Equivalence: 0.046 ng/Kg			
Total HpCDF	0.410	-----	0.084	BJ	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	1.400	-----	0.100	J				
Total HpCDD	2.500	-----	0.100	J				
OCDF	0.700	-----	0.170	J				
OCDD	9.600	-----	0.190					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP32-081104-4-5		
Lab Sample ID	1083915002		
Filename	R81111A17		
Injected By	CVS		
Total Amount Extracted	13.1 g	Matrix	Soil
% Moisture	6.2	Dilution	NA
Dry Weight Extracted	12.3 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A01 & R81111A25	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/11/2008 23:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.029	0.025	I	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	0.11	-----	0.025	BJ	2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	74
2,3,7,8-TCDD	ND	-----	0.053		2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	-----	0.053		1,2,3,7,8-PeCDD-13C	2.00	81
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	ND	-----	0.053		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	-----	0.064	0.036	I	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	0.26	-----	0.045	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	-----	0.039	0.029	I	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.029		1,2,3,4,6,7,8-HpCDF-13C	2.00	70
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	0.11	-----	0.045	BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	0.14	-----	0.046	J	OCDD-13C	4.00	85
2,3,4,6,7,8-HxCDF	-----	0.084	0.022	I			
1,2,3,7,8,9-HxCDF	-----	0.055	0.046	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.90	-----	0.040	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.086	0.074	I	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	-----	0.190	0.055	I			
1,2,3,7,8,9-HxCDD	-----	0.120	0.054	I			
Total HxCDD	0.16	-----	0.061	J			
1,2,3,4,6,7,8-HpCDF	-----	0.370	0.056	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.110	0.051	I	Equivalence: 0.080 ng/Kg		
Total HpCDF	2.30	-----	0.054	BJ	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	2.90	-----	0.042	J			
Total HpCDD	5.10	-----	0.042				
OCDF	3.10	-----	0.061	J			
OCDD	23.00	-----	0.052				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP32-081104-8-9		
Lab Sample ID	1083915003		
Filename	D81112A12		
Injected By	SMT		
Total Amount Extracted	13.4 g	Matrix	Soil
% Moisture	6.6	Dilution	NA
Dry Weight Extracted	12.5 g	Collected	11/04/2008
ICAL ID	D81031GC2	Received	11/05/2008
CCal Filename(s)	D81112A02 & D81112B02	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 17:57

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	0.130	0.120	I	2,3,7,8-TCDF-13C	2.00	98	
Total TCDF	0.22	-----	0.120	BJ	2,3,7,8-TCDD-13C	2.00	84	
					1,2,3,7,8-PeCDF-13C	2.00	102	
2,3,7,8-TCDD	ND	-----	0.060		2,3,4,7,8-PeCDF-13C	2.00	100	
Total TCDD	ND	-----	0.060		1,2,3,7,8-PeCDD-13C	2.00	101	
					1,2,3,4,7,8-HxCDF-13C	2.00	91	
1,2,3,7,8-PeCDF	ND	-----	0.081		1,2,3,6,7,8-HxCDF-13C	2.00	80	
2,3,4,7,8-PeCDF	-----	0.220	0.091	I	2,3,4,6,7,8-HxCDF-13C	2.00	83	
Total PeCDF	1.10	-----	0.086	J	1,2,3,7,8,9-HxCDF-13C	2.00	105	
					1,2,3,4,7,8-HxCDD-13C	2.00	90	
1,2,3,7,8-PeCDD	0.16	-----	0.096	J	1,2,3,6,7,8-HxCDD-13C	2.00	80	
Total PeCDD	0.85	-----	0.096	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	98	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	108	
1,2,3,4,7,8-HxCDF	0.17	-----	0.017	BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	97	Y
1,2,3,6,7,8-HxCDF	0.25	-----	0.028	J	OCDD-13C	4.00	83	Y
2,3,4,6,7,8-HxCDF	0.14	-----	0.014	J				
1,2,3,7,8,9-HxCDF	0.11	-----	0.019	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	2.50	-----	0.020	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	0.079	0.076	I	2,3,7,8-TCDD-37Cl4	0.20	84	
1,2,3,6,7,8-HxCDD	0.32	-----	0.082	J				
1,2,3,7,8,9-HxCDD	-----	0.180	0.064	I				
Total HxCDD	0.64	-----	0.074	J				
1,2,3,4,6,7,8-HpCDF	1.20	-----	0.095	BJ	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	-----	0.150	0.130	I	Equivalence: 0.25 ng/Kg			
Total HpCDF	3.30	-----	0.110	J	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	3.20	-----	0.052	J				
Total HpCDD	6.30	-----	0.052					
OCDF	3.80	-----	0.130	J				
OCDD	24.00	-----	0.120					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP33-081104-1-2		
Lab Sample ID	1083915004		
Filename	R81111A19		
Injected By	CVS		
Total Amount Extracted	13.1 g	Matrix	Soil
% Moisture	9.8	Dilution	NA
Dry Weight Extracted	11.8 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A01 & R81111A25	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 00:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.93	-----	0.140		2,3,7,8-TCDF-13C	2.00	61
Total TCDF	37.00	-----	0.140		2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	0.43	-----	0.150	J	2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	15.00	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	69
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.86	-----	0.190	J	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	0.88	-----	0.160	J	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	36.00	-----	0.170		1,2,3,7,8,9-HxCDF-13C	2.00	60
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	0.94	-----	0.094	J	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	22.00	-----	0.094		1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	0.95	-----	0.061	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	0.61	-----	0.042	J	OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	1.50	-----	0.042	J			
1,2,3,7,8,9-HxCDF	0.11	-----	0.041	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	18.00	-----	0.047		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.50	-----	0.088	J	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	3.40	-----	0.086	J			
1,2,3,7,8,9-HxCDD	2.10	-----	0.130	J			
Total HxCDD	35.00	-----	0.100				
1,2,3,4,6,7,8-HpCDF	-----	4.2	0.051	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.35	-----	0.075	BJ	Equivalence: 2.6 ng/Kg		
Total HpCDF	6.10	-----	0.063		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	17.00	-----	0.092				
Total HpCDD	35.00	-----	0.092				
OCDF	4.20	-----	0.085	J			
OCDD	63.00	-----	0.038				

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EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
E = PCDE Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP33-081104-3-4		
Lab Sample ID	1083915005		
Filename	D81112A14		
Injected By	SMT		
Total Amount Extracted	13.2 g	Matrix	Soil
% Moisture	5.6	Dilution	NA
Dry Weight Extracted	12.5 g	Collected	11/04/2008
ICAL ID	D81031GC2	Received	11/05/2008
CCal Filename(s)	D81112A02 & D81112B02	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 19:02

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.34	-----	0.081	J	2,3,7,8-TCDF-13C	2.00	88	
Total TCDF	3.60	-----	0.081		2,3,7,8-TCDD-13C	2.00	73	
					1,2,3,7,8-PeCDF-13C	2.00	93	
2,3,7,8-TCDD	ND	-----	0.075		2,3,4,7,8-PeCDF-13C	2.00	92	
Total TCDD	7.30	-----	0.075		1,2,3,7,8-PeCDD-13C	2.00	92	
					1,2,3,4,7,8-HxCDF-13C	2.00	81	
1,2,3,7,8-PeCDF	1.10	-----	0.150	J	1,2,3,6,7,8-HxCDF-13C	2.00	68	
2,3,4,7,8-PeCDF	7.40	-----	0.220		2,3,4,6,7,8-HxCDF-13C	2.00	72	
Total PeCDF	36.00	-----	0.180		1,2,3,7,8,9-HxCDF-13C	2.00	94	
					1,2,3,4,7,8-HxCDD-13C	2.00	77	
1,2,3,7,8-PeCDD	0.68	-----	0.098	J	1,2,3,6,7,8-HxCDD-13C	2.00	66	
Total PeCDD	7.10	-----	0.098		1,2,3,4,6,7,8-HpCDF-13C	2.00	84	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	100	
1,2,3,4,7,8-HxCDF	16.00	-----	0.120		1,2,3,4,6,7,8-HpCDD-13C	2.00	84	Y
1,2,3,6,7,8-HxCDF	-----	6.2	0.130	E	OCDD-13C	4.00	84	Y
2,3,4,6,7,8-HxCDF	3.80	-----	0.092	J				
1,2,3,7,8,9-HxCDF	3.20	-----	0.096	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	99.00	-----	0.110		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	1.1	0.110	I	2,3,7,8-TCDD-37Cl4	0.20	79	
1,2,3,6,7,8-HxCDD	5.20	-----	0.093					
1,2,3,7,8,9-HxCDD	1.90	-----	0.110	J				
Total HxCDD	65.00	-----	0.100					
1,2,3,4,6,7,8-HpCDF	25.00	-----	0.095		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	4.70	-----	0.150		Equivalence: 10 ng/Kg			
Total HpCDF	140.00	-----	0.120		(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	150.00	-----	0.190					
Total HpCDD	440.00	-----	0.190					
OCDF	140.00	-----	0.170					
OCDD	1000.00	-----	0.065					

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NC = Not Calculated

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J = Value below calibration range
E = PCDE Interference
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP33-081104-5-6		
Lab Sample ID	1083915006		
Filename	R81111A21		
Injected By	CVS		
Total Amount Extracted	13.8 g	Matrix	Soil
% Moisture	6.3	Dilution	NA
Dry Weight Extracted	12.9 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A01 & R81111A25	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 01:59

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.063	0.027	I	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	0.72	-----	0.027	J	2,3,7,8-TCDD-13C	2.00	56
					1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	-----	0.040		2,3,4,7,8-PeCDF-13C	2.00	54
Total TCDD	ND	-----	0.040		1,2,3,7,8-PeCDD-13C	2.00	62
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	0.15	-----	0.064	J	1,2,3,6,7,8-HxCDF-13C	2.00	67
2,3,4,7,8-PeCDF	-----	0.340	0.049	I	2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	2.20	-----	0.056	J	1,2,3,7,8,9-HxCDF-13C	2.00	58
					1,2,3,4,7,8-HxCDD-13C	2.00	62
1,2,3,7,8-PeCDD	-----	0.089	0.049	I	1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	0.13	-----	0.049	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	53
					1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	0.91	-----	0.042	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	-----	0.220	0.029	I	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	0.42	-----	0.049	J			
1,2,3,7,8,9-HxCDF	0.24	-----	0.042	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	9.20	-----	0.041		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.29	-----	0.056	J	2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	0.86	-----	0.070	J			
1,2,3,7,8,9-HxCDD	-----	0.370	0.056	I			
Total HxCDD	13.00	-----	0.061				
1,2,3,4,6,7,8-HpCDF	-----	8.000	0.057	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.47	-----	0.049	BJ	Equivalence: 0.71 ng/Kg		
Total HpCDF	15.00	-----	0.053		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	25.00	-----	0.110				
Total HpCDD	81.00	-----	0.110				
OCDF	16.00	-----	0.074				
OCDD	160.00	-----	0.097				

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J = Value below calibration range
B = Less than 10x higher than method blank level
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I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP33-081104-7-8		
Lab Sample ID	1083915007		
Filename	U81113A_08		
Injected By	BAL		
Total Amount Extracted	13.9 g	Matrix	Soil
% Moisture	16.8	Dilution	NA
Dry Weight Extracted	11.5 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/13/2008 21:45

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.82	-----	0.21	J	2,3,7,8-TCDF-13C	2.00	93
Total TCDF	8.20	-----	0.21		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	ND	-----	0.35		2,3,4,7,8-PeCDF-13C	2.00	86
Total TCDD	15.00	-----	0.35		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	101
1,2,3,7,8-PeCDF	ND	-----	1.80		1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	2.00	-----	0.90	J	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	16.00	-----	1.30		1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	99
1,2,3,7,8-PeCDD	1.70	-----	1.50	J	1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	17.00	-----	1.50		1,2,3,4,6,7,8-HpCDF-13C	2.00	58
					1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	-----	1.9	0.60	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	-----	9.7	0.69	E	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	1.70	-----	0.56	J			
1,2,3,7,8,9-HxCDF	1.20	-----	0.72	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	21.00	-----	0.64		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.70	-----	1.10	J	2,3,7,8-TCDD-37Cl4	0.20	93
1,2,3,6,7,8-HxCDD	4.20	-----	1.30	J			
1,2,3,7,8,9-HxCDD	2.70	-----	0.89	J			
Total HxCDD	40.00	-----	1.10				
1,2,3,4,6,7,8-HpCDF	21.00	-----	2.50		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.60		Equivalence: 5.4 ng/Kg		
Total HpCDF	80.00	-----	2.00		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	84.00	-----	1.50				
Total HpCDD	160.00	-----	1.50				
OCDF	90.00	-----	2.50				
OCDD	1200.00	-----	2.30				

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP40-081104-1-2		
Lab Sample ID	1083915008		
Filename	R81111B05		
Injected By	CVS		
Total Amount Extracted	12.2 g	Matrix	Soil
% Moisture	6.4	Dilution	NA
Dry Weight Extracted	11.4 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A25 & R81111B23	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 07:40

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.37	-----	0.056	J	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	5.10	-----	0.056		2,3,7,8-TCDD-13C	2.00	72
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	0.20	-----	0.036	J	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	3.40	-----	0.036		1,2,3,7,8-PeCDD-13C	2.00	81
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	0.34	-----	0.120	J	1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	0.49	-----	0.073	BJ	2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	4.50	-----	0.094		1,2,3,7,8,9-HxCDF-13C	2.00	69
					1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	-----	0.440	0.120	I	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	2.30	-----	0.120	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	0.53	-----	0.048	BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	76
1,2,3,6,7,8-HxCDF	0.38	-----	0.053	J	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	0.47	-----	0.062	J			
1,2,3,7,8,9-HxCDF	-----	0.090	0.052	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	11.00	-----	0.054		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.10	-----	0.098	J	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	4.00	-----	0.099	J			
1,2,3,7,8,9-HxCDD	2.40	-----	0.130	J			
Total HxCDD	43.00	-----	0.110				
1,2,3,4,6,7,8-HpCDF	-----	16.000	0.140	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.84	-----	0.180	BJ	Equivalence: 6.6 ng/Kg		
Total HpCDF	46.00	-----	0.160		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	250.00	-----	0.280				
Total HpCDD	660.00	-----	0.280				
OCDF	84.00	-----	0.091				
OCDD	2600.00	-----	0.086				

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J = Value below calibration range
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E = PCDE Interference
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP40-081104-3-4		
Lab Sample ID	1083915009		
Filename	R81111B06		
Injected By	CVS		
Total Amount Extracted	13.2 g	Matrix	Soil
% Moisture	6.9	Dilution	NA
Dry Weight Extracted	12.3 g	Collected	11/04/2008
ICAL ID	R81101GC2	Received	11/05/2008
CCal Filename(s)	R81111A26 & R81112A02	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 08:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.290		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	0.34	-----	0.290	BJ	2,3,7,8-TCDD-13C	2.00	74
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.074		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	0.79	-----	0.074	J	1,2,3,7,8-PeCDD-13C	2.00	76
					1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	-----	0.24	0.090	I	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	-----	0.34	0.150	I	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	4.10	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	-----	0.16	0.130	I	1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	0.86	-----	0.130	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	1.30	-----	0.061	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	0.43	-----	0.087	J	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	0.49	-----	0.073	J			
1,2,3,7,8,9-HxCDF	0.37	-----	0.074	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	12.00	-----	0.074		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.25	0.100	I	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	1.40	-----	0.100	J			
1,2,3,7,8,9-HxCDD	0.58	-----	0.077	J			
Total HxCDD	9.90	-----	0.094				
1,2,3,4,6,7,8-HpCDF	6.30	-----	0.100		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.68	-----	0.190	BJ	Equivalence: 0.96 ng/Kg		
Total HpCDF	24.00	-----	0.140		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	22.00	-----	0.190				
Total HpCDD	51.00	-----	0.190				
OCDF	22.00	-----	0.120				
OCDD	180.00	-----	0.180				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP40-081104-5-6		
Lab Sample ID	1083915010		
Filename	R81111B07		
Injected By	CVS		
Total Amount Extracted	12.5 g	Matrix	Soil
% Moisture	7.0	Dilution	NA
Dry Weight Extracted	11.6 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A25 & R81111B23	Extracted	11/06/2008
Method Blank ID	BLANK-18168	Analyzed	11/12/2008 08:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.055	0.050	I	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	-----	0.050		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.120		2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	0.27	-----	0.120	J	1,2,3,7,8-PeCDD-13C	2.00	86
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	ND	-----	0.130		1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	ND	-----	0.130		2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	ND	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	72
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	0.29	-----	0.210	J	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	0.73	-----	0.210	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	ND	-----	0.120		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	0.130		OCDD-13C	4.00	85
2,3,4,6,7,8-HxCDF	ND	-----	0.100				
1,2,3,7,8,9-HxCDF	ND	-----	0.110		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.41	-----	0.110	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.230	0.220	I	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	-----	0.520	0.260	I			
1,2,3,7,8,9-HxCDD	0.55	-----	0.320	J			
Total HxCDD	3.70	-----	0.270	J			
1,2,3,4,6,7,8-HpCDF	0.83	-----	0.420	BJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.360		Equivalence: 0.48 ng/Kg		
Total HpCDF	3.20	-----	0.390	J	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	13.00	-----	0.430				
Total HpCDD	35.00	-----	0.430				
OCDF	5.40	-----	0.400	J			
OCDD	140.00	-----	0.210				

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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP36-081104-1-2		
Lab Sample ID	1083915012		
Filename	R81111B08		
Injected By	CVS		
Total Amount Extracted	12.7 g	Matrix	Soil
% Moisture	7.1	Dilution	NA
Dry Weight Extracted	11.8 g	Collected	11/04/2008
ICAL ID	R81101GC2	Received	11/05/2008
CCal Filename(s)	R81111A26 & R81112A02	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 09:17

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.061		2,3,7,8-TCDF-13C	2.00	53
Total TCDF	ND	-----	0.061		2,3,7,8-TCDD-13C	2.00	65
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	0.075		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	ND	-----	0.075		1,2,3,7,8-PeCDD-13C	2.00	77
					1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	-----	0.074	0.069	I	1,2,3,6,7,8-HxCDF-13C	2.00	51
2,3,4,7,8-PeCDF	-----	0.090	0.055	I	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	0.120	-----	0.062	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	ND	-----	0.075		1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	ND	-----	0.075		1,2,3,4,6,7,8-HpCDF-13C	2.00	55
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	-----	0.092	0.053	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	-----	0.110	0.059	I	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	-----	0.110	0.056	I			
1,2,3,7,8,9-HxCDF	0.093	-----	0.055	BJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.093	-----	0.056	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.120	0.068	I	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	0.160	-----	0.100	J			
1,2,3,7,8,9-HxCDD	-----	0.150	0.090	I			
Total HxCDD	0.700	-----	0.087	BJ			
1,2,3,4,6,7,8-HpCDF	0.410	-----	0.100	BJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.150	-----	0.110	J	Equivalence: 0.053 ng/Kg		
Total HpCDF	0.560	-----	0.110	BJ	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	1.200	-----	0.140	BJ			
Total HpCDD	2.300	-----	0.140	BJ			
OCDF	0.910	-----	0.160	J			
OCDD	9.100	-----	0.220				

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EMPC = Estimated Maximum Possible Concentration
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Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP36-081104-5-6		
Lab Sample ID	1083915014		
Filename	U81113A_09		
Injected By	BAL		
Total Amount Extracted	13.0 g	Matrix	Soil
% Moisture	5.0	Dilution	NA
Dry Weight Extracted	12.4 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/13/2008 22:32

