CONTAMINATED MEDIA MANAGEMENT PLAN

The Fields Neighborhood Park

Northwest of NW 11th Avenue and NW Overton Street

Portland, Oregon

Prepared for:

Portland Development Commission
222 NW 5th Avenue
Portland, Oregon 97209

Prepared by:

AMEC Earth & Environmental, Inc.
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August 2011

Project No. 0-61M-116433

August X, 2011

0-61M-116433

Mr. Dave Obern
Portland Development Commission
222 NW 5th Avenue
Portland, Oregon 97209

Dear Mr. Obern:

Re: Final Contaminated Media Management Plan
The Fields Neighborhood Park ECSI ID #5443
Portland, Oregon

AMEC Earth & Environmental, Inc. (AMEC) is pleased to provide you with the enclosed final Contaminated Media Management Plan (CMMP). The plan has been prepared to describe contaminated media management requirements and procedures to be employed by the Contractor during the construction of The Fields Neighborhood Park (Site). Requirements and procedures described in the plan are consistent with the Hoyt Street Rail Yard Record of Decision (ROD), dated December 15, 2000 and the Explanation of Significant Difference (ESD) for the Site, dated January 13, 2011 and approved by the DEQ in a letter dated March 10, 2011.

Comments on the initial draft CMMP were provided by the Oregon Department of Environmental Quality in an e-mail dated July 14, 2011. The comments received, and an AMEC response for each comment, are provided below.

General Comments:

1. DEQ acknowledges that park design is still under development. It would be helpful, however, to discuss and/or present locations where excavations are expected to occur at the site.

Response to Comment #1 – The final design remains in process so the locations where excavations are expected to occur at the site have not been finalized. As these details are finalized, this information will be provided to the DEQ. The CMMP was not revised to address this comment.

Section 3.2, HSRY and Site Environmental Assessment History, Table 2

2. DEQ suggests defining “Managed Soil” and “Special Handling Soil” in a footnote of the table.

Response to Comment #2 – Footnotes have been added to Table 2.

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3. Was a soil excavation performed at sample location 18-11 as per the recommendation in the April 13, 2011 Soil Data Summary Report? Please include information on the excavation or planned excavation in the narrative.

Response to Comment #3 – Text has been added to the end of Section 3.2 to address this comment.

Section 3.3.2, ROD Remediation Requirements – Groundwater

4. As the groundwater wells are still needed at the site to address groundwater issues with BNSF, please include the locations of groundwater monitoring wells LTM-102, LTM-103, and LTM-104 in a Figure and describe their location in the narrative.

Response to Comment #4 – Text has been added to Section 3.3.2 describing well locations. Figure 2 was revised to include the well locations.

Section 3.3.3, ESD Remediation Requirements – Soil

5. The last sentence of the "Clarification Regarding Surface Cap Soil Quality" section indicates that imported clean fill with contaminant concentrations at or below ON-1 RBCs will be used in the Children's Area.

   On-site soils meeting ON-1 RBCs may be reused for shallow soil use on the property. However, soil imported to the Fields property must meet clean fill requirements which are below ON-1 RBCs.

Response to Comment #5 – Text has been added referencing DEQ clean fill screening values rather than ON1 screening values for imported soils. Table 4 has been added as well, and summarizes DEQ clean fill screening values. One deviation from the DEQ screening values is contained in the table, for barium.

Section 5.0, Contaminated Soil Management – Excess Soil Off-Site Disposal

6. The narrative indicates that excess managed soil and/or special handling soil will be sampled and subsequently transported to an appropriate disposal facility. Please describe the analysis to be performed on these soils.

Response to Comment #6 – Additional information regarding the analysis to be performed on soils in order to permit the disposal of the soils has been added to Section 5.0.

Section 5.3, Soil Excavation Observation and Monitoring

7. The second paragraph of this section indicates that testing of Unanticipated and Unknown Contaminated Soil will be performed to confirm whether these soils are distinct and different as compared to Managed or Special Handling Soils. As Section 5.11 does not describe the analysis to be performed on these soils, please include this information in this section and/or Section 5.11.

Response to Comment #7 – Text has been added to Section 5.11 to address this comment.

Section 5.10, Disposal of Excess Site Soils or Other Solid Wastes

8. As lead is a contaminant of concern at the site, please insure that appropriate analysis is performed to meet landfill requirements.

Response to Comment #8 – Text has been added to Section 5.10 to address this comment.

Section 5.11, Unanticipated and Unknown Contaminated Soil Management

9. See comment #7 above regarding analysis for Unanticipated and Unknown Contaminated Soil.

Response to Comment #9 – Text has been added to Section 5.11 to address this comment.

Section 5.12, Testing of Soils Imported for Use on the Site

10. The narrative indicates that no sampling of crushed rock or topsoil imported to the site is anticipated unless it shows evidence of contamination. Please see comment # 5 regarding the clean fill requirements for soils imported to the site.