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	0.27		2,3,7,8-TCDF-13C	2.00	89	
Total TCDF	ND	-----	0.27		2,3,7,8-TCDD-13C	2.00	83	
					1,2,3,7,8-PeCDF-13C	2.00	68	
2,3,7,8-TCDD	ND	-----	0.52		2,3,4,7,8-PeCDF-13C	2.00	67	
Total TCDD	ND	-----	0.52		1,2,3,7,8-PeCDD-13C	2.00	73	
					1,2,3,4,7,8-HxCDF-13C	2.00	98	
1,2,3,7,8-PeCDF	ND	-----	0.78		1,2,3,6,7,8-HxCDF-13C	2.00	79	
2,3,4,7,8-PeCDF	ND	-----	0.66		2,3,4,6,7,8-HxCDF-13C	2.00	78	
Total PeCDF	ND	-----	0.72		1,2,3,7,8,9-HxCDF-13C	2.00	77	
					1,2,3,4,7,8-HxCDD-13C	2.00	91	
1,2,3,7,8-PeCDD	ND	-----	0.78		1,2,3,6,7,8-HxCDD-13C	2.00	79	
Total PeCDD	ND	-----	0.78		1,2,3,4,6,7,8-HpCDF-13C	2.00	54	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	44	
1,2,3,4,7,8-HxCDF	-----	0.86	0.59	E	1,2,3,4,6,7,8-HpCDD-13C	2.00	55	
1,2,3,6,7,8-HxCDF	ND	-----	0.47		OCDD-13C	4.00	29	P
2,3,4,6,7,8-HxCDF	ND	-----	0.64					
1,2,3,7,8,9-HxCDF	ND	-----	0.76		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	1.1	-----	0.61	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	0.88		2,3,7,8-TCDD-37Cl4	0.20	97	
1,2,3,6,7,8-HxCDD	ND	-----	0.74					
1,2,3,7,8,9-HxCDD	ND	-----	0.90					
Total HxCDD	ND	-----	0.84					
1,2,3,4,6,7,8-HpCDF	2.4	-----	1.60	J	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.50		Equivalence: 0.13 ng/Kg			
Total HpCDF	6.9	-----	1.60		(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	5.7	-----	2.00					
Total HpCDD	11.0	-----	2.00					
OCDF	-----	6.60	3.10	I				
OCDD	47.0	-----	3.20					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
P = Recovery outside target range
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP36-081104-8-9		
Lab Sample ID	1083915016		
Filename	R81111B10		
Injected By	CVS		
Total Amount Extracted	11.1 g	Matrix	Soil
% Moisture	5.0	Dilution	NA
Dry Weight Extracted	10.6 g	Collected	11/04/2008
ICAL ID	R81101GC2	Received	11/05/2008
CCal Filename(s)	R81111A26 & R81112A02	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 10:22

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.042		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	0.042		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	0.096		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	ND	-----	0.096		1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.100		1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	0.130		2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	0.17	-----	0.110	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	80
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	0.099		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.099		1,2,3,4,6,7,8-HpCDF-13C	2.00	62
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	-----	0.18	0.110	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	-----	0.14	0.120	E	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	-----	0.11	0.093	I			
1,2,3,7,8,9-HxCDF	ND	-----	0.140		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.76	-----	0.110	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.12	-----	0.110	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	-----	0.20	0.170	I			
1,2,3,7,8,9-HxCDD	ND	-----	0.180				
Total HxCDD	0.44	-----	0.150	BJ			
1,2,3,4,6,7,8-HpCDF	-----	1.30	0.190	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.24	0.150	I	Equivalence: 0.058 ng/Kg		
Total HpCDF	2.60	-----	0.170	J	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	2.50	-----	0.200	J			
Total HpCDD	4.60	-----	0.200	J			
OCDF	-----	3.90	0.350	I			
OCDD	20.00	-----	0.230				

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ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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J = Value below calibration range
B = Less than 10x higher than method blank level
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP38-081104-5-6		
Lab Sample ID	1083915019		
Filename	U81113A_10		
Injected By	BAL		
Total Amount Extracted	14.2 g	Matrix	Soil
% Moisture	46.0	Dilution	NA
Dry Weight Extracted	7.70 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/13/2008 23:20

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.68	-----	0.30	J	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	10.00	-----	0.30		2,3,7,8-TCDD-13C	2.00	69
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	-----	0.43		2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	2.30	-----	0.43		1,2,3,7,8-PeCDD-13C	2.00	80
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	-----	0.51	0.45	I	1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	0.79	-----	0.49	J	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	6.40	-----	0.47	J	1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	0.83	-----	0.63	J	1,2,3,6,7,8-HxCDD-13C	2.00	63
Total PeCDD	1.90	-----	0.63	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	52
1,2,3,4,7,8-HxCDF	ND	-----	0.71		1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	-----	1.90	0.71	E	OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	ND	-----	0.66				
1,2,3,7,8,9-HxCDF	-----	0.66	0.65	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	30.00	-----	0.68		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.10		2,3,7,8-TCDD-37Cl4	0.20	91
1,2,3,6,7,8-HxCDD	4.60	-----	0.76	J			
1,2,3,7,8,9-HxCDD	1.30	-----	0.82	J			
Total HxCDD	22.00	-----	0.90				
1,2,3,4,6,7,8-HpCDF	56.00	-----	0.64		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	2.70	-----	0.59	J	Equivalence: 4.2 ng/Kg		
Total HpCDF	190.00	-----	0.61		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	93.00	-----	0.80				
Total HpCDD	160.00	-----	0.80				
OCDF	320.00	-----	1.50				
OCDD	900.00	-----	1.60				

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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP38-081104-6-7		
Lab Sample ID	1083915020		
Filename	U81113A_14		
Injected By	BAL		
Total Amount Extracted	15.2 g	Matrix	Soil
% Moisture	75.9	Dilution	NA
Dry Weight Extracted	3.65 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/14/2008 02:29

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	2.3	1.9	I	2,3,7,8-TCDF-13C	2.00	11	P
Total TCDF	ND	-----	1.9		2,3,7,8-TCDD-13C	2.00	10	P
					1,2,3,7,8-PeCDF-13C	2.00	11	P
2,3,7,8-TCDD	ND	-----	3.8		2,3,4,7,8-PeCDF-13C	2.00	12	P
Total TCDD	ND	-----	3.8		1,2,3,7,8-PeCDD-13C	2.00	13	P
					1,2,3,4,7,8-HxCDF-13C	2.00	10	P
1,2,3,7,8-PeCDF	ND	-----	2.7		1,2,3,6,7,8-HxCDF-13C	2.00	10	P
2,3,4,7,8-PeCDF	ND	-----	1.8		2,3,4,6,7,8-HxCDF-13C	2.00	10	P
Total PeCDF	ND	-----	2.3		1,2,3,7,8,9-HxCDF-13C	2.00	11	P
					1,2,3,4,7,8-HxCDD-13C	2.00	11	P
1,2,3,7,8-PeCDD	ND	-----	3.9		1,2,3,6,7,8-HxCDD-13C	2.00	10	P
Total PeCDD	ND	-----	3.9		1,2,3,4,6,7,8-HpCDF-13C	2.00	9	P
					1,2,3,4,7,8,9-HpCDF-13C	2.00	8	P
1,2,3,4,7,8-HxCDF	ND	-----	2.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	10	P
1,2,3,6,7,8-HxCDF	ND	-----	2.0		OCDD-13C	4.00	8	P
2,3,4,6,7,8-HxCDF	ND	-----	3.3					
1,2,3,7,8,9-HxCDF	ND	-----	2.3		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	ND	-----	2.4		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	2.8		2,3,7,8-TCDD-37Cl4	0.20	87	
1,2,3,6,7,8-HxCDD	ND	-----	2.1					
1,2,3,7,8,9-HxCDD	ND	-----	2.6					
Total HxCDD	ND	-----	2.5					
1,2,3,4,6,7,8-HpCDF	-----	5.1	2.3	I	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	2.6		Equivalence: 0.22 ng/Kg			
Total HpCDF	6.6	-----	2.5	J	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	11.0	-----	3.1	J				
Total HpCDD	11.0	-----	3.1	J				
OCDF	18.0	-----	9.2	J				
OCDD	97.0	-----	5.8					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
P = Recovery outside target range
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP30-081104-1-2		
Lab Sample ID	1083915022		
Filename	R81111B13		
Injected By	CVS		
Total Amount Extracted	13.1 g	Matrix	Soil
% Moisture	16.7	Dilution	NA
Dry Weight Extracted	10.9 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A25 & R81111B23	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 11:58

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.24	-----	0.098	J	2,3,7,8-TCDF-13C	2.00	59
Total TCDF	3.50	-----	0.098		2,3,7,8-TCDD-13C	2.00	63
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	0.22	-----	0.180	J	2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	1.90	-----	0.180		1,2,3,7,8-PeCDD-13C	2.00	74
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	0.30	-----	0.170	BJ	1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	-----	0.42	0.150	I	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	2.40	-----	0.160	J	1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	-----	0.37	0.140	I	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	0.99	-----	0.140	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	53
					1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	-----	0.21	0.140	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	0.28	-----	0.140	J	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	0.29	-----	0.096	J			
1,2,3,7,8,9-HxCDF	0.26	-----	0.130	BJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.50	-----	0.130	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.32	-----	0.170	J	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.57	-----	0.210	J			
1,2,3,7,8,9-HxCDD	0.56	-----	0.190	BJ			
Total HxCDD	6.00	-----	0.190				
1,2,3,4,6,7,8-HpCDF	0.66	-----	0.220	BJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.220		Equivalence: 0.56 ng/Kg		
Total HpCDF	0.66	-----	0.220	BJ	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	3.20	-----	0.310	J			
Total HpCDD	7.60	-----	0.310				
OCDF	1.10	-----	0.520	J			
OCDD	33.00	-----	0.830				

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Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP30-081104-3-4		
Lab Sample ID	1083915023		
Filename	R81111B14		
Injected By	CVS		
Total Amount Extracted	13.6 g	Matrix	Soil
% Moisture	7.0	Dilution	NA
Dry Weight Extracted	12.6 g	Collected	11/04/2008
ICAL ID	R81101GC2	Received	11/05/2008
CCal Filename(s)	R81111A26 & R81112A02	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 12:31

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.048		2,3,7,8-TCDF-13C	2.00	62
Total TCDF	ND	-----	0.048		2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	ND	-----	0.072		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	ND	-----	0.072		1,2,3,7,8-PeCDD-13C	2.00	79
					1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	-----	0.060	0.030	I	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	-----	0.059	0.027	I	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	0.028		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	0.062	-----	0.045	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	0.062	-----	0.045	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	0.068	-----	0.034	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	-----	0.048	0.043	I	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	-----	0.071	0.042	I			
1,2,3,7,8,9-HxCDF	-----	0.077	0.045	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.068	-----	0.041	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.047		2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	ND	-----	0.053				
1,2,3,7,8,9-HxCDD	ND	-----	0.051				
Total HxCDD	ND	-----	0.050				
1,2,3,4,6,7,8-HpCDF	0.220	-----	0.075	BJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.078		Equivalence: 0.044 ng/Kg		
Total HpCDF	0.220	-----	0.076	BJ	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.350	0.110	I			
Total HpCDD	0.580	-----	0.110	BJ			
OCDF	0.450	-----	0.130	J			
OCDD	3.400	-----	0.200	BJ			

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J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP30-081104-7-7.5		
Lab Sample ID	1083915025-R		
Filename	U81125A_07		
Injected By	SMT		
Total Amount Extracted	43.4 g	Matrix	Soil
% Moisture	55.7	Dilution	NA
Dry Weight Extracted	19.2 g	Collected	11/04/2008
ICAL ID	U81123	Received	11/05/2008
CCal Filename(s)	U81124A_16 & U81125A_15	Extracted	11/19/2008
Method Blank ID	BLANK-18300	Analyzed	11/25/2008 12:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	56	0.35	E	2,3,7,8-TCDF-13C	2.00	74
Total TCDF	810.0	-----	0.35		2,3,7,8-TCDD-13C	2.00	69
					1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	10.0	-----	0.23		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	660.0	-----	0.23		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	99
1,2,3,7,8-PeCDF	20.0	-----	0.63		1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	24.0	-----	1.10		2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	330.0	-----	0.88		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	24.0	-----	0.94		1,2,3,6,7,8-HxCDD-13C	2.00	87
Total PeCDD	510.0	-----	0.94		1,2,3,4,6,7,8-HpCDF-13C	2.00	61
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	12.0	-----	1.20		1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	18.0	-----	1.90		OCDD-13C	4.00	40
2,3,4,6,7,8-HxCDF	9.9	-----	1.00				
1,2,3,7,8,9-HxCDF	3.2	-----	1.30		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	150.0	-----	1.40		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	14.0	-----	0.78		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	27.0	-----	1.10				
1,2,3,7,8,9-HxCDD	17.0	-----	0.93				
Total HxCDD	540.0	-----	0.94				
1,2,3,4,6,7,8-HpCDF	200.0	-----	1.40		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	8.5	-----	2.00		Equivalence: 51 ng/Kg		
Total HpCDF	440.0	-----	1.70		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	180.0	-----	1.50				
Total HpCDD	370.0	-----	1.50				
OCDF	310.0	-----	1.20				
OCDD	840.0	-----	0.85				

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Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = PCDE Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP27-081104-0-1		
Lab Sample ID	1083915026		
Filename	U81113A_11		
Injected By	BAL		
Total Amount Extracted	13.8 g	Matrix	Soil
% Moisture	10.3	Dilution	NA
Dry Weight Extracted	12.4 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/14/2008 00:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.18	-----	0.11	J	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	0.61	-----	0.11	J	2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.14		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	2.20	-----	0.14		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.22		1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	0.72	-----	0.24	J	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	6.20	-----	0.23		1,2,3,7,8,9-HxCDF-13C	2.00	73
					1,2,3,4,7,8-HxCDD-13C	2.00	86
1,2,3,7,8-PeCDD	0.66	-----	0.34	J	1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	3.70	-----	0.34	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	66
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	1.60	-----	0.18	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	76
1,2,3,6,7,8-HxCDF	0.90	-----	0.14	J	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	0.94	-----	0.16	J			
1,2,3,7,8,9-HxCDF	0.61	-----	0.20	BJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	16.00	-----	0.17		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.96	-----	0.16	J	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	3.10	-----	0.19	J			
1,2,3,7,8,9-HxCDD	1.90	-----	0.21	J			
Total HxCDD	20.00	-----	0.19				
1,2,3,4,6,7,8-HpCDF	20.00	-----	0.25		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	1.90	-----	0.31	J	Equivalence: 4.2 ng/Kg		
Total HpCDF	71.00	-----	0.28		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	98.00	-----	0.62				
Total HpCDD	170.00	-----	0.62				
OCDF	81.00	-----	0.36				
OCDD	1200.00	-----	0.49				

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Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP27-081104-3-4		
Lab Sample ID	1083915027		
Filename	R81111B17		
Injected By	CVS		
Total Amount Extracted	13.8 g	Matrix	Soil
% Moisture	21.6	Dilution	NA
Dry Weight Extracted	10.8 g	Collected	11/04/2008
ICAL ID	R81101GC1	Received	11/05/2008
CCal Filename(s)	R81111A25 & R81111B23	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 14:08

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.061		2,3,7,8-TCDF-13C	2.00	67
Total TCDF	0.10	-----	0.061	J	2,3,7,8-TCDD-13C	2.00	67
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	0.078		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	-----	0.078		1,2,3,7,8-PeCDD-13C	2.00	83
					1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	ND	-----	0.130		1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	-----	0.099	0.080	I	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	0.100		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	ND	-----	0.130		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	-----	0.130	0.096	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	0.15	-----	0.100	J	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	-----	0.130	0.100	I			
1,2,3,7,8,9-HxCDF	ND	-----	0.120		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.15	-----	0.100	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.120		2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	ND	-----	0.190				
1,2,3,7,8,9-HxCDD	0.18	-----	0.160	BJ			
Total HxCDD	0.18	-----	0.160	BJ			
1,2,3,4,6,7,8-HpCDF	-----	0.380	0.160	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.160		Equivalence: 0.034 ng/Kg		
Total HpCDF	ND	-----	0.160		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.210				
Total HpCDD	0.41	-----	0.210	BJ			
OCDF	-----	0.350	0.320	I			
OCDD	1.20	-----	0.410	BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP27-081104-4-5		
Lab Sample ID	1083915028		
Filename	U81113A_12		
Injected By	BAL		
Total Amount Extracted	14.8 g	Matrix	Soil
% Moisture	33.1	Dilution	NA
Dry Weight Extracted	9.93 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/14/2008 00:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.16		2,3,7,8-TCDF-13C	2.00	72
Total TCDF	ND	-----	0.16		2,3,7,8-TCDD-13C	2.00	67
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	0.26		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	3.80	-----	0.26		1,2,3,7,8-PeCDD-13C	2.00	84
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	0.20		1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	-----	0.16		2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	0.48	-----	0.18	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	-----	0.29	0.25	I	1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	ND	-----	0.25		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	0.33	-----	0.12	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	0.22	-----	0.16	J	OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	0.25	-----	0.13	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.14		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	5.10	-----	0.14		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.36	-----	0.16	J	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	-----	0.66	0.36	I			
1,2,3,7,8,9-HxCDD	0.60	-----	0.17	BJ			
Total HxCDD	6.90	-----	0.23				
1,2,3,4,6,7,8-HpCDF	5.70	-----	0.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.30	-----	0.19	J	Equivalence: 0.65 ng/Kg		
Total HpCDF	14.00	-----	0.20		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	16.00	-----	0.27				
Total HpCDD	33.00	-----	0.27				
OCDF	13.00	-----	0.41				
OCDD	240.00	-----	0.51				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
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ND = Not Detected
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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP27-081104-6-7		
Lab Sample ID	1083915029		
Filename	D81112A09		
Injected By	SMT		
Total Amount Extracted	13.5 g	Matrix	Soil
% Moisture	16.1	Dilution	NA
Dry Weight Extracted	11.3 g	Collected	11/04/2008
ICAL ID	D81103GC1	Received	11/05/2008
CCal Filename(s)	D81112A01 & D81112B01	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 16:00

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	0.042		2,3,7,8-TCDF-13C	2.00	78	
Total TCDF	0.069	-----	0.042	J	2,3,7,8-TCDD-13C	2.00	65	
					1,2,3,7,8-PeCDF-13C	2.00	69	
2,3,7,8-TCDD	ND	-----	0.052		2,3,4,7,8-PeCDF-13C	2.00	69	
Total TCDD	ND	-----	0.052		1,2,3,7,8-PeCDD-13C	2.00	65	
					1,2,3,4,7,8-HxCDF-13C	2.00	74	
1,2,3,7,8-PeCDF	-----	0.080	0.054	I	1,2,3,6,7,8-HxCDF-13C	2.00	65	
2,3,4,7,8-PeCDF	0.098	-----	0.046	J	2,3,4,6,7,8-HxCDF-13C	2.00	75	
Total PeCDF	0.098	-----	0.050	BJ	1,2,3,7,8,9-HxCDF-13C	2.00	87	
					1,2,3,4,7,8-HxCDD-13C	2.00	77	
1,2,3,7,8-PeCDD	ND	-----	0.088		1,2,3,6,7,8-HxCDD-13C	2.00	67	
Total PeCDD	ND	-----	0.088		1,2,3,4,6,7,8-HpCDF-13C	2.00	79	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	83	
1,2,3,4,7,8-HxCDF	0.120	-----	0.042	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	88	
1,2,3,6,7,8-HxCDF	-----	0.056	0.039	I	OCDD-13C	4.00	69	Y
2,3,4,6,7,8-HxCDF	-----	0.088	0.040	I				
1,2,3,7,8,9-HxCDF	-----	0.080	0.034	I	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	0.200	-----	0.039	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	0.053		2,3,7,8-TCDD-37Cl4	0.20	86	
1,2,3,6,7,8-HxCDD	0.160	-----	0.034	J				
1,2,3,7,8,9-HxCDD	-----	0.091	0.041	I				
Total HxCDD	0.160	-----	0.043	BJ				
1,2,3,4,6,7,8-HpCDF	0.390	-----	0.046	BJ	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	-----	0.140	0.097	I	Equivalence: 0.096 ng/Kg			
Total HpCDF	0.390	-----	0.071	BJ	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	0.750	-----	0.098	BJ				
Total HpCDD	0.750	-----	0.098	BJ				
OCDF	-----	0.840	0.100	I				
OCDD	6.800	-----	0.170	BJ				

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J = Value below calibration range
B = Less than 10x higher than method blank level
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP34-081104-4-6		
Lab Sample ID	1083915030		
Filename	U81113A_13		
Injected By	BAL		
Total Amount Extracted	12.1 g	Matrix	Soil
% Moisture	15.9	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/14/2008 01:42

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.36	-----	0.13	J	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	6.40	-----	0.13		2,3,7,8-TCDD-13C	2.00	71
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	ND	-----	0.20		2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	3.00	-----	0.20		1,2,3,7,8-PeCDD-13C	2.00	78
					1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	-----	0.29		1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	1.50	-----	0.23	J	2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	16.00	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	68
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	-----	0.48	0.28	I	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	3.60	-----	0.28	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	54
					1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	-----	0.29	0.16	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	0.51	-----	0.24	J	OCDD-13C	4.00	40
2,3,4,6,7,8-HxCDF	-----	0.67	0.20	I			
1,2,3,7,8,9-HxCDF	-----	0.25	0.19	I	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	9.40	-----	0.20		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.44	-----	0.24	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	0.84	-----	0.22	J			
1,2,3,7,8,9-HxCDD	0.56	-----	0.28	BJ			
Total HxCDD	9.30	-----	0.25				
1,2,3,4,6,7,8-HpCDF	3.70	-----	0.22	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.34		Equivalence: 1.2 ng/Kg		
Total HpCDF	7.80	-----	0.28		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	9.50	-----	0.41				
Total HpCDD	18.00	-----	0.41				
OCDF	7.20	-----	0.63	J			
OCDD	61.00	-----	0.52				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
B = Less than 10x higher than method blank level
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP34-081104-7.5-9.5		
Lab Sample ID	1083915031		
Filename	D81112A13		
Injected By	SMT		
Total Amount Extracted	13.1 g	Matrix	Soil
% Moisture	54.6	Dilution	NA
Dry Weight Extracted	5.94 g	Collected	11/04/2008
ICAL ID	D81103GC1	Received	11/05/2008
CCal Filename(s)	D81112A01 & D81112B01	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/12/2008 18:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.93	-----	0.086	J	2,3,7,8-TCDF-13C	2.00	86
Total TCDF	18.00	-----	0.086		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	-----	0.38	0.170	I	2,3,4,7,8-PeCDF-13C	2.00	75
Total TCDD	12.00	-----	0.170		1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	84
1,2,3,7,8-PeCDF	-----	0.64	0.380	I	1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	1.30	-----	0.310	J	2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	9.10	-----	0.350		1,2,3,7,8,9-HxCDF-13C	2.00	94
					1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	1.10	-----	0.310	J	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	15.00	-----	0.310		1,2,3,4,6,7,8-HpCDF-13C	2.00	83
					1,2,3,4,7,8,9-HpCDF-13C	2.00	91
1,2,3,4,7,8-HxCDF	-----	0.64	0.190	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	-----	1.20	0.260	E	OCDD-13C	4.00	74 Y
2,3,4,6,7,8-HxCDF	0.86	-----	0.230	J			
1,2,3,7,8,9-HxCDF	0.32	-----	0.180	BJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.40	-----	0.220	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.92	-----	0.280	J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	2.20	-----	0.280	J			
1,2,3,7,8,9-HxCDD	-----	1.20	0.390	I			
Total HxCDD	25.00	-----	0.320				
1,2,3,4,6,7,8-HpCDF	-----	11.00	0.180	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.69	-----	0.190	J	Equivalence: 2.3 ng/Kg		
Total HpCDF	14.00	-----	0.180		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	28.00	-----	0.300				
Total HpCDD	55.00	-----	0.300				
OCDF	24.00	-----	0.430				
OCDD	280.00	-----	0.440				

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I = Interference present
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Anatek Labs, Inc.

Client's Sample ID	DP34-081104-1-3		
Lab Sample ID	1083915032		
Filename	U81113A_07		
Injected By	BAL		
Total Amount Extracted	13.4 g	Matrix	Soil
% Moisture	11.2	Dilution	NA
Dry Weight Extracted	11.9 g	Collected	11/04/2008
ICAL ID	U81002	Received	11/05/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Extracted	11/06/2008
Method Blank ID	BLANK-18170	Analyzed	11/13/2008 20:57

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.20	-----	0.19		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	23.00	-----	0.19		2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	85
2,3,7,8-TCDD	ND	-----	0.23		2,3,4,7,8-PeCDF-13C	2.00	86
Total TCDD	17.00	-----	0.23		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	84
1,2,3,7,8-PeCDF	-----	1.6	0.38	E	1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	6.00	-----	0.35		2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	55.00	-----	0.36		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	87
1,2,3,7,8-PeCDD	2.00	-----	0.82	J	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	29.00	-----	0.82		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	1.80	-----	0.50	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	-----	7.7	0.36	E	OCDD-13C	4.00	49
2,3,4,6,7,8-HxCDF	-----	2.4	0.41	I			
1,2,3,7,8,9-HxCDF	0.79	-----	0.33	BJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	38.00	-----	0.40		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	2.40	-----	0.55	J	2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,6,7,8-HxCDD	5.40	-----	0.30				
1,2,3,7,8,9-HxCDD	3.00	-----	0.45	J			
Total HxCDD	63.00	-----	0.43				
1,2,3,4,6,7,8-HpCDF	26.00	-----	0.45		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	1.70	-----	0.88	J	Equivalence: 7.1 ng/Kg		
Total HpCDF	81.00	-----	0.67		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	75.00	-----	0.26				
Total HpCDD	140.00	-----	0.26				
OCDF	85.00	-----	0.53				
OCDD	550.00	-----	0.50				

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J = Value below calibration range
B = Less than 10x higher than method blank level
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-18168	Matrix	Solid
Filename	D81112A07	Dilution	NA
Total Amount Extracted	12.4 g	Extracted	11/06/2008
ICAL ID	D81103GC1	Analyzed	11/12/2008 14:33
CCal Filename(s)	D81112A01 & D81112B01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	0.045		2,3,7,8-TCDF-13C	2.00	74	
Total TCDF	0.048	-----	0.045	J	2,3,7,8-TCDD-13C	2.00	62	
					1,2,3,7,8-PeCDF-13C	2.00	63	
2,3,7,8-TCDD	ND	-----	0.086		2,3,4,7,8-PeCDF-13C	2.00	65	
Total TCDD	ND	-----	0.086		1,2,3,7,8-PeCDD-13C	2.00	62	
					1,2,3,4,7,8-HxCDF-13C	2.00	73	
1,2,3,7,8-PeCDF	ND	-----	0.079		1,2,3,6,7,8-HxCDF-13C	2.00	64	
2,3,4,7,8-PeCDF	0.082	-----	0.040	J	2,3,4,6,7,8-HxCDF-13C	2.00	69	
Total PeCDF	0.082	-----	0.059	J	1,2,3,7,8,9-HxCDF-13C	2.00	81	
					1,2,3,4,7,8-HxCDD-13C	2.00	71	
1,2,3,7,8-PeCDD	ND	-----	0.075		1,2,3,6,7,8-HxCDD-13C	2.00	63	
Total PeCDD	ND	-----	0.075		1,2,3,4,6,7,8-HpCDF-13C	2.00	75	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	79	
1,2,3,4,7,8-HxCDF	0.065	-----	0.036	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	80	
1,2,3,6,7,8-HxCDF	-----	0.058	0.041	I	OCDD-13C	4.00	65	Y
2,3,4,6,7,8-HxCDF	-----	0.069	0.040	I				
1,2,3,7,8,9-HxCDF	-----	0.110	0.043	I	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	0.110	-----	0.040	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	0.064		2,3,7,8-TCDD-37Cl4	0.20	69	
1,2,3,6,7,8-HxCDD	ND	-----	0.070					
1,2,3,7,8,9-HxCDD	-----	0.086	0.066	I				
Total HxCDD	ND	-----	0.067					
1,2,3,4,6,7,8-HpCDF	0.140	-----	0.073	J	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	0.160	-----	0.093	J	Equivalence: 0.051 ng/Kg			
Total HpCDF	0.300	-----	0.083	J	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	-----	0.200	0.120	I				
Total HpCDD	0.240	-----	0.120	J				
OCDF	-----	0.190	0.098	I				
OCDD	0.630	-----	0.140	J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-18170	Matrix	Solid
Filename	D81112A08	Dilution	NA
Total Amount Extracted	13.1 g	Extracted	11/06/2008
ICAL ID	D81031GC2	Analyzed	11/12/2008 15:05
CCal Filename(s)	D81112A02 & D81112B02	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	0.043		2,3,7,8-TCDF-13C	2.00	55	
Total TCDF	ND	-----	0.043		2,3,7,8-TCDD-13C	2.00	49	
					1,2,3,7,8-PeCDF-13C	2.00	76	
2,3,7,8-TCDD	ND	-----	0.076		2,3,4,7,8-PeCDF-13C	2.00	81	
Total TCDD	ND	-----	0.076		1,2,3,7,8-PeCDD-13C	2.00	81	
					1,2,3,4,7,8-HxCDF-13C	2.00	76	
1,2,3,7,8-PeCDF	0.12	-----	0.075	J	1,2,3,6,7,8-HxCDF-13C	2.00	65	
2,3,4,7,8-PeCDF	-----	0.091	0.070	I	2,3,4,6,7,8-HxCDF-13C	2.00	71	
Total PeCDF	0.12	-----	0.072	J	1,2,3,7,8,9-HxCDF-13C	2.00	84	
					1,2,3,4,7,8-HxCDD-13C	2.00	71	
1,2,3,7,8-PeCDD	-----	0.130	0.083	I	1,2,3,6,7,8-HxCDD-13C	2.00	62	
Total PeCDD	ND	-----	0.083		1,2,3,4,6,7,8-HpCDF-13C	2.00	83	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	88	
1,2,3,4,7,8-HxCDF	-----	0.097	0.047	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	78	Y
1,2,3,6,7,8-HxCDF	-----	0.098	0.047	I	OCDD-13C	4.00	71	Y
2,3,4,6,7,8-HxCDF	-----	0.094	0.052	I				
1,2,3,7,8,9-HxCDF	0.11	-----	0.056	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	0.11	-----	0.050	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	0.100	0.050	I	2,3,7,8-TCDD-37Cl4	0.20	54	
1,2,3,6,7,8-HxCDD	-----	0.110	0.066	I				
1,2,3,7,8,9-HxCDD	0.10	-----	0.061	J				
Total HxCDD	0.10	-----	0.059	J				
1,2,3,4,6,7,8-HpCDF	0.15	-----	0.057	J	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	-----	0.140	0.087	I	Equivalence: 0.032 ng/Kg			
Total HpCDF	0.15	-----	0.072	J	(Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	0.24	-----	0.079	J				
Total HpCDD	0.42	-----	0.079	J				
OCDF	-----	0.350	0.150	I				
OCDD	0.69	-----	0.110	J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-18300	Matrix	Solid
Filename	U81124A_08	Dilution	NA
Total Amount Extracted	10.2 g	Extracted	11/19/2008
ICAL ID	U81123	Analyzed	11/25/2008 00:08
CCal Filename(s)	U81123A_27 & U81124A_16	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.14		2,3,7,8-TCDF-13C	2.00	77
Total TCDF	0.61	-----	0.14	J	2,3,7,8-TCDD-13C	2.00	82
					1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	0.18		2,3,4,7,8-PeCDF-13C	2.00	92
Total TCDD	ND	-----	0.18		1,2,3,7,8-PeCDD-13C	2.00	104
					1,2,3,4,7,8-HxCDF-13C	2.00	88
1,2,3,7,8-PeCDF	ND	-----	0.19		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	ND	-----	0.14		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	ND	-----	0.17		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	ND	-----	0.18		1,2,3,6,7,8-HxCDD-13C	2.00	83
Total PeCDD	ND	-----	0.18		1,2,3,4,6,7,8-HpCDF-13C	2.00	80
					1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	0.16		1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	-----	0.14		OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	0.16				
1,2,3,7,8,9-HxCDF	ND	-----	0.20		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.17		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.15		2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	0.16				
1,2,3,7,8,9-HxCDD	ND	-----	0.15				
Total HxCDD	ND	-----	0.15				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.16		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.26		Equivalence: 0.00100 ng/Kg		
Total HpCDF	ND	-----	0.21		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.25				
Total HpCDD	ND	-----	0.25				
OCDF	0.44	-----	0.34	J			
OCDD	0.56	-----	0.26	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-18169		
Filename	D81112A03	Matrix	Solid
Total Amount Extracted	12.4 g	Dilution	NA
ICAL ID	D81103GC1	Extracted	11/06/2008
CCal Filename(s)	D81112A01 & D81112B01	Analyzed	11/12/2008 12:04
Method Blank ID	BLANK-18168	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.20	0.23	114	2,3,7,8-TCDF-13C	2.00	85	
Total TCDF				2,3,7,8-TCDD-13C	2.00	70	
				1,2,3,7,8-PeCDF-13C	2.00	72	
2,3,7,8-TCDD	0.20	0.22	111	2,3,4,7,8-PeCDF-13C	2.00	74	
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	70	
				1,2,3,4,7,8-HxCDF-13C	2.00	84	
1,2,3,7,8-PeCDF	1.00	1.22	122	1,2,3,6,7,8-HxCDF-13C	2.00	72	
2,3,4,7,8-PeCDF	1.00	1.15	115	2,3,4,6,7,8-HxCDF-13C	2.00	79	
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	89	
				1,2,3,4,7,8-HxCDD-13C	2.00	80	
1,2,3,7,8-PeCDD	1.00	1.10	110	1,2,3,6,7,8-HxCDD-13C	2.00	72	
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	82	
				1,2,3,4,7,8,9-HpCDF-13C	2.00	86	
1,2,3,4,7,8-HxCDF	1.00	1.05	105	1,2,3,4,6,7,8-HpCDD-13C	2.00	84	
1,2,3,6,7,8-HxCDF	1.00	1.10	110	OCDD-13C	4.00	70	Y
2,3,4,6,7,8-HxCDF	1.00	1.07	107				
1,2,3,7,8,9-HxCDF	1.00	1.04	104	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	1.00	1.10	110	2,3,7,8-TCDD-37Cl4	0.20	78	
1,2,3,6,7,8-HxCDD	1.00	1.10	110				
1,2,3,7,8,9-HxCDD	1.00	1.08	108				
Total HxCDD							
1,2,3,4,6,7,8-HpCDF	1.00	1.06	106				
1,2,3,4,7,8,9-HpCDF	1.00	1.16	116				
Total HpCDF							
1,2,3,4,6,7,8-HpCDD	1.00	1.04	104				
Total HpCDD							
OCDF	2.00	2.59	130				
OCDD	2.00	2.29	114				

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-18171		
Filename	U81113A_03	Matrix	Solid
Total Amount Extracted	11.4 g	Dilution	NA
ICAL ID	U81002	Extracted	11/06/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Analyzed	11/13/2008 17:49
Method Blank ID	BLANK-18170	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.19	94	2,3,7,8-TCDF-13C	2.00	68
Total TCDF				2,3,7,8-TCDD-13C	2.00	67
				1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	0.20	0.20	100	2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	90
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	1.00	0.98	98	1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	1.00	0.93	93	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	1.00	0.92	92	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	66
				1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	1.00	0.94	94	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	1.00	0.95	95	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	1.00	0.94	94			
1,2,3,7,8,9-HxCDF	1.00	0.94	94	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.98	98	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	1.00	1.00	100			
1,2,3,7,8,9-HxCDD	1.00	0.98	98			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	1.03	103			
1,2,3,4,7,8,9-HpCDF	1.00	1.08	108			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	0.91	91			
Total HpCDD						
OCDF	2.00	2.14	107			
OCDD	2.00	2.13	107			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-18301		
Filename	U81124A_05	Matrix	Solid
Total Amount Extracted	10.7 g	Dilution	NA
ICAL ID	U81123	Extracted	11/19/2008
CCal Filename(s)	U81123A_27 & U81124A_16	Analyzed	11/24/2008 21:45
Method Blank ID	BLANK-18300	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.19	95	2,3,7,8-TCDF-13C	2.00	82
Total TCDF				2,3,7,8-TCDD-13C	2.00	83
				1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.00	90
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	100
				1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	1.00	0.96	96	1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	1.00	0.95	95	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	1.00	0.87	87	1,2,3,6,7,8-HxCDD-13C	2.00	85
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	82
				1,2,3,4,7,8,9-HpCDF-13C	2.00	74
1,2,3,4,7,8-HxCDF	1.00	0.91	91	1,2,3,4,6,7,8-HpCDD-13C	2.00	91
1,2,3,6,7,8-HxCDF	1.00	0.97	97	OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	1.00	0.96	96			
1,2,3,7,8,9-HxCDF	1.00	0.94	94	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.97	97	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	1.00	0.96	96			
1,2,3,7,8,9-HxCDD	1.00	0.95	95			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	0.95	95			
1,2,3,4,7,8,9-HpCDF	1.00	1.03	103			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	0.90	90			
Total HpCDD						
OCDF	2.00	2.00	100			
OCDD	2.00	1.95	98			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Method 8290 Spiked Sample Report

Client - Anatek Labs, Inc.

Client's Sample ID	DP40-081104-1-2-MS		
Lab Sample ID	1083915008-MS		
Filename	R81111B01	Matrix	Soil
Total Amount Extracted	13.1 g	Dilution	NA
ICAL ID	R81101GC1	Extracted	11/06/2008
CCal Filename(s)	R81111A25 & R81111B23	Analyzed	11/12/2008 05:13
Method Blank ID	BLANK-18168	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.19	96	2,3,7,8-TCDF-13C	2.00	64
				2,3,7,8-TCDD-13C	2.00	68
				1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	0.20	0.20	98	2,3,4,7,8-PeCDF-13C	2.00	65
				1,2,3,7,8-PeCDD-13C	2.00	76
				1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	1.00	1.06	106	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	1.00	1.02	102	2,3,4,6,7,8-HxCDF-13C	2.00	63
				1,2,3,7,8,9-HxCDF-13C	2.00	66
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	1.00	0.93	93	1,2,3,6,7,8-HxCDD-13C	2.00	67
				1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	1.00	1.01	101	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	1.00	1.05	105	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	1.00	1.03	103			
1,2,3,7,8,9-HxCDF	1.00	0.99	99	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.02	102	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	1.00	1.07	107			
1,2,3,7,8,9-HxCDD	1.00	1.08	108			
1,2,3,4,6,7,8-HpCDF	1.00	1.26	126			
1,2,3,4,7,8,9-HpCDF	1.00	1.08	108			
1,2,3,4,6,7,8-HpCDD	1.00	4.11	411			
OCDF	2.00	3.00	150			
OCDD	2.00	35.46	1773			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Anatek Labs, Inc.

Client's Sample ID	DP40-081104-1-2-MSD		
Lab Sample ID	1083915008-MSD		
Filename	R81111B02	Matrix	Soil
Total Amount Extracted	12.8 g	Dilution	NA
ICAL ID	R81101GC2	Extracted	11/06/2008
CCal Filename(s)	R81111A26 & R81112A02	Analyzed	11/12/2008 06:03
Method Blank ID	BLANK-18168	Injected By	CVS

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	98	2,3,7,8-TCDF-13C	2.00	68
				2,3,7,8-TCDD-13C	2.00	82
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	0.20	0.20	99	2,3,4,7,8-PeCDF-13C	2.00	71
				1,2,3,7,8-PeCDD-13C	2.00	85
				1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	1.00	1.13	113	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	1.00	1.05	105	2,3,4,6,7,8-HxCDF-13C	2.00	75
				1,2,3,7,8,9-HxCDF-13C	2.00	80
				1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	1.00	0.98	98	1,2,3,6,7,8-HxCDD-13C	2.00	71
				1,2,3,4,6,7,8-HpCDF-13C	2.00	60
				1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	1.00	1.07	107	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	1.00	1.11	111	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	1.00	1.09	109			
1,2,3,7,8,9-HxCDF	1.00	1.08	108	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.06	106	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	1.00	1.17	117			
1,2,3,7,8,9-HxCDD	1.00	1.11	111			
1,2,3,4,6,7,8-HpCDF	1.00	1.34	134			
1,2,3,4,7,8,9-HpCDF	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDD	1.00	3.70	370			
OCDF	2.00	3.33	167			
OCDD	2.00	31.93	1597			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Anatek Labs, Inc.

Client's Sample ID	DP38-081104-6-7-MS		
Lab Sample ID	1083915020-MS		
Filename	U81113A_15	Matrix	Soil
Total Amount Extracted	15.2 g	Dilution	NA
ICAL ID	U81002	Extracted	11/06/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Analyzed	11/14/2008 03:17
Method Blank ID	BLANK-18170	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	110	2,3,7,8-TCDF-13C	2.00	8 P
				2,3,7,8-TCDD-13C	2.00	7 P
				1,2,3,7,8-PeCDF-13C	2.00	7 P
2,3,7,8-TCDD	0.20	0.22	108	2,3,4,7,8-PeCDF-13C	2.00	8 P
				1,2,3,7,8-PeCDD-13C	2.00	8 P
				1,2,3,4,7,8-HxCDF-13C	2.00	6 P
1,2,3,7,8-PeCDF	1.00	0.99	99	1,2,3,6,7,8-HxCDF-13C	2.00	6 P
2,3,4,7,8-PeCDF	1.00	1.04	104	2,3,4,6,7,8-HxCDF-13C	2.00	6 P
				1,2,3,7,8,9-HxCDF-13C	2.00	7 P
				1,2,3,4,7,8-HxCDD-13C	2.00	6 P
1,2,3,7,8-PeCDD	1.00	1.06	106	1,2,3,6,7,8-HxCDD-13C	2.00	6 P
				1,2,3,4,6,7,8-HpCDF-13C	2.00	4 P
				1,2,3,4,7,8,9-HpCDF-13C	2.00	4 P
1,2,3,4,7,8-HxCDF	1.00	0.95	95	1,2,3,4,6,7,8-HpCDD-13C	2.00	6 P
1,2,3,6,7,8-HxCDF	1.00	0.97	97	OCDD-13C	4.00	4 P
2,3,4,6,7,8-HxCDF	1.00	1.00	100			
1,2,3,7,8,9-HxCDF	1.00	0.98	98	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.08	108	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.00	1.14	114			
1,2,3,7,8,9-HxCDD	1.00	1.12	112			
1,2,3,4,6,7,8-HpCDF	1.00	1.22	122			
1,2,3,4,7,8,9-HpCDF	1.00	1.26	126			
1,2,3,4,6,7,8-HpCDD	1.00	1.14	114			
OCDF	2.00	2.59	130			
OCDD	2.00	3.87	194			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Anatek Labs, Inc.