Response to Comment #10 – AMEC received verbal approval from DEQ during a telephone conversation that testing of commercial rock and topsoil products would not be required. A reference to Table 4 has been added to Section 5.12.

Section 10.0, Closure Reporting

11. Please include the volume, source location and analysis of fill imported to the site in the closure reporting documents.Response to Comment #11 – The text that DEQ has requested be included in Section 10,0 has been added.

We appreciate the opportunity to serve you on this project. If you have any questions or desire further information, please feel free to contact the undersigned at (503) 639-3400.

Sincerely,

AMEC Earth & Environmental, Inc.

Leonard C. Farr Jr., RG
Senior Associate/Geologist

Attachments

LF/cw

c: George Lozovoy, Portland Parks Bureau
John O'Donovan, City of Portland Bureau of Environmental Services
Rebecca Wells-Albers, Oregon Department of Environmental Quality

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CE 1.0 Civil Environmental Details (soil stockpile requirements)

1.0 INTRODUCTION

This Contaminated Media Management Plan (CMMP) has been prepared by AMEC Earth & Environmental, Inc. (AMEC) on behalf of the Portland Development Commission (PDC) for The Fields Neighborhood Park (Site), located northeast of the intersection of NW 11th Avenue and NW Overton Street in Portland, Oregon (Figure 1). A preliminary design drawing for the proposed Site improvements is provided as Figure 2. The Site is intended to be redeveloped as a city park by the City of Portland (City) with key features to include: walkways, an open field, children's play area, storm drainage, restrooms, and other related park structures. The media management procedures described herein are consistent with requirements stipulated in the Hoyt Street Rail Yard (HSRY) Record of Decision (ROD) issued by the Oregon Department of Environmental Quality (DEQ) in 2000, and Explanation of Significant Difference ([ESD] formally approved on March 10, 2011 following a February 2011 public comment period) and Remedial Action Plan (RAP) for the Site dated April 11, 2011. The Site is enrolled in the DEQ Voluntary Cleanup Program, and has been assigned the Environmental Cleanup and Site Information (ECSI) file number 5443.

1.1 PURPOSE

The purpose of this CMMP is to provide Site-specific information and guidance to the Site Contractor regarding the management of contaminated media that may be encountered during park construction activities as well as any other future park Site improvements (if any). Specifically, this document includes:

- A description of the type and magnitude of contaminants of concern (COC) detected in soil samples previously collected at the Site;
- Procedures for the management of known contaminated soil and water that may be encountered during construction activities;
- Procedures for the management of Unanticipated and Unknown Soil Contamination, should any be encountered during construction activities;
- Measures to control the Site during construction activities; and
- Measures to control the off-Site migration of contaminated soil via erosion and/or track-off.

Specifically excluded from the CMMP are any requirements related to groundwater monitoring, which are covered under the Consent Decree Case #0202-01268 between Burlington Northern Santa Fe Railroad and the DEQ, dated January 31, 2002.

There is no warranty by AMEC or PDC, expressed or implied, that any information or data obtained from any source mentioned, is accurate or indicative of the subsurface soils or conditions that may

be encountered in the project. In the event that development activities encounter chemical contamination significantly different than that identified in the ROD, RAP, or any other materials suspected of posing a threat to employees, the public, or the environment, the contractor should take the following actions:

- Immediately cease all work activities in and around any area of the project where contamination has been encountered or discovered, and take appropriate measures in compliance with all applicable environmental laws to stop or minimize the immediate spread or release of any contamination.
- In order to prevent rain or stormwater runoff from contacting the suspected contamination, immediately place the appropriate control measures or devices on or adjacent to the affected area in a manner that does not disturb the Site or the suspected contamination.

2.0 SITE LOCATION

The Site is located northeast of the intersection of NW Overton Street and NW 11th Avenue in Portland, Oregon. The Site is approximately 3.3 acres in size, and is comprised of five tax lots (Figure 1). Information regarding each tax lot is provided in the table below.

The Site is located in downtown Portland in an area of mixed residential and commercial land use known as The Pearl District. The area formerly was a rail yard, and has been redeveloped over the last approximately 10 years into one of Portland's most vibrant and dynamic neighborhoods.

Table 1: Tax Lots Comprising the Site

ADDRESS	PROPERTY ID	HISTORICAL BLOCK #	ACREAGE
1030 NW Overton Street	R541377	18	1.16
None Assigned	R550779	21	0.91
None Assigned	R541397	25	0.61
None Assigned	R626614	-	0.14
None Assigned	R636479	22	0.50

3.0 BACKGROUND AND SITE HISTORY

3.1 OPERATIONAL HISTORY

Initial development of the property by the Burlington Northern Santa Fe Railway Company (BNSF) occurred in 1911. Primary BNSF operations included fueling and maintenance of locomotives. BNSF operations at the Site were discontinued in 1997.