Client's Sample ID	DP38-081104-6-7-MSD		
Lab Sample ID	1083915020-MSD		
Filename	U81113A_16	Matrix	Soil
Total Amount Extracted	15.2 g	Dilution	NA
ICAL ID	U81002	Extracted	11/06/2008
CCal Filename(s)	U81113A_02 & U81113A_18	Analyzed	11/14/2008 04:04
Method Blank ID	BLANK-18170	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	107	2,3,7,8-TCDF-13C	2.00	6 P
				2,3,7,8-TCDD-13C	2.00	6 P
				1,2,3,7,8-PeCDF-13C	2.00	7 P
2,3,7,8-TCDD	0.20	0.21	107	2,3,4,7,8-PeCDF-13C	2.00	7 P
				1,2,3,7,8-PeCDD-13C	2.00	8 P
				1,2,3,4,7,8-HxCDF-13C	2.00	6 P
1,2,3,7,8-PeCDF	1.00	1.02	102	1,2,3,6,7,8-HxCDF-13C	2.00	6 P
2,3,4,7,8-PeCDF	1.00	1.03	103	2,3,4,6,7,8-HxCDF-13C	2.00	6 P
				1,2,3,7,8,9-HxCDF-13C	2.00	7 P
				1,2,3,4,7,8-HxCDD-13C	2.00	7 P
1,2,3,7,8-PeCDD	1.00	1.05	105	1,2,3,6,7,8-HxCDD-13C	2.00	6 P
				1,2,3,4,6,7,8-HpCDF-13C	2.00	5 P
				1,2,3,4,7,8,9-HpCDF-13C	2.00	5 P
1,2,3,4,7,8-HxCDF	1.00	0.95	95	1,2,3,4,6,7,8-HpCDD-13C	2.00	6 P
1,2,3,6,7,8-HxCDF	1.00	1.04	104	OCDD-13C	4.00	4 P
2,3,4,6,7,8-HxCDF	1.00	1.01	101			
1,2,3,7,8,9-HxCDF	1.00	1.02	102	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.09	109	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	1.00	1.14	114			
1,2,3,7,8,9-HxCDD	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDF	1.00	1.18	118			
1,2,3,4,7,8,9-HpCDF	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDD	1.00	1.04	104			
OCDF	2.00	2.56	128			
OCDD	2.00	3.22	161			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Anatek Labs, Inc.

Client Sample ID	DP40-081104-1-2			Dry Weights	
Lab Sample ID	1083915008	Sample Filename	R81111B05	Sample Amount	11.4 g
MS ID	1083915008-MS	MS Filename	R81111B01	MS Amount	12.3 g
MSD ID	1083915008-MSD	MSD Filename	R81111B02	MSD Amount	11.9 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.365	0.20	0.19	0.20	2.3	94	96	2.5
2,3,7,8-TCDD	0.199	0.20	0.20	0.20	0.8	97	98	0.8
1,2,3,7,8-PeCDF	0.337	1.00	1.06	1.13	6.6	105	113	6.6
2,3,4,7,8-PeCDF	0.493	1.00	1.02	1.05	3.3	101	105	3.3
1,2,3,7,8-PeCDD	0.000	1.00	0.93	0.98	4.9	93	97	5.0
1,2,3,4,7,8-HxCDF	0.532	1.00	1.01	1.07	6.0	100	107	6.1
1,2,3,6,7,8-HxCDF	0.380	1.00	1.05	1.11	4.8	105	110	4.9
2,3,4,6,7,8-HxCDF	0.467	1.00	1.03	1.09	6.1	102	109	6.2
1,2,3,7,8,9-HxCDF	0.000	1.00	0.99	1.08	9.1	98	108	9.1
1,2,3,4,7,8-HxCDD	1.125	1.00	1.02	1.06	4.3	100	105	4.4
1,2,3,6,7,8-HxCDD	3.961	1.00	1.07	1.17	8.8	102	112	9.4
1,2,3,7,8,9-HxCDD	2.429	1.00	1.08	1.11	3.3	105	108	3.4
1,2,3,4,6,7,8-HpCDF	0.000	1.00	1.26	1.34	6.8	106	115	8.5
1,2,3,4,7,8,9-HpCDF	0.837	1.00	1.08	1.18	9.4	107	117	9.5
1,2,3,4,6,7,8-HpCDD	249.729	1.00	4.11	3.70	10.6	104	72	37.0
OCDF	84.310	2.00	3.00	3.33	10.4	98	116	16.7
OCDD	2630.278	2.00	35.46	31.93	10.5	156	26	141.9

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - Anatek Labs, Inc.

Client Sample ID	DP38-081104-6-7			Dry Weights	
Lab Sample ID	1083915020	Sample Filename	U81113A_14	Sample Amount	3.65 g
MS ID	1083915020-MS	MS Filename	U81113A_15	MS Amount	3.7 g
MSD ID	1083915020-MSD	MSD Filename	U81113A_16	MSD Amount	3.6 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.22	0.21	3.1	106	103	3.2
2,3,7,8-TCDD	0.000	0.20	0.22	0.21	0.6	108	107	0.6
1,2,3,7,8-PeCDF	0.000	1.00	0.99	1.02	3.1	99	102	3.1
2,3,4,7,8-PeCDF	0.000	1.00	1.04	1.03	1.3	104	103	1.3
1,2,3,7,8-PeCDD	0.000	1.00	1.06	1.05	1.3	106	105	1.3
1,2,3,4,7,8-HxCDF	0.000	1.00	0.95	0.95	0.5	95	95	0.5
1,2,3,6,7,8-HxCDF	0.000	1.00	0.97	1.04	6.3	97	104	6.3
2,3,4,6,7,8-HxCDF	0.000	1.00	1.00	1.01	0.7	100	101	0.7
1,2,3,7,8,9-HxCDF	0.000	1.00	0.98	1.02	3.6	98	102	3.6
1,2,3,4,7,8-HxCDD	0.000	1.00	1.08	1.09	1.5	108	109	1.5
1,2,3,6,7,8-HxCDD	0.000	1.00	1.14	1.14	0.6	114	114	0.6
1,2,3,7,8,9-HxCDD	0.000	1.00	1.12	1.18	5.7	112	118	5.7
1,2,3,4,6,7,8-HpCDF	0.000	1.00	1.22	1.18	2.7	120	116	2.7
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.26	1.18	6.3	126	118	6.3
1,2,3,4,6,7,8-HpCDD	10.538	1.00	1.14	1.04	8.7	110	100	9.0
OCDF	18.427	2.00	2.59	2.56	1.1	126	125	1.1
OCDD	96.582	2.00	3.87	3.22	18.2	176	144	20.1

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

CCI ANALYTICAL LABORATORIES REPORT

CCI
ANALYTICAL
LABORATORIES
A Division of DataChem Laboratories, Inc.

CERTIFICATE OF ANALYSIS

CLIENT: ANATEK LABS
1282 ALTURAS DR
MOSCOW, ID 83843

DATE: 11/24/2008
CCIL JOB #: 0811095
DATE RECEIVED: 11/14/2008
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: JUSTIN DOTY
CLIENT PROJECT ID: PITC
CLIENT SAMPLE ID: 11/4/2008 081105018-10
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C8-C10 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C10-C12 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C12-C16 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C16-C21 Aliphatics	NWEPH	11	MG/KG	11/19/2008	EBS
>C21-C34 Aliphatics	NWEPH	180	MG/KG	11/19/2008	EBS
>C10-C12 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C12-C16 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C16-C21 Aromatics	NWEPH	10	MG/KG	11/18/2008	EBS
>C21-C34 Aromatics	NWEPH	160	MG/KG	11/18/2008	EBS
Total Aliphatics	NWEPH	200	MG/KG	11/19/2008	EBS
Total Aromatics	NWEPH	180	MG/KG	11/18/2008	EBS
Chromium (VI)	EPA-7196	ND(<5.0)	MG/KG	11/17/2008	BAM

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

NOTE: TOTAL ALIPHATICS AND AROMATICS ARE BASED ON EC RANGE "ND" RESULTS SUMMED AT 1/2 OF REPORTING LIMIT

APPROVED BY:

8620 Holly Drive Suite 100 Everett, WA 98208 425 356-2600 FAX 425 356-2626 Seattle 206 292-9059

CCI
ANALYTICAL
LABORATORIES
A Division of DataChem Laboratories, Inc.

CERTIFICATE OF ANALYSIS

CLIENT: ANATEK LABS
1282 ALTURAS DR
MOSCOW, ID 83843

DATE: 11/24/2008
CCIL JOB #: 0811095
DATE RECEIVED: 11/14/2008
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: JUSTIN DOTY
CLIENT PROJECT ID: PITC
CLIENT SAMPLE ID: 11/4/2008 081105018-14
CCIL SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C8-C10 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C10-C12 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C12-C16 Aliphatics	NWEPH	ND(<5)	MG/KG	11/19/2008	EBS
>C16-C21 Aliphatics	NWEPH	9	MG/KG	11/19/2008	EBS
>C21-C34 Aliphatics	NWEPH	110	MG/KG	11/19/2008	EBS
>C10-C12 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C12-C16 Aromatics	NWEPH	ND(<5)	MG/KG	11/18/2008	EBS
>C16-C21 Aromatics	NWEPH	8	MG/KG	11/18/2008	EBS
>C21-C34 Aromatics	NWEPH	96	MG/KG	11/18/2008	EBS
Total Aliphatics	NWEPH	120	MG/KG	11/19/2008	EBS
Total Aromatics	NWEPH	100	MG/KG	11/18/2008	EBS

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

NOTE: TOTAL ALIPHATICS AND AROMATICS ARE BASED ON EC RANGE "ND" RESULTS SUMMED AT 1/2 OF REPORTING LIMIT

APPROVED BY:

8620 Holly Drive Suite 100 Everett, WA 98208 425 356-2600 FAX 425 356-2626 Seattle 206 292-9059

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ANALYTICAL
LABORATORIES
A Division of DataChem Laboratories, Inc.

CERTIFICATE OF ANALYSIS

CLIENT: ANATEK LABS
1282 ALTURAS DR
MOSCOW, ID 83843

DATE: 11/24/2008
CCIL JOB #: 0811095
DATE RECEIVED: 11/14/2008
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: JUSTIN DOTY
CLIENT PROJECT ID: PITC
CLIENT SAMPLE ID: 11/4/2008 081105018-20
CCIL SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND(<15)*	MG/KG	11/19/2008	EBS
>C8-C10 Aromatics	NWEPH	ND(<15)*	MG/KG	11/18/2008	EBS
>C10-C12 Aliphatics	NWEPH	ND(<15)*	MG/KG	11/19/2008	EBS
>C12-C16 Aliphatics	NWEPH	ND(<15)*	MG/KG	11/19/2008	EBS
>C16-C21 Aliphatics	NWEPH	22	MG/KG	11/19/2008	EBS
>C21-C34 Aliphatics	NWEPH	220	MG/KG	11/19/2008	EBS
>C10-C12 Aromatics	NWEPH	ND(<15)*	MG/KG	11/18/2008	EBS
>C12-C16 Aromatics	NWEPH	ND(<15)*	MG/KG	11/18/2008	EBS
>C16-C21 Aromatics	NWEPH	ND(<15)*	MG/KG	11/18/2008	EBS
>C21-C34 Aromatics	NWEPH	130	MG/KG	11/18/2008	EBS
Total Aliphatics	NWEPH	260	MG/KG	11/19/2008	EBS
Total Aromatics	NWEPH	150	MG/KG	11/18/2008	EBS

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

NOTE: TOTAL ALIPHATICS AND AROMATICS ARE BASED ON EC RANGE "ND" RESULTS SUMMED AT 1/2 OF REPORTING LIMIT

APPROVED BY:

8620 Holly Drive Suite 100 Everett, WA 98208 425 356-2600 FAX 425 356-2626 Seattle 206 292-9059

CCI
ANALYTICAL
LABORATORIES
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CERTIFICATE OF ANALYSIS

CLIENT: ANATEK LABS
1282 ALTURAS DR
MOSCOW, ID 83843

DATE: 11/24/2008
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WDOE ACCREDITATION #: C1336

CLIENT CONTACT: JUSTIN DOTY
CLIENT PROJECT ID: PITC

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0811095-01	NWEPH	C25	109
0811095-01	NWEPH	p-Terphenyl	88
0811095-02	NWEPH	C25	114
0811095-02	NWEPH	p-Terphenyl	88
0811095-03	NWEPH	C25	110
0811095-03	NWEPH	p-Terphenyl	88

APPROVED BY:

8620 Holly Drive Suite 100 Everett, WA 98208 425 356-2600 FAX 425 356-2626 Seattle 206 292-9059

SVL ANALYTICAL REPORT

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

W8K0325

Anatek Log-In #

Company Name:	ANATEK LABS	Project Manager:	JUSTIN DOTY
Address:	1282 ALTURAS DR	Project Name & # :	PI TC
City: MOSCOW	State: ID Zip: 83843	Email Address :	justin@anateklabs.com
Phone:	(208) 883-2839	Purchase Order #:	
Fax:	(208) 882-9246	Sampler Name & phone:	

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

✓ Normal
__ Next Day*
__ 2nd Day*
__ Other*_____

*All rush order requests must be prior approved.

__ Phone
× Mail
× Fax
× Email

Provide Sample Description / **List Analyses Requested** / **Note Special Instructions/Comments**

Preservative:

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	TOC
	081105018-001	11/4/08	SOIL			×
	081105018-002	11/4/08	SOIL			×
	081105018-005	11/4/08	SOIL			×
	081105018-007	11/4/08	SOIL			×
	081105018-009	11/4/08	SOIL			×
	081105018-020	11/4/08	SOIL			×
	081105018-027	11/4/08	SOIL			×
	081105018-028	11/4/08	SOIL			×
	081105018-031	11/4/08	SOIL			×
	081105018-032	11/4/08	SOIL			×

SVL

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
VOC Head Space?	Y	N

Temperature (°C): 1.1 +2°C
Preservative:
Date & Time:
Inspected By:

	Printed Name	Signature	Company	Date	Time
Relinquished by	Justin Doty		Anatek	11/13/08	12:45
Received by	C FLORES	C Flores	SVL	11/14/08	14:30
Relinquished by					
Received by					
Relinquished by					
Received by					

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
081105018-001	W8K0325-01	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-002	W8K0325-02	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-005	W8K0325-03	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-007	W8K0325-04	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-009	W8K0325-05	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-020	W8K0325-06	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-027	W8K0325-07	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-028	W8K0325-08	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-031	W8K0325-09	Soil	04-Nov-08 00:00	14-Nov-2008
081105018-032	W8K0325-10	Soil	04-Nov-08 00:00	14-Nov-2008

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-001**
SVL Sample ID: **W8K0325-01 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.35	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-002**
SVL Sample ID: **W8K0325-02 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.23	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-005**
SVL Sample ID: **W8K0325-03 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.28	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-007**
SVL Sample ID: **W8K0325-04 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	4.3	%	0.060			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-009**
SVL Sample ID: **W8K0325-05 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.36	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-020**
SVL Sample ID: **W8K0325-06 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	34	%	0.60			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-027**
SVL Sample ID: **W8K0325-07 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.43	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
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Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-028**
SVL Sample ID: **W8K0325-08 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 3500 Cr D	Hexavalent Chromium	< 0.010	mg/L	0.010	0.004		W847107	SJK	11/25/08 01:15	H7
USDA HB60(24)	**Total Organic Carbon**	0.48	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-031**
SVL Sample ID: **W8K0325-09 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	0.80	%	0.030			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Client Sample ID: **081105018-032**
SVL Sample ID: **W8K0325-10 (Soil)**

Sampled: 04-Nov-08 00:00
Received: 14-Nov-08
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
USDA HB60(24)	**Total Organic Carbon**	15	%	0.30			W848032	SJK	11/26/08 06:50	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Classical Chemistry Parameters								
SM 3500 Cr D	Hexavalent Chromium	mg/L	<0.010	0.004	0.010	W847107	25-Nov-08	
USDA HB60(24)	Total Organic Carbon	%	<0.030		0.030	W848032	26-Nov-08	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 3500 Cr D	Hexavalent Chromium	mg/L	0.204	0.200	102	80 - 120	W847107	25-Nov-08	
USDA HB60(24)	Total Organic Carbon	%	28.9	28.7	101	80 - 120	W848032	26-Nov-08	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 3500 Cr D	Hexavalent Chromium	mg/L	<0.010	<0.010	UDL	20	W847107	25-Nov-08	
USDA HB60(24)	Total Organic Carbon	%	0.350	0.350	0.0	20	W848032	26-Nov-08	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters										
SM 3500 Cr D	Hexavalent Chromium	mg/L	0.204	<0.010	0.200	102	75 - 125	W847107	25-Nov-08	
USDA HB60(24)	Total Organic Carbon	%	2.15	0.350	1.69	107	75 - 125	W848032	26-Nov-08	

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Anatek Labs (ID)
1282 Alturas Drive
Moscow, ID 83843

Project Name: metals
Work Order: **W8K0325**
Reported: 26-Nov-08 10:52

Notes and Definitions

H7	Sample analysis performed past standard holding time but within project-specific holding time.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Troy Bussey

From: John Coddington [john@anateklabs.com]
Sent: Wednesday, November 26, 2008 4:06 PM
To: Troy Bussey
Subject: FW: W8K0325
Attachments: w8k0325-1.pdf; Anatek W8K0325-1.csv

Troy,

The results are reported as mg/L of sample extract. Their extraction multiplier is 8.333, which would make their reporting limit ~0.1 mg/Kg. Based on that, I hope the results are satisfactory.

John

John W. Coddington, Ph.D.
Laboratory Manager
Anatek Labs, Inc - Moscow Idaho
Voice: (208)883-2839
Fax: (208)882-9246
Cell: (208)301-1301

From: Jim Hodge [mailto:jim@svl.net]
Sent: Wednesday, November 26, 2008 3:51 PM
To: John Coddington
Subject: RE:

John

We start with 3.0 grams of sample in 25ml so the conversion to mg/kgm would be times 8.333. I hope this is what you need.

Jim

From: John Coddington [mailto:john@anateklabs.com]
Sent: Wednesday, November 26, 2008 3:26 PM

To: Jim Hodge
Subject: RE:

Thanks Jim,

My client needs to know how that relates to the amount in the soil. In other words, corrected for the extraction multiplier.

John W. Coddington, Ph.D.
Laboratory Manager
Anatek Labs, Inc - Moscow Idaho
Voice: (208)883-2839
Fax: (208)882-9246
Cell: (208)301-1301

From: Melba Bencich [mailto:melba@svl.net]
Sent: Wednesday, November 26, 2008 3:02 PM
To: John Coddington
Subject: W8K0325

John,
The Hex Cr is reported as mg/L extract.

Thank you.
Melba
Melba Bencich
Melba Bencich
Document Control Supervisor
SVL Analytical, Inc.
(208)784-1258
(208)783-0891 (fax)

Appendix C

CALCULATION OF INTERIM ACTION CLEANUP LEVELS AND REUSE UNDER PAVEMENT LEVELS

TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

SECTION 1 – CALCULATION OF INTERIM ACTION CLEANUP LEVELS AND REUSE UNDER PAVEMENT LEVELS

1.1 Introduction

The purpose of this appendix is to present the methodology used to calculate soil Interim Action Cleanup Levels (IACLs) and soil Interim Action Reuse Under Pavement Levels (IARUPLs) for the Interim Action (IA) at the Port of Olympia's (Port's) East Bay Site (Site). PIONEER Technologies Corporation (PIONEER) calculated IACLs and IARUPLs in accordance with Model Toxics Control Act (MTCA) regulations in WAC-173-340-357, -708, -720, -730, -740, -745, and -747.

The IACLs and IARUPLs are applicable to soil disturbed during this IA, and are not applicable to any future interim actions or a final Site remedy. A central premise of this IA is the anticipation that virtually all of the infrastructure corridor soil that is disturbed during infrastructure construction activities will be reused under pavement, disposed of off-site, or will have concentrations below unrestricted land use cleanup levels. However, it is recognized that there may be small amounts of disturbed soil with concentrations above unrestricted land use cleanup levels and/or terrestrial ecological screening criteria that are not located under pavement. Areas within the infrastructure corridor that are not covered by pavement will be addressed as necessary as part of a future interim action or the final cleanup action for the site. As a result, cleanup levels developed for future interim actions or the future feasibility study may incorporate a different set of exposure pathways than those that were deemed complete for this IA.

1.2 Constituents of Potential Concern

IACLs and IARUPLs were developed for the following constituents of potential concern (COPCs) listed in the Remedial Investigation Work Plan (GeoEngineers and PIONEER 2008):

- Arsenic
- Cadmium
- Lead
- Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
- Total chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans (dioxins/furans)
- Total naphthalenes
- Total petroleum hydrocarbons (TPH) in the diesel range (TPH-D)
- TPH in the heavy oil range (TPH-HO)
- TPH in the gasoline range (TPH-G)

In addition, IACLs and IARUPLs were developed for the following constituents in the event that TPH-G is encountered during the IA:

- Benzene
- Toluene
- Ethylbenzene
- Total xylenes

1.3 Site-Wide Complete or Potentially Complete Exposure Pathways

A Conceptual Site Exposure Model (CSEM) was developed for the Remedial Investigation Work Plan (GeoEngineers and PIONEER 2008) to present a conceptual, site-wide understanding of all potential exposure pathways during current land use, construction-phase land use, and future land use at the Site. As shown in Figure C-1, complete or potentially complete exposure pathways for the entire Site during the construction phase and future land use are:

- Direct contact (incidental ingestion and dermal contact) with soil by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Construction-phase building construction workers
    - Construction-phase building construction trespassers
    - Future urban residents
    - Future commercial workers
    - Future utility maintenance workers
    - Future recreators
    - Terrestrial organisms
- Inhalation of particulates by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Construction-phase building construction workers
    - Construction-phase building construction trespassers
    - Future urban residents
    - Future commercial workers
    - Future utility maintenance workers
    - Future recreators
    - Terrestrial organisms
- Inhalation of vapors by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Construction-phase building construction workers
    - Construction-phase building construction trespassers
    - Future urban residents
    - Future commercial workers
    - Future utility maintenance workers
    - Future recreators
    - Terrestrial organisms
- Dermal contact with shallow groundwater in utility excavations by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Future utility maintenance workers
- Ingestion of groundwater used as drinking water by:

    - Future urban residents
    - Future commercial workers
    - Future utility maintenance workers
    - Future recreators
- Dermal contact (i.e., bathing) with groundwater used as drinking water by:
    - Future urban residents
    - Future commercial workers
- Incidental ingestion of and dermal contact with surface water in East Bay by:
    - Construction-phase recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Future recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Aquatic organisms
- Consumption of seafood from East Bay by:
    - Construction-phase recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Future recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Aquatic organisms

1.4 Incomplete or Insignificant Exposure Pathways for this IA

All of the exposure pathways listed in Section 1.3 will be evaluated further before site-wide cleanup levels are developed during the feasibility study. Furthermore, as discussed in Section 1.1, it is recognized that some or all of these exposure pathways may be complete and significant for infrastructure corridor soil locations that are not covered by pavement, and that additional action may be necessary for infrastructure corridor locations not covered by pavement. However, the following exposure pathways listed in Section 1.3 are either incomplete or insignificant for infrastructure corridor areas to be covered by pavement during this IA for the following reasons:

- Direct contact of soil and inhalation of particulates by building construction workers and building construction trespassers (i.e., those receptors at the Site during the building construction portion of the construction phase, which will occur after the utility and road installation portion of the construction phase is complete) are incomplete pathways for IA areas beneath pavement. Further evaluation of these pathways for non-paved areas of the Site will be performed following the IA.
- Direct contact of soil and inhalation of particulates by future urban residents, future commercial workers, and future recreators are incomplete pathways for IA areas beneath pavement. Further evaluation of these pathways for non-paved areas of the Site will be performed following the IA.
- The terrestrial ecological evaluation was ended for IA areas beneath pavement in accordance with WAC 173-340-7491(1)(b). It is recognized that an institutional control may be required for the paved roads due to terrestrial ecological regulations. Further evaluation of these pathways for non-paved areas of the Site will be performed following the IA.
- Inhalation of vapors is incomplete for all receptors since no volatile constituents have been detected at elevated concentrations in soil samples collected within the infrastructure corridor. In addition, no occupied buildings are planned over paved and unpaved portions of the infrastructure corridor. Further evaluation of these pathways for areas of the Site outside of the infrastructure corridor will be performed following the IA.

- Dermal contact with groundwater in utility excavations by construction-phase utility installation workers and utility installation trespassers is insignificant relative to the direct contact with soil pathway given the planned dewatering activities, the general lack of elevated groundwater constituent concentrations in existing data, the engineering controls being implemented during infrastructure construction pursuant to the IAWP, and the health and safety measures (e.g., personal protective equipment) being implemented pursuant to the IAWP.
- Dermal contact with groundwater in utility excavations by future utility maintenance workers is likely insignificant relative to the direct contact with soil pathway since it is anticipated that implementation of engineering controls and health and safety measures similar to this IAWP will be institutional control requirements for all future utility maintenance work. However, further evaluation of this pathway will be performed following the IA.
- The groundwater as drinking water pathway is insignificant for all receptors for the IA since there is no current or anticipated future land use of drinking water on Site or downgradient of the Site. More importantly, a suitable drinking water well could not be installed in shallow groundwater on Site or downgradient of the Site per WAC 173-340-720(2)(b)(i) given the regulatory requirements of Chapter 173-160 WAC and Chapter 246-290 WAC, the extremely shallow depth to water, the low sustainable yield available from shallow groundwater, and proximity to salt water. It should also be noted that the IA will not preclude any groundwater remedial actions that may be necessary in the future at the Site.

1.5 Resulting IA Exposure Pathways for Quantification of IACLs and IARUPLs

Figure C-1 highlights in blue the remaining exposure pathways for infrastructure corridor areas under pavement after accounting for the exposure pathways that are incomplete or insignificant as discussed in Section 1.4. These resulting exposure pathways were used to quantify IACLs and IARUPLs.

Complete soil-based exposure pathways relevant to the IA are:

- Direct contact (ingestion and dermal contact) with soil by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Future utility maintenance workers
- Inhalation of particulates by:
    - Construction-phase utility installation workers
    - Construction-phase utility installation trespassers
    - Future utility maintenance workers

As directed by Washington State Department of Ecology (Ecology), the following surface water pathways are also considered complete for the IA:

- Incidental ingestion of and dermal contact with surface water in East Bay by:
    - Construction-phase recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Future recreators and subsistence fishers (i.e., Squaxin Island Tribe)
    - Aquatic organisms
- Consumption of seafood from East Bay by:
    - Construction-phase recreators and subsistence fishers (i.e., Squaxin Island Tribe)

- Future recreators and subsistence fishers (i.e., Squaxin Island Tribe)
- Aquatic organisms

1.6 Development of IACLs Based on Unrestricted Land Use

IACLs based on unrestricted land use were developed for the exposure pathways listed in Section 1.5 as follows:

- Soil levels protective of direct contact exposures were calculated as shown in Attachment C-1 using MTCA Equation 740-3, 740-4, or 740-5, the associated default exposure parameters for those equations, and chemical-specific parameters from the Cleanup Levels and Risk Calculations (CLARC) database (Ecology 2008, Ecology 2009), with the following exceptions:
  - The arsenic level was adjusted up to accepted natural background value per WAC 173-340-740(5)(c) and MTCA Table 740-1 footnote b.
  - Method A soil cleanup levels were used for lead, TPH-G, TPH-D, and TPH-HO (Kmet 2001a). The three extractable petroleum hydrocarbon results obtained during the Phase 1 Remedial Investigation were not used to calculate direct contact levels for TPH-D and TPH-HO with MTCA Equation 740-3 per Ecology direction.
- Soil levels protective of inhalation of particulates exposures for COPCs with inhalation toxicity values in the CLARC database (Ecology 2008, Ecology 2009) were calculated as presented in Tables C-1 and Tables C-2.
- Soil levels protective of potential surface water receptors were calculated as shown in Attachment C-1 using MTCA Equations 747-1 and 747-2, the associated default parameters for those equations, and chemical-specific parameters from the CLARC database (Ecology 2008, Ecology 2009), with the following exceptions and site-specific modifications:
  - Concentrations protective of potential surface water receptors (see Table C-3) were used as the target water concentrations in MTCA Equation 747-1. The target water concentrations are the most stringent of MTCA Method A and Standard Method B surface water cleanup levels. It should be noted that the MTCA Standard Method B surface water cleanup levels are conservatively protective for recreators and subsistence fishers (i.e., Squaxin Island Tribe) during construction-phase and future land use as discussed in Appendix G. It should also be noted that the surface water concentrations that are protective for the consumption of seafood pathway are also sufficiently protective for the incidental ingestion of and dermal contact with surface water pathways per WAC 173-340-730(3)(b)(iii).
  - An average, site-specific fraction organic carbon (foc) value of 0.4% was used in accordance with WAC 173-340-747(5)(b)(i) for organic compound calculations. This average foc value was calculated from the seven lowest foc values measured during the Phase 1 Remedial Investigation (see Appendix B). The three highest foc values from the Phase 1 Remedial Investigation were excluded from the average due the presence of wood debris. All foc samples were collected from soil that is not significantly impacted with TPH at concentrations that would affect the foc measurements.
  - The arsenic level was adjusted up to accepted natural background value per WAC 173-340-740(5)(c) and MTCA Table 740-1 footnote b.

- The cadmium level was adjusted up the accepted practical quantification limit per WAC 173-340-740(5)(c) and MTCA Table 740-1 footnote e.
- Since there are no organic carbon partitioning coefficient (Koc) and Henry's Law Constants (Hcc) values for dioxins/furans in CLARC (Ecology 2008), a Koc value of 3.9E+06 L/kg (USEPA 2005) was used and Hcc was assumed to be negligible in the total dioxins/furans calculation.
- The total naphthalenes level was adjusted down due to residual saturation concerns in WAC 173-340-747(10).
- MTCA A soil cleanup levels were used for TPH-D and TPH-HO, which are based on default residual saturation values per WAC 173-340-747(10)(d)(i).
- A Method A soil cleanup level was used for TPH-G since there is no site-specific volatile petroleum hydrocarbon data available.

As shown in Table C-4, the resulting IACLs are the most stringent of the soil levels calculated for the IA exposure pathways in an unrestricted land use scenario. It should be noted that the default exposure assumptions for unrestricted land use (i.e., a child resident) are significantly more conservative than the reasonable maximum exposure assumptions for any construction-phase receptor and for any future receptor who may access soil beneath pavement (i.e., future utility maintenance worker).

1.7 Development of IARUPLs Based on Reuse Under Pavement

IARUPLs based on reuse under pavement were developed for the exposure pathways listed in Section 1.5 as follows:

- Soil levels protective of direct contact exposures were calculated as shown in Attachment C-1 using MTCA Equation 745-3, 745-4, or 745-5, the associated default exposure parameters for those equations, and chemical-specific parameters from the CLARC database (Ecology 2008, Ecology 2009), with the following exceptions:
  - Method A soil cleanup levels were used for lead, TPH-G, TPH-D, and TPH-HO (Kmet 2001b). The three extractable petroleum hydrocarbon results obtained during the Phase 1 Remedial Investigation were not used to calculate direct contact levels for TPH-D and TPH-HO with MTCA Equation 745-3 per Ecology direction.
- Soil levels protective of inhalation of particulates exposures for COPCs with inhalation toxicity values in the CLARC database (Ecology 2008, Ecology 2009) were calculated as presented in Tables C-1 and Tables C-2.
- Soil levels protective of potential surface water receptors were calculated exactly as described in Section 1.6.

As shown in Table C-5, the resulting IARUPLs are the most stringent of the soil levels calculated for the IA exposure pathways in a reuse under pavement scenario. Exposure assumptions for an adult worker were used in the direct contact and inhalation of particulates calculations since the only receptors that could be exposed to soil beneath the pavement are construction-phase utility installation workers, construction-phase utility installation trespassers, and future utility maintenance workers. It should be

noted that the default adult worker exposure assumptions used to determine these IARUPLs are significantly more conservative than the reasonable maximum exposure assumptions for construction-phase utility installation workers, construction-phase utility installation trespassers, and future utility maintenance workers.

REFERENCES

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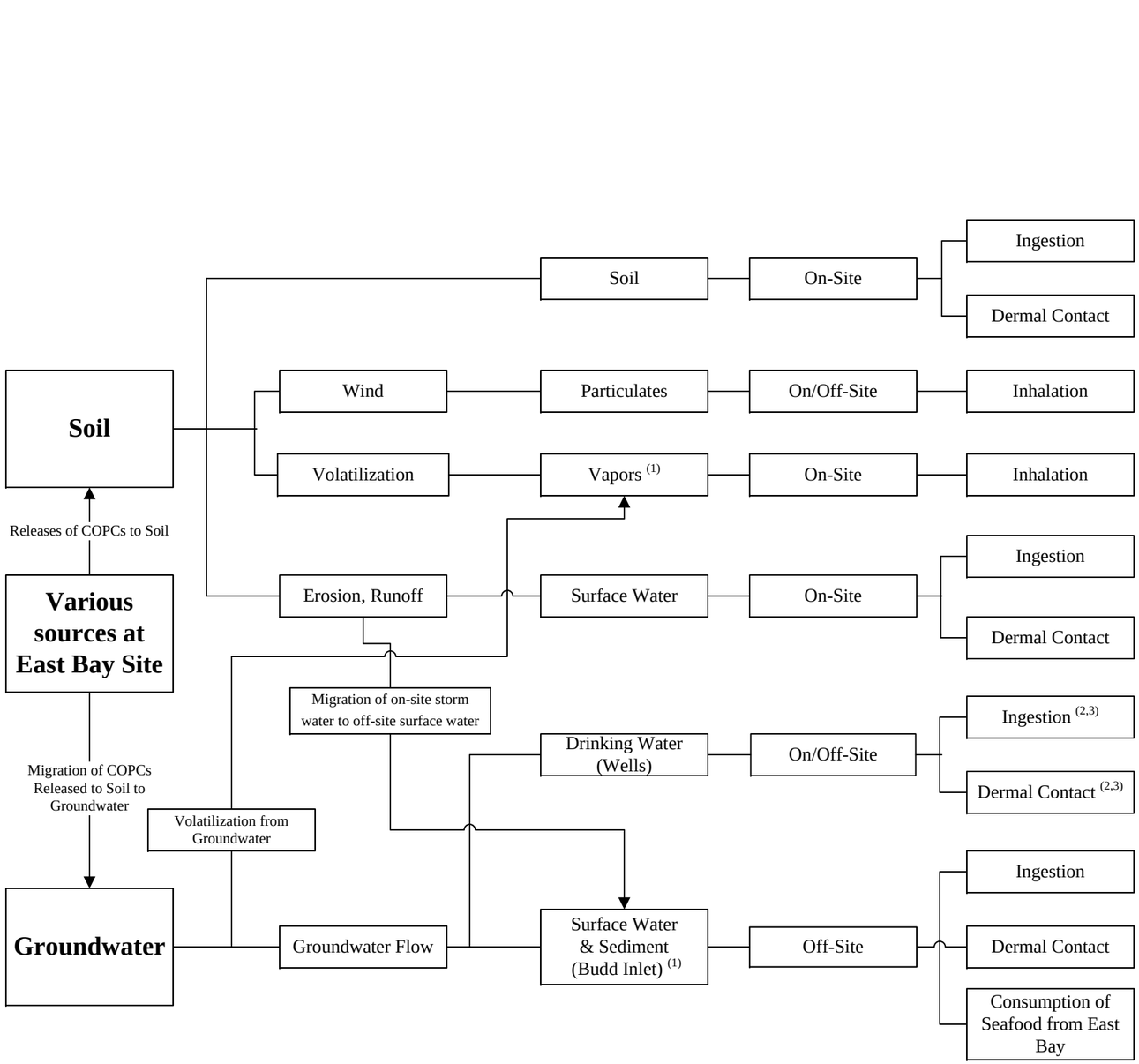

Primary and Secondary Sources	Transport Mechanism	Exposure Medium	Exposure Point	Exposure Route	Complete Pathway?

Current Land Use (Pre-construction)				Construction Phase					Future Land Use				Ecological	
Residents	Commercial / Industrial Workers	Trespassers (4)	Recreators (4,5)	Utility Installation Workers (4)	Utility Installation Trespassers (4)	Building Construction Workers (4)	Building Construction Trespassers (4)	Recreators and Subsistence Fishers (4,5)	Urban Residents (4,6)	Commercial Workers (6)	Utility Maintenance Workers (4)	Recreators and Subsistence Fishers (4,6)	Terrestrial Organisms	Aquatic Organisms
○	○	◆	○	●	●	●	●	○	◆	◆	●	◆	◆	○
○	○	◆	○	●	●	●	●	○	◆	◆	●	◆	◆	○
○	○	○	○	●	●	●	●	○	◆	◆	●	◆	◆	○
○	○	◆	○	◆	◆	◆	◆	○	◆	◆	◆	◆	◆	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	◆	◆	◆	◆	◆	○
○	○	◆	○	◆	◆	○	○	○	◆	◆	◆	○	◆	○
○	○	○	◆	○	○	○	○	◆	○	○	○	◆	○	◆
○	○	○	◆	○	○	○	○	◆	○	○	○	◆	○	◆
○	○	○	◆	○	○	○	○	◆	○	○	○	◆	○	◆

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Figure C-1

Conceptual Site Exposure Model
Port of Olympia East Bay Site

Key

- ● Complete Exposure Pathway
- ◆ Potentially Complete Exposure Pathway (pending further evaluation)
- ○ Incomplete Exposure Pathway

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NOTES:
(1) Although this pathway is likely not complete based on existing data, it is considered potentially complete for all relevant receptors pending further evaluation.
(2) Even though there are no current drinking water wells that are impacted by releases to site soil and it is unlikely that a suitable future water well could be installed in the shallow groundwater at the site, use of shallow groundwater as a future drinking water source is considered potentially complete for all relevant receptors pending further evaluation.
(3) Also applies to suspected ponded groundwater during current land use and shallow groundwater in a utility excavation during the construction phase and/or future land use.
(4) This exposure scenario is a reasonable maximum exposure scenario and is more conservative and therefore protective of other similar exposure scenarios. For instance, the exposure assumptions for current trespassers are more conservative than other current exposure scenarios, such as a scenario for people who access boats stored on-site. Likewise, all three off-site recreator scenarios are more conservative than other off-site human exposure scenarios; the two on-site worker and two on-site trespasser scenarios during the construction phase are more conservative than other on-site construction phase exposure scenarios; the future urban residential scenario is more conservative than the hotel guest exposure scenario; the future utility maintenance worker exposure scenario is more conservative than other human exposure scenarios for future subsurface work; etc.
(5) Current and construction-phase recreators are off-site only since there is no current recreational land use on-site and access will be restricted during the construction phase.
(6) Although future soil-based exposures would be incomplete if exposure barriers were installed as necessary in accordance with current development plans, the pathway is considered potentially complete for all relevant receptors pending further evaluation.

TABLE C-1: EQUATIONS AND PARAMETERS FOR INHALATION OF PARTICULATES CALCULATIONS

Non-Carcinogenic Level (mg/kg) [1]	$= \frac{RfDi * HQ * ABW * AT * 365\ days/year * PEF}{IR * EF * ED}$
Carcinogenic Level (mg/kg) [1]	$= \frac{Risk * ABW * AT * 365\ days/year * PEF}{CPFi * IR * EF * ED}$

			Unrestricted Land Use (Child Resident) [2]		Reuse Under Pavement (Adult Worker) [3]	
Abbreviation	Parameter	Units	Non-Carcinogen Values [2]	Carcinogen Values [2]	Non-Carcinogen Values [3]	Carcinogen Values [3]
RfDi	Reference dose (inhalation)	mg/kg-day	Chemical-specific	N/A	Chemical-specific	N/A
HQ	Hazard quotient	unitless	1	N/A	1	N/A
CPFi	Carcinogenic potency factor (inhalation)	kg-day/mg	N/A	Chemical-specific	N/A	Chemical-specific
Risk	Acceptable cancer risk level	unitless	N/A	1.0E-06	N/A	1.0E-05
ABW	Average body weight	kg	16	16	70	70
AT	Averaging time	years	6	75	20	75
PEF	Particulate emission factor	m^3/kg	4.63E+09 [1]	4.63E+09 [1]	4.63E+09 [1]	4.63E+09 [1]
IR	Inhalation rate	m^3/day	10 [1]	10 [1]	20 [1]	20 [1]
EF	Exposure frequency	days/year	365	365	146	146
ED	Exposure duration	years	6	6	20	20

Notes:
[1] From Interim Risk Assessment Guidance for Superfund (USEPA 1991).
[2] Default exposure assumptions for a child resident from WAC 173-340-740(3)(b)(iii)(B).
[3] Default exposure assumptions for an adult worker from WAC 173-340-745(5)(b)(iii)(B).

Table C-2. Calculations for Inhalation of Particulates Pathway

Constituent	Inhalation Reference Dose (mg/kg-day) [1]	Non-Carcinogenic Levels (mg/kg)		Inhalation Cancer Potency Factor (kg-day/mg) [1]	Carcinogenic Levels (mg/kg)	
		Unrestricted Land Use (Child Resident)	Reuse Under Pavement (Adult Worker)		Unrestricted Land Use (Child Resident)	Reuse Under Pavement (Adult Worker)
Arsenic	1.5E+01	1.1E+11	6.1E+11	1.5E+01	6.2E+03	1.0E+05
Cadmium	No value [3]	NC [4]	NC [4]	6.3E+00	1.5E+04	2.4E+05
Lead	No value [3]	NC [4]	NC [4]	No value [3]	N/A [5]	N/A [5]
Total cPAHs [2]	No value [3]	N/A [5]	N/A [5]	6.1E+00	1.5E+04	2.5E+05
Total Dioxins/Furans [2]	No value [3]	N/A [5]	N/A [5]	1.5E+05	6.2E-01	1.0E+01
Total Naphthalenes [2]	8.6E-04	6.4E+06	3.5E+07	No value [3]	N/A [5]	N/A [5]
TPH-D	No value [3]	NC [4]	NC [4]	No value [3]	N/A [5]	N/A [5]
TPH-HO	No value [3]	NC [4]	NC [4]	No value [3]	N/A [5]	N/A [5]
TPH-G	No value [3]	NC [4]	NC [4]	No value [3]	N/A [5]	N/A [5]
Benzene	8.6E-03	6.4E+07	3.5E+08	2.7E-02	3.4E+06	5.6E+07
Toluene	1.4E+00	1.0E+10	5.7E+10	No value [3]	N/A [5]	N/A [5]
Ethylbenzene	2.9E-01	2.1E+09	1.2E+10	No value [3]	N/A [5]	N/A [5]
Total Xylenes	2.9E-02	2.1E+08	1.2E+09	No value [3]	N/A [5]	N/A [5]

Notes for both tables:

[1] All toxicity information (i.e., reference doses and cancer potency factors) from Ecology's Cleanup Levels and Risk Calculations (CLARC) on-line database (Ecology 2008).

[2] Benzo[a]pyrene, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and naphthalene used to evaluate compliance for total cPAHs, total dioxins/furans, and total napthalenes, respectively, per WAC 173-340-708(8) and footnotes on MTCA Tables 740- and 745-1.

[3] "No value" means no appropriate toxicity value is available.

[4] "NC" means value cannot be directly calculated since no appropriate toxicity information is available for this exposure scenario.

[5] "N/A" means noncancer hazard calculations only apply to noncarcinogens and cancer risk calculations only apply to carcinogens.

TABLE C-3: DETERMINING TARGET CONCENTRATIONS FOR PROTECTION OF POTENTIAL SURFACE WATER RECEPTORS

Constituent of Potential Concern	MTCA Standard Method B Surface Water Equations [1,2] (ug/L)	Surface Water ARARs for Human Health in Marine Waters [2,3] (ug/L)	Surface Water ARARs for Aquatic Life in Marine Waters [2,3] (ug/L)	Resulting Target Concentration for Protection of Potential Surface Water Receptors [4] (ug/L)
Arsenic	0.098	0.14	36	5 [6]
Cadmium	20	No value	8.8	8.8
Lead	No value	No value	8.1	8.1
Total cPAHs [5]	0.030	0.018	No value	0.018 [7]
Total Dioxins/Furans [5]	No value	5.1E-09	No value	1.0E-05 [8]
Total Naphthalenes [5]	4,900	No value	No value	4,900
TPH-D	No value [9]	No value [9]	No value [9]	500 [9]
TPH-HO	No value [9]	No value [9]	No value [9]	500 [7,9]
TPH-G	No value [9]	No value [9]	No value [9]	1000 [9,10]
Benzene	23	51	No value	23
Toluene	19,000	15,000	No value	15,000
Ethylbenzene	6,900	2,100	No value	2,100
Total Xylenes	No value	No value	No value	1,000 [11]

Notes:

[1] Most stringent of human health protection values calculated with MTCA Equation 730-1 for noncarcinogens and MTCA Equation 730-2 for carcinogens, subject to adjustments (e.g., background, PQLs, ARARs). The resulting values are overly conservative since the portion of East Bay downgradient of the Site is closed to shellfish harvesting and does not contain resident fish populations due to the mud flat habitat.

[2] Values from Ecology's Cleanup Levels and Risk Calculations (CLARC) on-line database (Ecology 2008, Ecology 2009).

[3] Most stringent of all applicable or relevant and appropriate requirement (ARAR) values referenced in WAC 173-340-730(3)(b)(i) (i.e., Chapter 173-201A WAC, Section 304 of the Clean Water Act, 40 Code of Federal Regulations 131). For aquatic life, more stringent of acute and chronic values used. The resulting values are overly conservative since the portion of East Bay downgradient of the Site is closed to shellfish harvesting and does not contain resident fish populations due to the mud flat habitat.

[4] Most stringent of Standard Method B equations, human health ARARs, and aquatic life ARARs, subject to any necessary natural background and practical quantitation limit (PQL) adjustments.

[5] Method B equation results and ARAR values for total cPAHs, total dioxins/furans, and total naphthalenes are based on benzo(a)pyrene, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and naphthalene, respectively.

[6] Adjusted up to natural background for groundwater of 5 ug/L per WAC 173-340-720(7)(c) and WAC 173-340-730(5)(c) (see footnote b to MTCA Table 720-1).

[7] May need to be adjusted up to actual PQLs per WAC 173-340-720(7)(c) and WAC 173-340-730(5)(c) since expected groundwater PQLs for cPAHs and TPH-HO are 0.014 ug/L and 500 ug/L, respectively (GeoEngineers and PIONEER 2008).

[8] Adjusted up to PQL expectation for groundwater per WAC 173-340-720(7)(c) and WAC 173-340-730(5)(c). Although the Port and PIONEER contend that 57 pg/L is the appropriate PQL expectation for total dioxins/furans based on the PQL expectation for all congeners (GeoEngineers and PIONEER 2008) on a toxicity equivalency basis, a PQL value of 10 pg/L was used per Ecology request.

[9] For TPH compounds, MTCA Method A groundwater cleanup levels are used in accordance with WAC 173-340-730(3)(b)(iii)(C).

[10] 1000 ug/L value used since no benzene is present.

[11] Used MTCA Method A groundwater cleanup level since no surface water values for xylenes.

TABLE C-4 – INTERIM ACTION CLEANUP LEVELS (IACLS) BASED ON UNRESTRICTED LAND USE

Constituent of Potential Concern	Direct Contact Pathway [1,2,3] (mg/kg)	Inhalation of Particulates Pathway [2,4] (mg/kg)	Protection of Potential Surface Water Receptors [1,5] (mg/kg)	Resulting Interim Action Cleanup Levels Based on Unrestricted Land Use [6] (mg/kg)
Arsenic	20	6,200	20	20
Cadmium	72	15,000	2	2
Lead	250 [7]	No value	1,600	250
Total cPAHs	0.095	15,000	1.4	0.095
Total Dioxins/Furans	9.8E-06	6.2E-01	3.1E-03	9.8E-06
Total Naphthalenes	1,100	6.4E+06	160 [8]	160
TPH-D	3,000 [7]	No value	2,000 [7,8]	2,000
TPH-HO	3,000 [7]	No value	2,000 [7,8]	2,000
TPH-G	4,700 [7]	No value	100 [7]	100
Benzene	18	3.4E+06	0.22	0.22
Toluene	5,900	1.0E+10	240	240
Ethylbenzene	7,400	2.1E+09	43	43
Total Xylenes	15,000	2.1E+08	23	23

Notes:

[1] All values are from Method B calculations presented in Attachment C-1, unless otherwise noted as a Method A value.

[2] Default exposure assumptions for a child resident from WAC 173-340-740(3)(b)(iii)(B) were utilized for the Interim Action per Ecology request.

[3] Includes both ingestion and dermal contact even though non-TPH Method A and Method B calculations typically only quantify ingestion in accordance with Kmet 2001a and WAC 173-340-740(3)(b)(iii)(B), respectively.

[4] From Table C-2. More stringent of non-carcinogenic level and carcinogenic level used. The risk associated with the inhalation of particulates pathway is additive to the risk associated with the direct contact pathway since both pathways are complete for the same receptors. However, in this case, the sum of direct contact and inhalation of particulates pathways equals the direct contact value since inhalation contributes an insignificant portion of the combined risk, to two significant figures.

[5] It should be noted that these values were calculated using a methodology developed by the United States Environmental Protection Agency (USEPA) for use in calculating soil screening levels, not cleanup levels (USEPA 1996). It should also be noted that this calculation assumes that no attenuation occurs and that there is no mixing zone as groundwater flows into surface water. In addition, target surface water concentrations are overly conservative as noted previously. For these reasons, the levels calculated for protection of potential surface water receptors are overly conservative. This conservatism is evidenced by the general lack of groundwater detections above MTCA Method A groundwater cleanup levels in the existing data that can be attributable to a Site release.

[6] The most stringent of the values for the individual pathways. It should be noted that future actions may have different levels that are protective of the same land use. For instance, future actions could have different levels if site-specific exposure assumptions were used or if more information is learned about the exposure pathways following additional data collection.

[7] Method A value. TPH-G, TPH-D, and TPH-HO direct contact values from Kmet 2001a.

[8] Based on residual saturation concerns.

TABLE C-5 – INTERIM ACTION REUSE UNDER PAVEMENT LEVELS (IARUPLS)

Constituent of Potential Concern	Direct Contact Pathway [1,2,3] (mg/kg)	Inhalation of Particulates Pathway [2,4] (mg/kg)	Protection of Potential Surface Water Receptors [1,5] (mg/kg)	Resulting Interim Action Reuse Under Pavement Levels [6] (mg/kg)
Arsenic	33	100,000	20	20
Cadmium	1,300	240,000	2	2
Lead	250 [7]	No value	1,600	250
Total cPAHs	3.4	250,000	1.4	1.4
Total Dioxins/Furans	5.1E-04	1.0E+01	3.1E-03	5.1E-04
Total Naphthalenes	13,000	3.5E+07	160 [8]	160
TPH-D	39,000 [7]	No value	2,000 [7,8]	2,000
TPH-HO	39,000 [7]	No value	2,000 [7,8]	2,000
TPH-G	150,000 [7]	No value	100 [7]	100
Benzene	1,400	5.6E+07	0.22	0.22
Toluene	120,000	5.7E+10	240	240
Ethylbenzene	140,000	1.2E+10	43	43
Total Xylenes	290,000	1.2E+09	23	23

Notes:

[1] All values are from site-specific calculations presented in Attachment C-1, unless otherwise noted as a Method A value.

[2] Default exposure assumptions for an adult worker from WAC 173-340-745(5)(b)(iii)(B) were utilized for the Interim Action per Ecology request. However, it should be noted that these assumptions are significantly more conservative than reasonable maximum exposure assumptions for construction phase utility installation workers, construction phase utility installation trespassers, and future utility maintenance workers.

[3] Includes both ingestion and dermal contact even though non-TPH calculations with these default assumptions typically only quantify ingestion in accordance with Kmet 2001b and WAC 173-340-745(5)(b)(iii)(B).

[4] From Table C-2. More stringent of non-carcinogenic level and carcinogenic level used. The risk associated with the inhalation of particulates pathway is additive to the risk associated with the direct contact pathway since both pathways are complete for the same receptors. However, in this case, the sum of direct contact and inhalation of particulates pathways equals the direct contact value since inhalation contributes an insignificant portion of the combined risk, to two significant figures.

[5] It should be noted that these values were calculated using a methodology developed by the United States Environmental Protection Agency (USEPA) for use in calculating soil screening levels, not cleanup levels (USEPA 1996). It should also be noted that this calculation assumes that no attenuation occurs and that there is no mixing zone as groundwater flows into surface water. In addition, target surface water concentrations are overly conservative as noted previously. For these reasons, the levels calculated for protection of potential surface water receptors are overly conservative. This conservatism is evidenced by the general lack of groundwater detections above MTCA Method A groundwater cleanup levels in the existing data that can be attributable to a Site release.

[6] The most stringent of the values for the individual pathways. It should be noted that future actions may have different levels that are protective of the same land use. For instance, future actions could have different levels if site-specific exposure assumptions were used or if more information is learned about the exposure pathways following additional data collection.

[7] Method A value. TPH-G, TPH-D, and TPH-HO direct contact values from Kmet 2001b. Method A cleanup level for unrestricted land uses used for Interim Action since there is no toxicity value for lead.

[8] Based on residual saturation concerns.

ATTACHMENT C-1

MTCA SPREADSHEETS SUPPORTING CALCULATIONS

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Arsenic**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s	20	mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	3.00E-04	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o	1.50E+00	kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.01	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.2	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	2.900E+01	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	0.000E+00	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S		mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**5.00E+00**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	1	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Arsenic

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.9E+00	mg/kg
Natural Background concentration for Soil:	20	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.0E+01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	0.0E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	102.2	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	2.400E+01	2.162E+01	1.050E+03	4.000E+02
		@RISK =1.0E-6 or 1.0E-5	6.7E-01	6.0E-01	8.8E+01	3.3E+01

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		5.0E+00	
	Target Soil CUL? mg/kg		2.9E+00	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		Cadmium	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s	2	mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for AF, ABS_d, GI:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	1.00E-03	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	INH	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	$AB1$	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	AF	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.01	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	GI	0.2	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	6.700E+00	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	0.000E+00	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:	H	0.000E+00	atm.m^3/mol
*Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)	H_{cc}	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S		mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**8.80E+00**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	1	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Cadmium

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.2E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	2	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.0E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	0.0E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	24.4	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	8.000E+01	7.207E+01	3.500E+03	1.333E+03
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		8.8E+00	
	Target Soil CUL? mg/kg		1.2E+00	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Lead (Soil-to-SW only)**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o		mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.01	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.2	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	1.000E+04	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	0.000E+00	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S		mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**8.10E+00**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	1	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Lead (Soil-to-SW only)

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.6E+03	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.6E+03	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	0.0E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	34,884.7	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	N/A	N/A	N/A	N/A
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		8.1E+00	
	Target Soil CUL? mg/kg		1.6E+03	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Total cPAHs**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o		mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o	7.30E+00	kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	INH	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	$AB1$	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	AF	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.1	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	GI	0.5	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	9.700E+05	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	4.600E-05	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	H	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	1.600E-03	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**1.80E-02**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Total cPAHs

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.4E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.4E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	6.208E+00	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	13,535.9	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	N/A	N/A	N/A	N/A
		@RISK =1.0E-6 or 1.0E-5	1.4E-01	9.5E-02	1.8E+01	3.4E+00

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		1.8E-02	
	Target Soil CUL? mg/kg		1.4E+00	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Total CDDs/CDFs**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o		mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o	1.50E+05	kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i	1.50E+05	kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	INH	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	$AB1$	0.6	unitless
3.4 Adherence Factor (default = "0.2")[2]	AF	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.03	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	GI	0.8	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	3.900E+06	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	0.000E+00	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	H	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	1.930E-05	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**1.00E-05**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Total CDDs/CDFs

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	5.1E-04	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	5.1E-04	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	3.011E-01	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	54,419.6	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
Soil Direct Contact			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	N/A	N/A	N/A	N/A
		@RISK =1.0E-6 or 1.0E-5	1.1E-05	9.8E-06	1.5E-03	5.1E-04

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		1.0E-05	
	Target Soil CUL? mg/kg		3.1E-03	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Total naphthalenes**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	2.00E-02	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	1	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.1	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.5	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	1.200E+03	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	2.000E-02	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	3.100E+01	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**4.90E+03**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Total naphthalenes

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	4.9E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	4.9E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	1.6E+02	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	17.7	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	1.600E+03	1.111E+03	7.000E+04	1.333E+04
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		4.9E+03	
	Target Soil CUL? mg/kg		4.9E+02	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Benzene**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	4.00E-03	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o	5.50E-02	kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	***INH***	2	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	***AB1***	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	***AF***	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.0005	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	***GI***	0.8	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	6.200E+01	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	2.300E-01	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	***H***	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	1.800E+03	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**2.30E+01**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Benzene

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.2E-01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.2E-01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	8.4E+02	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	1.9	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	3.200E+02	3.196E+02	1.400E+04	7.950E+03
		@RISK =1.0E-6 or 1.0E-5	1.8E+01	1.8E+01	2.4E+03	1.4E+03

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		2.3E+01	
	Target Soil CUL? mg/kg		2.2E-01	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Toluene**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	8.00E-02	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	2	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.03	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.8	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	1.400E+02	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	2.700E-01	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	5.300E+02	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**1.50E+04**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Toluene

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.4E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.4E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	4.2E+02	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	3.0	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	6.400E+03	5.912E+03	2.800E+05	1.164E+05
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		1.5E+04	
	Target Soil CUL? mg/kg		2.4E+02	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Ethylbenzene**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	1.00E-01	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	2	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.03	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.8	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	2.000E+02	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	3.200E-01	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	1.700E+02	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**2.10E+03**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Ethylbenzene

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	4.3E+01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	4.3E+01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	1.7E+02	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	3.8	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	8.000E+03	7.390E+03	3.500E+05	1.455E+05
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		2.1E+03	
	Target Soil CUL? mg/kg		4.3E+01	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 2/16/2009
Site Name: Port of Olympia East Bay
Evaluator: Troy Bussey

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

[1]Soil ingestion only; [2]Soil dermal contact; [3]Soil to Ground Water; [4]Ground Water ingestion; [5]Vapor exposure pathway

A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
1. General information			
1.1 Name of Chemical:		**Total Xylenes**	
1.2 Measured Soil Concentration, if any:	C_s		mg/kg
1.3 Natural Background Concentration for Soil, if any:	NB_s		mg/kg
1.4 Practical Quantitation Limit for Soil, if any:	PQL_s		mg/kg
* To evaluate the ingestion and dermal pathways concurrently, check here and input values for ***AF, ABS$_d$, GI***:		☑	
2. Toxicological Properties of the Chemical: Chemical-Specific			
2.1 Oral Reference Dose[1, 3]	RfD_o	2.00E-01	mg/kg-day
2.2 Oral Carcinogenic Potency Factor[1, 3]	CPF_o		kg-day/mg
2.3 Inhalation Reference Dose[5]	RfD_i		mg/kg-day
2.4 Inhalation Carcinogenic Potency Factor[5]	CPF_i		kg-day/mg
3. Exposure Parameters			
3.1 Inhalation Correction Factor (default = "2" for volatiles; "1" for all others)[4]	*INH*	2	unitless
3.2 Inhalation Absorption Fraction (default = "1")[5]	ABS_i	1	unitless
3.3 Gastrointestinal Absorption Fraction (default = "1")[1, 2]	*AB1*	1	unitless
3.4 Adherence Factor (default = "0.2")[2]	*AF*	0.2	mg/cm^2-day
3.5 Dermal Absorption Fraction (chemical-specific or defaults)[2]	ABS_d	0.03	unitless
3.6 Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults)[2]	*GI*	0.8	unitless
4. Physical and Chemical Properties of the Chemical: Chemical-Specific			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K_d value here and enter "1" for f_{oc} value	K_{oc}	2.300E+02	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H_{cc}	2.800E-01	unitless
**If the value for Henry's Law Constant is given in the unit of "atm.m^3/mol", enter value here:*	*H*	*0.000E+00*	atm.m^3/mol
**Converted unitless form of H_{cc} @13^{o}C: (Enter this converted value into "H_{cc} input Box" above for a calculation)*	H_{cc}	*0.000E+00*	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit	S	1.700E+02	mg/l

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation: **Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.*	C_w	**1.00E+03**	ug/l

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):	n	0.43	unitless
Volumetric Water Content (default = "0.30"):	Θ_w	0.3	unitless
Volumetric Air Content (default = "0.13"):	Θ_α	0.13	unitless
Dry Soil Bulk Density (default = "1.50"):	ρ_b	1.5	kg/l
Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for f_{oc} value here	f_{oc}	0.004	unitless
Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)	DF	20	unitless

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

** Vapor Attenuation Factor is the ratio of air concentration at the exposure point (e.g., within the building) to the vapor-phase contaminant concentration within the soil at the source*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway	VAF		unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Total Xylenes

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here: ☑

To calculate a soil concentration based on Method C vapor pathway, check here: ☐

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.3E+01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.3E+01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg
Soil Saturation Limit, C_{sat}:	1.9E+02	mg/kg

C_{sat} corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone

Retardation Factor, ***R*** :	4.2	unitless	contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

Summary by Exposure Pathway

			Method B *Unrestricted Land Use* @ HQ=1.0; RISK =1.0E-6		*Method C* *Industrial Land Use* @ HQ=1.0; RISK =1.0E-5	
			Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
Soil Direct Contact	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	1.600E+04	1.478E+04	7.000E+05	2.909E+05
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Potable Ground Water	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Ground Water CUL? ug/l		1.0E+03	
	Target Soil CUL? mg/kg		2.3E+01	

			Method B @ HQ=1.0; RISK =1.0E-6	*Method C* @ HQ=1.0; RISK =1.0E-5
Protection of Air Quality ***(for informational purpose only)***	Under the Current Condition	Predicted Air Conc? ug/m^3 @Exposure Point	N/A	
		HQ? @ Exposure Point	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A
	Target Air CUL? ug/m^3	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A

NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

CAUTION: The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

CAUTION: The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Appendix D

SAMPLING AND ANALYSIS PLAN / QUALITY ASSURANCE PROJECT PLAN

TABLE OF CONTENTS

TABLES

SECTION 1 – SAMPLING AND ANALYSIS PLAN

1.1 Purpose

The purpose of the Sampling and Analysis Plan (SAP) is to present the methodology for samples collected and analyzed pursuant to the Interim Action Work Plan (IAWP). The SAP is designed so that sampling and analysis activities can be completed in accordance with Washington Administrative Code (WAC) 173-340-820 and applicable components of Washington State Department of Ecology (Ecology) guidance (Ecology 1995a). It should be noted that the brevity of this SAP is based on the nature of anticipated sampling activities and that typical contents of a SAP are not repeated if included elsewhere in the IAWP.

1.2 Airborne Dust Monitoring

The third-party Port of Olympia (Port) contractor providing oversight support for environmental soil issues will utilize a calibrated PDR-1000 Personal DataRAM Particulate Monitor Kit or equivalent field meter to measure the amount of respirable dust (i.e., particles less than 10 microns in diameter) in the air and log that information throughout the day. Real-time monitoring will be conducted for the work-day duration at one reasonable maximum sample location (e.g., next to heavy equipment operators) for each work day. Each work day may have a different monitoring location depending on the nature of work being conducted that day. The field meter will be configured to collect measurements approximately every minute and to alarm if a concentration exceeding the Airborne Dust Action Level presented in Appendix F is measured.

If the time-weighted average of daily dust measurements does not exceed the Airborne Dust Action Level during the first two weeks of monitoring, then airborne dust monitoring may be temporarily discontinued until June 22nd (assuming the initial monitoring began prior to June 8th). Regardless of initial results, airborne dust monitoring will be continued for two weeks starting on June 22nd (if the initial monitoring begins prior to June 8th). If the Airborne Dust Action Level is not exceeded during the two weeks of initial monitoring and the two weeks of summer monitoring, then airborne dust monitoring may be permanently discontinued.

1.3 Soil Sampling and Analysis

The third-party Port contractor providing oversight support for environmental soil issues will utilize hand tools (e.g., shovel, trowel, mixing bowl) to collect stockpile samples at the sampling frequencies shown in Table D-1. The current estimated volume of soil to be excavated and stockpiled during the IA ranges from 20,000 cubic yards (CY) to 30,000 CY. Although the exact number of stockpile samples will depend on the actual size and location of the stockpiles, no less than 40 to 60 soil stockpile samples will be collected (based on the estimated excavation volume).

Each soil stockpile sample from stockpiles designated for off-site disposal (due to geotechnical considerations or gross contamination provisions) will be a five-point composite of representative sub-sampling locations. All soil stockpile samples collected from stockpiles designated for off-site disposal will be analyzed for:

- Arsenic, cadmium, and lead by the toxicity characteristic leaching procedure (TCLP) per United States Environmental Protection Agency (USEPA) Method SW846-1311

Each soil stockpile sample from stockpiles designated for on-site reuse under pavement will be collected from a representative depth as discrete, non-homogenized, and non-sieved samples. All soil stockpile samples collected from stockpiles designated for on-site reuse under pavement will be analyzed for:

- Arsenic, cadmium, and lead by USEPA Method SW846-6010 or 6020
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method SW846-8270C
- Chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans (dioxins/furans) by USEPA Method SW846-8290
- Total petroleum hydrocarbons (TPH) in the diesel range (TPH-D) and the heavy oil range (TPH-HO) by Ecology Method NWTPH-Dx
- TPH in the gasoline range (TPH-G) by Ecology Method NWTPH-G, with follow-on analysis for benzene, toluene, ethylbenzene, and xylenes (BTEX) by USEPA Method SW846-8260B or SW846-8021 if TPH-G is detected.

Sample containers for all analyses will be provided by the analytical laboratory. At each sampling location, sample containers for TPH-G and possible BTEX analyses will be filled before all other sample containers. Samples for TPH-G and possible BTEX analyses will be collected and prepared in accordance with USEPA Method SW846-5035A. Table D-2 presents the appropriate sample containers, preservation, and holding times for the analyses used in this SAP. Sample containers will be held by the laboratory for possible subsequent analyses.

If suspected gross contamination is encountered and gross contamination sampling becomes necessary in accordance with the Compliance Monitoring Plan (CMP), then the specific sampling locations, sample density, and analytical methods for such sampling will be determined on a case-by-case basis in consultation with Ecology, as shown in Table D-1. In general, it is expected that all necessary excavation sidewall and bottom samples will be collected by the third-party Port contractor providing oversight support for environmental soil issues as discrete, grab-soil samples from the excavator bucket.

The third-party Port contractor providing oversight support for environmental soil issues will survey all soil sample locations with a Trimble GeoXT unit or equivalent.

1.4 Equipment Decontamination Procedures

All non-dedicated soil sampling equipment will be cleaned before use. Following use, the affected portions of the equipment will be scrubbed with potable water containing diluted detergent (e.g., Liquinox) before being sufficiently rinsed with potable water. Gloves will be changed before working at the next monitoring location. Dedicated equipment will be stored in dedicated plastic bags to prevent cross-contamination.

1.5 Investigation-Derived Waste

Investigation-derived waste generated pursuant to this SAP will be handled and disposed of as follows:

- Decontamination water will be added to the dewatering treatment system or discharged on Site.

- Disposable personal protective equipment (PPE) (e.g., nitrile gloves) and other general garbage will be disposed of at Port property as part of the normal solid waste stream.

1.6 Field Recordkeeping

The third-party Port contractor providing oversight support for environmental soil issues will record and maintain field notes and take photographs as appropriate. The third-party Port contractor providing oversight support for environmental soil issues will provide PIONEER Technologies Corporation (PIONEER) with a copy of all field notes and photographs, and will maintain these records for three years.

1.7 Sample Identification and Labeling

All samples will be identified by a unique sample designation that includes the sample location name, sample date, and sample depth. The sample designation scheme is as follows:

- Sample Location Name-Sample Date-Sample Depth

The sample location name is a four character code that uniquely identifies each sampling location. The station location name has two parts: a two-letter location type (i.e., "SP" for stockpile sample and "SW" for excavation sidewall or bottom sample) followed by a unique, sequential two-digit number (i.e., "nn"). Sample date is in the format of year, month, date (i.e., "YYMMDD"). Sample depth is the sample interval in feet below stockpile or ground surface (e.g., "0.5-1").

Two examples of complete sample designations are:

- SP03-090605-0.5-1 Stockpile sample #3 collected on June 5, 2009 from depth of 0.5 to 1 feet below stockpile surface
- SW12-090830-6-7 Sidewall sample #12 collected on August 30, 2009 from depth of 6 to 7 feet below ground surface

All sample labels will clearly indicate the site location, sample designation, date, time, sampler's initials, parameters to be analyzed, preservative added (if any), and any pertinent comments.

1.8 Sample Handling and Shipment

Samples being submitted for laboratory analysis will be packaged and shipped in accordance with 49 Code of Federal Regulations (CFR) 173.6 and 49 CFR 173.24. All samples will be shipped as "Environmental Samples" and not as hazardous material. Samples will be shipped via express delivery to the laboratory as soon as reasonably possible after sample collection. The following are general packaging procedures:

- Sample labels will be securely attached to each sample container.
- Plastic bubble-wrap bags, sheets, or Styrofoam packing material will be used to protect sample containers.
- Insulated plastic or metal-clad plastic coolers will be used as shipping containers.
- All samples will be chilled with the addition of blue, cube, or block ice.
- The original chain-of-custody form (see also below) will be placed inside the cooler in a sealed plastic bag.

- Two signed custody seals will be placed over the lid of the cooler and covered with clear plastic tape.
- The cooler will be securely taped shut with strapping tape.
- The completed shipping label will be attached to the top of the cooler.
- The cooler will then be delivered to the shipping courier.

1.9 Chain-of-Custody Documentation

Chain-of-custody procedures are employed to maintain and document sample possession. A sample is considered under a person's custody if it is in that person's physical possession, within visual sight of that person after taking physical possession, secured by that person so that the sample cannot be tampered with, or secured by that person in an area that is restricted to unauthorized personnel.

The originator (the sampler) will fill in all requested information on the custody record and will sign and date the record in the first "relinquished by" box. Original signed custody records listing the samples in the cooler will accompany all shipments of samples (note: it is possible that more than one custody form will be needed per cooler to list all the samples contained in the cooler). The originator of the custody record will keep the bottom copy (usually pink).

SECTION 2 – QUALITY ASSURANCE PROJECT PLAN

2.1 Purpose

The purpose of the Quality Assurance Project Plan (QAPP) is to provide methodology for evaluating whether sampling and analysis procedures will produce data of acceptable quality. The QAPP is designed to produce data of acceptable quality in accordance with WAC 173-340-820 and Ecology guidance (Ecology 2004). It should be noted that the brevity of this QAPP is based on the nature of anticipated sampling activities and that typical contents of a QAPP are not repeated if included elsewhere in the IAWP.

2.2 Field Quality Control Samples

In accordance with the soil sampling approach utilized in the Remedial Investigation Work Plan (RIWP) (GeoEngineers and PIONEER 2008), the following field quality control (QC) soil samples will be collected and submitted for analysis:

- One trip blank will be submitted for each batch of TPH-G/BTEX samples submitted to the analytical laboratory and analyzed for TPH-G and BTEX (if necessary).

2.3 Laboratory Quality Control

The project analytical laboratory will be responsible for conducting laboratory QC procedures and reporting laboratory QC results in accordance with laboratory standard operating procedures. It is expected at a minimum that the project laboratory will perform and report a method blank, blank spike, matrix spike, and matrix spike duplicate once per batch of metals, PAHs, dioxins/furans, NWTPH-Dx, NWTPH-G, or BTEX analyses. Control limits for acceptable spike recoveries and the relative percent difference on spike duplicates are shown in Table D-3. Also, it is expected that the laboratory will perform and report results of surrogate recovery for every PAHs, dioxins/furans, NWTPH-Dx, NWTPH-G, and BTEX sample. Control limits for acceptable surrogate recoveries are shown in Table D-4.

2.4 Practical Quantitation Limit

Table D-5 presents a comparison of Interim Action Cleanup Levels and Interim Action Reuse Under Pavement Levels with expected practical quantitation limits (PQLs) for each constituent of potential concern (COPC). It is expected that the project will be able to achieve soil PQLs of appropriate sensitivity.

2.5 QA/QC Review and Verification

The overall data quality will be reviewed and verified by PIONEER to determine the appropriateness of project-related data. Project data as well as quality assurance/quality control (QA/QC) data (i.e., field QC results, lab QC results, PQLs, and holding times) will be evaluated in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity. Results of this evaluation will be summarized in the IA Report. Corrective action for field or laboratory procedures will be taken as needed in consultation with Ecology.

SECTION 3 – REFERENCES

Ecology 1995a. Guidance on Sampling and Data Analysis Methods, January.

Ecology 1995b. Guidance for Remediation of Petroleum Contaminated Soils, November.

Ecology 2003. Guidance for Site Checks and Site Assessments for Underground Storage Tanks, May.

Ecology 2004. Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies, July.

PIONEER 2008. Personal correspondence between Troy Bussey and Leslie Whiteman of Rabanco, Dean Large of Waste Connections, and Missy Boone of Waste Management, December.

TABLE D-1. SOIL SAMPLING AND ANALYSIS PLAN SUMMARY

Monitoring Location / Media	Total Arsenic, Cadmium, and Lead by USEPA Method SW846-6010 or 6020	TCLP Arsenic, Cadmium, and Lead by USEPA Method SW846-1311	PAHs by USEPA Method SW846-8270C	Dioxins/ Furans by USEPA Method SW846-8290	TPH-D and TPH-HO by NWTPH-Dx	TPH-G by Ecology Method NWTPH-G
Soil stockpiles designated for off-site disposal		≥ 1 sample per 500 CY (1,2,3)				
Soil stockpiles designated for on-site reuse	≥ 1 sample per 500 CY (3,4)		≥ 1 sample per 500 CY (3,4)	≥ 1 sample per 500 CY (3,4)	≥ 1 sample per 500 CY (3,4)	≥ 1 sample per 500 CY (3,4,5)
Worst-case locations (e.g., excavation sidewall and/or stockpile) to characterize suspected gross contamination	TBD (6)	TBD (6)	TBD (6)	TBD (6)	TBD (6)	TBD (5,6)
Excavation sidewalls/bottom to confirm gross contamination overexcavation was completed successfully	TBD (6)		TBD (6)	TBD (6)	TBD (6)	TBD (5,6)

Notes:

(1) Samples from soil stockpiles designated for off-site disposal still need to be characterized for acceptance at a Resource Conservation and Recovery Act (RCRA) Subtitle D facility. Toxicity characteristic leaching procedure (TCLP) results for arsenic, cadmium, and lead will be used in concert with the existing infrastructure corridor soil data to profile soil stockpiles designated for off-site disposal.

(2) An appropriate sampling frequency for acceptance of soil for disposal at a RCRA Subtitle D facility is one sample per 500 cubic yards (CY) (PIONEER 2008).

(3) 500 CY is the maximum volume that will be represented by a single soil sample. Thus, stockpiles can be combined for sampling purposes as long as the soil stockpiles in question contain similar soil (e.g., the stockpiles were generated from the same zone as shown on Figure 5-1, none of the stockpiles contain any grossly contaminated soil, etc). Likewise, multiple samples will be collected from stockpiles larger than 500 CY. For instance, four samples would be collected from a 1900 CY stockpile.

(4) The sampling frequency that is appropriate for land disposal at a landfill is also appropriate for reuse of soil under pavement. Ecology guidance for stockpile sampling at leaking underground storage tanks sites (Ecology 1995b, Ecology 2003) was not utilized given the amount of performance soil data that will be collected with the 500 CY sampling frequency, the soil will be reused under pavement, the maximum soil concentrations within the infrastructure corridor are relatively low, and the purpose of this sampling is not to determine whether or not a release from an underground storage tank has occurred.

(5) All TPH-G samples will be held for possible subsequent analysis. If TPH-G is detected above the practical quantitation limit in a given sample, that sample will be analyzed for benzene, toluene, ethylbenzene, and xylenes by USEPA Method SW846-8260B or SW846-8021.

(6) TBD = to be determined. If suspected gross contamination is encountered, then sample locations and analyses will be determined on a case-by-case basis in consultation with Ecology.

CY: Cubic yards
Dioxins/Furans: Chlorinated dibenzo-p-dioxins / chlorinated dibenzofurans
PAHs: Polycyclic aromatic hydrocarbons
TCLP: Toxicity Characteristic Leaching Procedure
TPH-D: Total petroleum hydrocarbons in the diesel range
TPH-HO: Total petroleum hydrocarbons in the heavy oil range
TPH-G: Total petroleum hydrocarbons in the gasoline range
USEPA: United States Environmental Protection Agency

TABLE D-2. SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Analytical Method	Container Type	Preservation	Extraction Holding Time (days)	Analysis Holding Time (days)
USEPA Method SW846-6010/6020	One 4-oz glass jar	Cool to 4ºC	N/A	180
USEPA Method SW846-8270C	One 4-oz glass jar	Cool to 4ºC	14	40
USEPA Method SW846-8290	One 4-oz glass jar	Cool to 4ºC	30	40
Ecology Method NWTPH-Dx	One 4-oz glass jar	Cool to 4ºC	14	40
Ecology Method NWTPH-G and USEPA Method SW846-8260B or -8021	Depends on sampling methodology (see USEPA Method SW846-5035A for options)		N/A	14

Notes:
N/A: Not applicable
USEPA: United States Environmental Protection Agency

TABLE D-3. SPIKE RECOVERY AND SPIKE DUPLICATE CONTROL LIMITS

Analytical Method	Range of Acceptable Blank Spike Recoveries (%)	Range of Acceptable Matrix Spike/Matrix Spike Duplicate Recoveries (%)	Acceptable Spike Duplicate Relative Percent Difference (%)
USEPA Method SW846-6010/6020	80 – 120	75 – 125	< 25
USEPA Method SW846-8270C	30 – 140	30 – 140	< 50
USEPA Method SW846-8290	20 – 180	20 – 180	< 30
Ecology Method NWTPH-Dx	50 – 150	50 – 150	< 50
Ecology Method NWTPH-G	50 – 150	50 – 150	< 50
USEPA Method SW846-8260B or -8021	70 – 130	70 – 130	< 25

Notes:
USEPA: United States Environmental Protection Agency

TABLE D-4. SURROGATE RECOVERY CONTROL LIMITS

Analytical Method	Typical Surrogate(s)	Acceptable Range of Surrogate Percent Recovery (%)
USEPA Method SW846-6010/6020	N/A	N/A
USEPA Method SW846-8270C	Terphenyl-d14	18 – 137
USEPA Method SW846-8290	Various carbon-13 compounds	40 – 135
Ecology Method NWTPH-Dx	Hexacosane	50 – 150
Ecology Method NWTPH-G	4-Bromofluorobenzene	50 – 150
USEPA Method SW846-8260B or -8021	1,2-Dichloroethane-d4	70 – 130
	4-Bromofluorobenzene	70 – 130
	Toluene-d8	70 – 130

Notes:
N/A: Not applicable
USEPA: United States Environmental Protection Agency

TABLE D-5. PRACTICAL QUANTITATION LIMITS

Analytical Method	Constituent	Interim Action Cleanup Level (mg/kg)	Interim Action Reuse Under Pavement Level (mg/kg)	Typical Expectations for Laboratory PQL [1] (mg/kg)	Acceptable PQL for IA Project Laboratory [2] (mg/kg)
USEPA Method SW846-6010/6020	Arsenic	20	20	2.5 – 10	2
	Cadmium	2	2	0.01 – 2	2
	Lead	250	250	1.2 - 8	2
USEPA Method SW846-8270C	Total cPAHs	0.095	1.4	0.009 – 1.2	0.15 [3]
	Total naphthalenes	160	160	0.067 – 1.3	0.3 [3]
USEPA Method SW846-8290	Total dioxins/furans	9.8E-06	5.1E-04	9E-06	3E-06 [4]
Ecology Method NWTPH-Dx	TPH-D	2,000	2,000	N/A	50
	TPH-HO	2,000	2,000	N/A	100
Ecology Method NWTPH-G	TPH-G	100	100	N/A	10
USEPA Method SW846-8260B or SW846-8021	Benzene	0.22	0.22	0.001 – 0.01	0.01
	Toluene	240	240	0.001 – 0.01	0.01
	Ethylbenzene	43	43	0.001 – 0.01	0.01
	Total xylenes	23	23	0.003 – 0.03	0.03

Notes:
[1] Based on Ecology guidance (Ecology 1995a).
[2] It may not be possible to achieve these quantitation limits (e.g., samples that require dilution before analysis).
[3] Based on 0.1 mg/kg for each PAH constituent.
[4] Based on 0.000001 mg/kg for each dioxins/furans congener constituent.
PQL: Practical quantitation limit
cPAHs: Carcinogenic polycyclic aromatic hydrocarbons
Dioxins/furans: Chlorinated dibenzo-p-dioxins / chlorinated dibenzofurans
TPH-D: Total petroleum hydrocarbons in the diesel range
TPH-HO: Total petroleum hydrocarbons in the heavy oil range
TPH-G: Total petroleum hydrocarbons in the gasoline range

Appendix E

PIONEER HEALTH AND SAFETY PLAN PLAN

PIONEER HEALTH AND SAFETY PLAN

1.1 Purpose

The purpose of this health and safety plan (HASP) is to establish personnel protection standards, specify safe operating procedures, and provide for contingencies that may arise during on-site interim action (IA) activities conducted by PIONEER Technologies Corporation (PIONEER) at the Port of Olympia (Port) East Bay Site (Site). This HASP does not cover any other on-site contractors or organizations. This HASP has been developed in accordance with 29 Code of Federal Regulations (CFR) 1910.120, Chapter 296-843 of the Washington Administrative Code (WAC), and WAC 173-340-810. This HASP will be updated as necessary when conditions change.

PIONEER employees will keep a copy of this HASP on-site when they are conducting work on Site.

1.2 PIONEER Role in Site Operations

A description of the Site, IA, and possible PIONEER roles and responsibilities during the IA are discussed in the main text of the Interim Action Work Plan (IAWP). PIONEER has a limited support role in implementing Site operation activities. PIONEER's designated Site Safety Officer is included in the Emergency Response Section below.

1.3 Hazard Analysis

Possible chemical, physical, and biological hazards for PIONEER workers are discussed below.

1.3.1 Chemical Hazards

Table E-1 presents the maximum detected concentrations detected in Site soil, along with their associated permissible exposure limits and symptoms of overexposure. Overexposure from site chemicals is not anticipated given the concentrations in Site soil and the limited nature of PIONEER's IA activities.

1.3.2 Physical Hazards

Potential physical hazards and procedures to be used to monitor/reduce these hazards will include the following:

- Slip/trip/fall: Good housekeeping practices should be employed to prevent slip/trip/fall hazards. Caution must be employed when walking to prevent slip/trip/fall hazards caused by terrain.
- Getting hit by heavy equipment: Wear appropriate personal protective equipment (PPE) including high-visibility safety vest, maintain visibility with equipment operators, and do not approach equipment while in operation.
- Excessive noise: Wear ear protection, as necessary, when in close proximity to noisy equipment.
- Vehicle traffic: Abide by traffic control measures implemented by the construction contractor.
- Cold/heat stress: Be aware of cold/heat stress symptoms and remedies, use work/rest cycle as necessary, and stop work under extreme temperature conditions.

1.3.3 Biological Hazards

No biological hazards are anticipated given the location of the Site and nature of IA activities.

1.4 Site Control

Due to the nature and scope of the fieldwork being conducted by PIONEER, establishment of a formal Site control plan for PIONEER fieldwork is not warranted. PIONEER will employee the buddy system to the extent feasible to assist in the event of an emergency.

1.5 Personal Protective Equipment

The level of PPE for PIONEER employees was selected by evaluating the performance characteristics of the PPE against the requirements and limitations of the Site and task-specific conditions. Based on the nature of potential Site hazards and the nature of PIONEER's IA activities, the following Modified Level D PPE is recommend for all PIONEER employees while on Site:

- Leather steel-toed boots
- Hard hat
- Safety glasses with side shields
- High-visibility safety vest
- Nitrile (surgical-type) gloves, as necessary
- Hearing protection, as necessary

Provisions for upgrade to Level C PPE have not been made because the potential for overexposure to chemical hazards by PIONEER employees is low given the nature of potential Site hazards and the nature of PIONEER's IA activities.

1.6 Exposure Monitoring

Provisions for exposure monitoring of PIONEER employees have not been made at this time because the potential for overexposure to chemical hazards is low given soil concentrations and the nature of PIONEER's IA activities. However, it should be noted that airborne dust monitoring will be conducted on a site-wide basis during the IA as described in the Compliance Monitoring Plan (CMP) and Sampling and Analysis Plan (SAP). Air monitoring of PIONEER employees will be conducted as necessary if warranted based on the results of the airborne dust monitoring.

1.7 Decontamination

Due to the nature and scope of fieldwork being conducted by PIONEER, establishment of formal decontamination infrastructure is not warranted for PIONEER employees. In the event that non-disposable PPE or clothing becomes contaminated during Site work, the PPE or clothing must either be appropriately cleaned before put back in service or replaced. In the event of skin contact with contaminated media, the affected skin should be washed immediately, as appropriate.

1.8 Drum/Container Issues

Sampling, managing, or handling of drums/containers is not in the scope of the fieldwork being conducted by PIONEER. As a result, a drum/container sampling and analysis plan, a spill containment plan, and drum/container standard operating procedures are not warranted.

1.9 Confined Spaces

The scope of PIONEER's IA activities does not include confined space entry. Under no circumstances should a PIONEER employee enter a confined space during the IA.

1.10 Personnel Training

All on-site PIONEER employees will be appropriately trained in accordance with WAC 296-843-200. For IA work to be conducted by PIONEER, this entails 40-hour initial Hazardous Waste Operations and Emergency Response (HAZWOPER) training, three days of supervised fieldwork, and eight-hour annual HAZWOPER refreshers.

PIONEER employees will review this HASP prior to initiating field activities. Additional training and information briefings will be conducted as necessary.

1.11 Medical Surveillance

Medical surveillance is not required since no PIONEER employees meet any of the criteria in WAC 296-843-21005.

1.12 Sanitation

Due to the nature and scope of fieldwork being conducted by PIONEER, establishment of PIONEER-specific sanitation facilities is not warranted. PIONEER should use potable water and toilet facilities provided by the construction contractor and/or the Port. As standard procedure, PIONEER employees should wash hands and face before eating, drinking, smoking, or other hand to mouth contact.

1.13 Lighting

Due to the nature and scope of fieldwork being conducted by PIONEER, provisions for lighting are not necessary.

1.14 Excavations

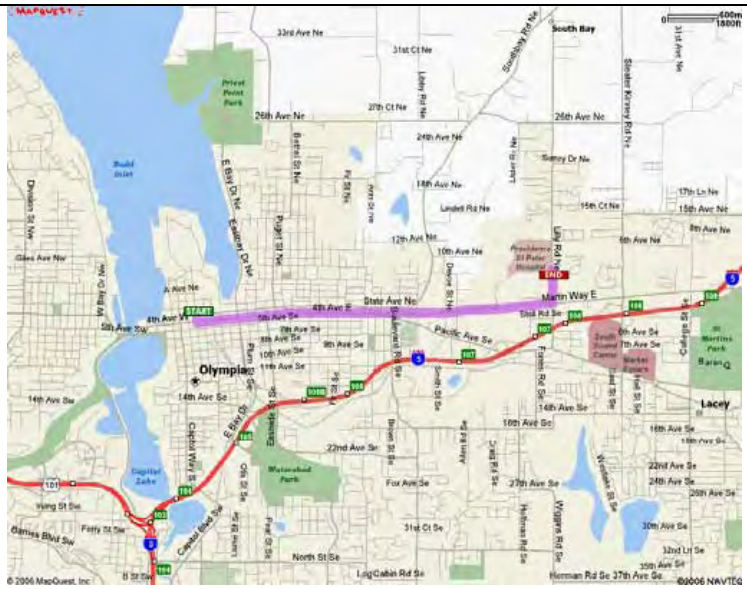
PIONEER will not be conducting excavations, trenching, or shoring as part of its fieldwork.

1.15 Emergency Contingency Plan

1.15.1 Emergency Phone Numbers

Contact	Name	Number
Police/Security	Police Department	911
Fire and Ambulance	Fire Department	911
Hospital	Providence St. Peter Hospital 413 Lilly Road NE Olympia, Washington 98506-5166	(360) 491-9480
PIONEER Project Manager / Site Safety Officer	Troy Bussey	(360) 570-1700
PIONEER Principal	Chris Waldron or Brad Grimsted	(360) 570-1700
Site/Client Contact	Joanne Snarski	(360) 528-8020
Environmental Release Contact	Washington State Department of Ecology 24-hour Emergency Response	(360) 753-2355
Regulatory Agency	Washington State Department of Ecology	(360) 586-0364

1.15.2 Directions and Map to Nearest Hospital

Directions to Hospital	1.Head west from State Ave NE - go 73 ft 2.Turn left at Franklin St NE - go 0.1 mi 3.Turn left at 4th Ave E - go 1.6 mi 4.Continue on Martin Way E - go 1.0 mi 5.Turn left at Lilly Rd NE - go 0.3 mi Total Distance is 3 miles
Map to Hospital	

1.15.3 Emergency Response Procedures

In the event of a personnel injury, fire, explosion, or spill:

- Ensure that all equipment has been shut off.
- Assess the nature of the situation.
- If appropriate, conduct corrective action if it can be done safely (e.g., bandage a minor injury, stop and contain a minor spill).
- If necessary, sound emergency alarm or phone 911 for emergency assistance.
- If appropriate, secure the area until emergency assistance arrives.
- If necessary, rally at designated location and take head count.
- Meet emergency crew and advise of location and nature of situation.
- Contact the PIONEER Site Safety Officer and PIONEER Principal.
- Begin investigation of situation.

1.15.4 Emergency Equipment

The following emergency equipment will be located in the field vehicle:

- First-aid kit
- Fire extinguisher

TABLE E-1: CHEMICAL HAZARD ANALYSIS

Constituent of Potential Concern	Maximum Concentration Detected in Infrastructure Corridor Soil (mg/kg)	Permissible Exposure Limit, Time-Weighted Average [1] (mg/m3)	Symptoms of Overexposure [2]
Arsenic	14	0.01	Respiratory system irritation
Cadmium	3.7	0.005	Headache, difficulty breathing
Lead	170	0.05	Weakness, exhaustion
Total cPAHs	0.33	0.2	Respiratory system irritation
Total dioxins/furans	6.2E-05	No value	Suspected carcinogen. Acute effects of overexposure have not been reported.
Total naphthalenes	0.32	50	Irritated eyes, headaches, malaise, confusion, profuse sweating, nausea, vomiting, abdominal pain, dermatitis.
TPH-D	91	100 [3]	Irritated eyes and mucous membranes. CNS effects including dizziness, headaches, blurred vision, and slurred speech.
TPH-HO	610	100 [4]	Dependant on constituents-may contain cPAHs and metals.
TPH-G	31	900 [5]	Irritated eyes and mucous membranes. CNS effects including dizziness, headaches, blurred vision, and slurred speech.

Notes:
[1] From Chapter 296-841 WAC and/or September 2005 National Institute for Occupational Safety and Health Pocket Guide to Chemical Hazards.
[2] Exposure is assumed through the inhalation route. PPE, work practices, and hygiene will minimize incidental ingestion of and dermal contact with soil.
[3] A Threshold Limit Value from American Conference of Government Industrial Hygienists, based on total hydrocarbons
[4] Assumed based on TPH-D value.
[5] Note that this Permissible Exposure Limit was vacated at the federal level.
cPAHs: Carcinogenic polycyclic aromatic hydrocarbons
Dioxin/Furans: Chlorinated dibenzo-p-dioxins / chlorinated dibenzofurans
TPH-D: Total petroleum hydrocarbons in the diesel range
TPH-HO: Total petroleum hydrocarbons in the heavy oil range
TPH-G: Total petroleum hydrocarbons in the gasoline range

Appendix F

CALCULATION OF AIRBORNE DUST ACTION LEVEL

CALCULATION OF AIRBORNE DUST ACTION LEVEL

Personal protective equipment (PPE) and clothing will minimize incidental ingestion of and dermal contact with soil for on-site workers exposed to Site soil. The Airborne Dust Action Level is the level that is protective for inhalation exposures by on-site workers without any control measures (e.g., respirators). The Airborne Dust Action Level of 18 mg/mg^3 is the most stringent of protective levels that were calculated for each constituent of potential concern (COPC) as shown in the following table.

$$\text{Airborne Dust Action Level (mg/m}^3\text{)} = \frac{\text{Health - based inhalation standard for constituent (mg/m}^3\text{)}}{\text{Maximum percentage of constitutent in soil} * \text{Safety factor of 2}}$$

Constituent of Potential Concern	Health-Based Inhalation Standard (mg/m^3) [1]	Maximum Percentage in Soil [2]	Airborne Dust Action Level (mg/m^3)
Arsenic	0.01	1.4E-05	360
Cadmium	0.005	3.7E-06	680
Lead	0.05	1.7E-04	150
Total cPAHs	0.2	3.3E-07	300,000
Total Dioxins/Furans	2.2E-09 [3]	6.2E-11	18
Total Naphthalenes	50	3.2E-07	7.8E+07
TPH-D	100	9.1E-05	550,000
TPH-HO	100	6.1E-04	82,000
TPH-G	900	3.1E-05	1.4E+07

Notes:
[1] Permissible Exposure Level from Table E-1 in Appendix E, unless otherwise noted.
[2] Maximum detected concentration in infrastructure corridor soil in mg/kg from Table 5-1 of main text divided by unit conversion factor of 1,000,000 mg/kg.
[3] No Permissible Exposure Level exists. Therefore, value was calculated using Model Toxics Control Act (MTCA) Equation 750-2 using default exposure assumptions for inhalation of particulates by an adult worker (seeAppendix C).
cPAHs: Carcinogenic polycyclic aromatic hydrocarbons
Dioxins/Furans: Chlorinated dibenzo-p-dioxins / chlorinated dibenzofurans
TPH-D: Total petroleum hydrocarbons in the diesel range
TPH-HO: Total petroleum hydrocarbons in the heavy oil range
TPH-G: Total petroleum hydrocarbons in the gasoline range

Appendix G

TECHNICAL MEMORANDUM ON FISH CONSUMPTION EXPOSURE ASSUMPTIONS

TABLE OF CONTENTS

FIGURES

SECTION 1 – TECHNICAL MEMORANDUM ON FISH CONSUMPTION EXPOSURE ASSUMPTIONS

1.1 Purpose

The purpose of this technical memorandum is to discuss fish consumption exposure assumptions for the Interim Action (IA) at the Port of Olympia's (Port's) East Bay Site (Site). Specifically, this memorandum discusses fish consumption exposure assumptions for subsistence fishers (i.e., Squaxin Island Tribe) in response to comments from the Washington State Department of Ecology (Ecology) (Ecology 2009).

1.2 Introduction

Potential surface water exposure pathways were not included when action levels[1] were quantified in the January 12, 2009 preliminary draft IA Work Plan (IAWP) because the Port and PIONEER Technologies Corporation (PIONEER) did not and do not believe the soil to surface water (via groundwater) exposure pathways are complete and significant pathways that need to be quantified for the IA based on the following facts:

- Fifteen to 30 soil samples collected from the infrastructure corridor were analyzed for constituents of potential concern (COPCs), with the number of samples depending on the COPC. None of the detected COPC concentrations exceeded Model Toxics Control Act (MTCA) Method A or Method B soil cleanup levels for the protection of surface water, with the exception of a single cadmium soil sample collected from MW05[2]. MTCA Method A and Method B soil cleanup levels for the protection of surface water include substantial conservatism based on the following facts:
    - The soil to surface water (via groundwater) partitioning calculations use a partitioning equation and default assumptions developed by the United States Environmental Protection Agency (USEPA) for use in calculating conservative soil-to-groundwater screening levels, not soil-to-surface water cleanup levels (USEPA 1996).
    - The soil to surface water (via groundwater) partitioning calculations assume that no attenuation occurs along the groundwater flow path.
    - The soil to surface water (via groundwater) partitioning calculations assume that there is no mixing zone as groundwater flows into surface water.
    - The target surface water concentrations used in the partitioning equation (i.e., MTCA Method A[3] and Method B[4] surface water cleanup levels) are based on default surface

[1] The current terms are Interim Action Cleanup Levels and Reuse Under Pavement Levels. The generic term "action levels" is used in this memorandum for simplicity since several other terms were used in previous IAWP versions.

[2] It should be noted that cadmium has not been detected in either of the two groundwater samples collected from MW05. It should also be noted that the Method A soil cleanup level for total polychlorinated biphenyls is less than the laboratory reporting limits for some soil samples.

[3] MTCA Method A surface water cleanup levels for this Site are the most stringent of promulgated state and federal marine water quality standards.

[4] MTCA Method B surface water cleanup levels are based on default exposure assumptions that correspond to consumption of 54 grams/day of fish from the surface water downgradient of the Site every other day for 30 years.

water exposure assumptions that are significantly more conservative than what the Port and PIONEER would propose as Site-specific, reasonable maximum exposure (RME) for surface water receptors at this Site.

- There are a total of 20 groundwater monitoring wells (MWs) at the Site. Groundwater samples have been collected from MW01 through MW10 during two different monitoring events and from MW11 through MW13 and MW15 through MW20 during one monitoring event. There have been no COPCs that exceed MTCA Method A / Standard Method B surface water cleanup levels in any MW located between the Site and East Bay, with the one exception of arsenic in MW04[5], which may be elevated due to natural background conditions.
- There is minimal recreational use of the surface water or sediment that involves human direct contact downgradient of the Site given the lack of a designated public beach area, lack of public swimming facilities, and the daily presence of tidal mud flats in that portion of East Bay.
- Budd Inlet is closed to recreational shellfish harvesting (Washington State Department of Health 2009). Commercial shellfish growing is prohibited in Budd Inlet (Washington State Department of Health 2007).
- There is a limited potential for resident fish populations in the surface water downgradient of the Site due to the daily presence of tidal mud flats in that portion of East Bay.
- Risk-based action levels are preferably based on Site-specific, RME scenarios for complete and significant pathways rather than hypothetical or possible exposure scenarios for potentially complete pathways.
- This IA is not a final cleanup action. This allows time for future cleanup actions to be considered in the event that any surface water pathways need to be addressed in the future.

As additional measures of protection, Ecology is requiring additional investigation work for the soil to surface water (via groundwater) pathways as well as consideration of the surface water pathways during the IA. Therefore, action level calculations in all subsequent IAWP versions have quantified the consumption of seafood pathway. The result is that the IAWP action levels are now equal to or more stringent than MTCA Method A and Method B soil cleanup levels for protection of surface water.

1.3 Evaluation of Fish Consumption Rates for Subsistence Fishers

The Squaxin Island fish consumption rate used at the nearby Cascade Pole Site (Landau Associates 1992) was reviewed for possible applicability to this Site. A Squaxin Island Tribe daily consumption rate of 31 grams/day of fish for 70 years was assumed for Cascade Pole based on an estimated annual catch of 10,000 chinook, coho, and chum salmon from Budd Inlet (Landau Associates 1992). The Cascade Pole tribal fish consumption rate is not directly applicable to the East Bay Site for the following reasons:

- The Squaxin Island Tribe does not consider East Bay to be a high priority fish habitat for restoration (Port of Olympia 2008).

[5] Although bis-(2-ethylhexyl) phthalate is not listed as a soil COPC in the Remedial Investigation Work Plan or the IAWP, it has been detected above its Method A / Standard Method B surface water cleanup level and will continue to be evaluated in groundwater following the IA. It should also be noted that the Method A / Standard Method B surface water cleanup levels for total carcinogenic polycyclic aromatic hydrocarbons and total polychlorinated biphenyls are less than the laboratory reporting limits for all groundwater samples collected to date.

- Fishing opportunities are limited due to the daily presence of tidal mud flats in that portion of East Bay.
- The portion of East Bay downgradient of the Site comprises a small percentage of Budd Inlet.
- Chinook, coho, and chum salmon are migratory and do not spend an appreciable amount of time in the surface water downgradient of the Site. Consequently, the bodily accumulation of COPCs predicted by modeling are overly conservative because the bioconcentration factors are based on a lifetime of exposure.
- The quantities of other fin fish (e.g., flat fish) in the portion of East Bay downgradient of the Site would not be sufficient to support subsistence consumption rates.

Nonetheless, a Squaxin Island fish consumption rate was developed for East Bay. As shown in Figure G-1, the portion of East Bay surface water downgradient of the Site conservatively comprises no more than 1% of Budd Inlet (i.e., 49 acres divided by 4,954 acres). It can be conservatively assumed the Squaxin Island fish diet fraction coming from the surface water downgradient of the Site would not exceed the proportional area of East Bay relative to Budd Inlet. Thus, the estimated lifetime Squaxin Island fish consumption total from the Site equals 31 grams/day * 365 days/year * 70 years * 0.01 diet fraction from the Site * 0.001 kilograms/gram = 7.9 kilograms. By comparison, the lifetime fish consumption total for MTCA default assumptions equal 54 grams/day * 365 days/year * 30 years * 0.5 diet fraction from the Site * 0.001 kilograms/gram = 296 kilograms.

1.4 Conclusion

Since the MTCA default surface water exposure assumptions provide substantial conservatism compared to RME assumptions for native subsistence fishers, MTCA default fish consumption exposure assumptions were used in the calculation of target surface water concentrations in Appendix C.

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Legend

- Surface Water Downgradient of Site
- Budd Inlet
- Site Boundary

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East Bay Interim Action Work Plan
Portion of Budd Inlet Comprised of Surface Water Downgradient of the Site

Port of Olympia - East Bay
March 2009

Figure G-1

PIONEER TECHNOLOGIES CORPORATION