Since 1997, redevelopment of the approximately 26-acre former rail yard, known as the HSRY, has been on-going. The boundaries of the former rail yard, and the relation of the Site within the former rail yard, are shown in Figure 1. Redevelopment has followed the City planning goals and consists of mixed use, with multi-family residential above ground-floor commercial with strategic park blocks that include Jamison Square and Tanner Springs Park located south of the Site.

The City, under a master development agreement with Hoyt Street Properties, obtained blocks 18 and 21 in 2005 and blocks 22 and 25 in 2010. The Site is planned to be developed into a city park with principal features to include a large open field, dog area, children's play area, and other related support facilities.

Blocks 18 and 21 are zoned OS or "Open Space". OS is intended to preserve and enhance public and private open, natural, and improved park and recreational areas indentified in the City's Comprehensive Plan. Blocks 22 and 25 are zoned EX or "Central Employment." The entire Site is located within the Pearl District design overlay zone. Design overlay zones are intended to promote the conservation, enhancement, and continued vitality of areas of the City with special scenic, architectural, or cultural value. This is achieved through the creation of design districts and applying the design overlay zone as part of community planning projects, development of design guidelines for each district, and by requiring design review or compliance with community design standards. In addition, design review or compliance with the community design standards ensures that certain types of infill development will be compatible with the neighborhood and enhance the area.

The City intends to construct the new park on the Site in 2011 or 2012 and currently is preparing final design documents. The PDC is the lead agency in coordinating environmental remediation actions and providing funding to the City for the improvements.

3.2 HSRY AND SITE ENVIRONMENTAL ASSESSMENT HISTORY

Environmental investigations at the HSRY date back to the late 1970s, when oily water was noted discharging at the Tanner Creek sewer outfall into the Willamette River. A series of environmental investigations were undertaken at the HSRY in the mid-1990s. A remedial investigation of the property was completed in 1996, the groundwater beneficial use survey in 1997, and the human and ecological risk assessment in 1998. Using information contained in these reports, the DEQ published a ROD for the Site and greater HSRY in 2000 that stipulated the remedial actions required to mitigate the COCs identified (Section 3.3).

Contaminants of concern identified in soil for the HSRY include petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), and lead. Contaminants of concern identified in groundwater include PAHs. Table 2 summarizes the concentrations of COCs detected in soil at the Site.

Table 2: Maximum Detected COC Concentrations in Soil

Constituent of Concern	Managed Soil (mg/kg)	Special Handling Soil (mg/kg)
Lead	93	1,100
Benzo(a)anthracene	0.18	1.44
Chrysene	0.33	2.42
Benzo(b)fluoranthene	0.39[1]	0.75
Benzo(k)fluoranthene		0.70
Benzo(a)pyrene	0.24	0.75
Dibenzo(a,h)anthracene	0.02	0.15
Indeno(1,2,3-cd)pyrene	0.17	0.42
Total Petroleum Hydrocarbons (TPH)	793	18,780

Notes: Managed Soil is the soil utilized in constructing the Site surface cap. The source of data included in this table for Managed Soil is AMEC 2010/2011 soil sampling (excludes sample 18-11)
Special Handling Soil is the soil underlying the Site surface cap. The source of data included in this table for Special Handling Soil is Hahn & Associates 2004 soil sampling

[1] = Concentration is sum of benzo(b)fluoranthene and benzo(k)fluoranthene

According to the Environmental Construction Report (Hoyt Street Phases 3 and 4 prepared by Anchor Environmental LLC [Anchor, 2004]), remediation of Blocks 18, 21, 22, and 25 (southern ½ only) was completed in October 2003. The remediation of the northern ½ of Block 25 was completed in April 2009. The principal elements of the remediation work consisted of removal of all

hot spot soils, and installation of a 3-foot surface cap with underlying demarcation barrier. Since the completion of the 2003 remedial actions, four phases of soil sampling have been conducted at the Site to characterize the condition of soils used in constructing the surface cap (referred to herein as Managed Soil). The data generated during the various soil sampling phases is summarized in the AMEC report entitled The Fields Neighborhood Park Soil Data Summary Report (AMEC, 2011). In this report, excavation of soil in the area of sample location 18-11 was recommended as the concentration of benzo(a)pyrene in this sample (837 micrograms per kilogram [µg/kg]) was approximately 4X higher than its greater park use risk-based concentration (RBC) of 210 µg/kg (the next highest benzo(a)pyrene concentration detected in surface cap soils was 242 µg/kg). This soil removal action and subsequent re-establishment of the cap will be conducted early-on during park construction activities.

3.3 HSRY AND SITE REMEDIATION REQUIREMENTS

A ROD was published by the DEQ for the Site and greater HSRY in December 2000 (DEQ, 2000). Remedy elements stipulated in the ROD are summarized in sections 3.3.1 and 3.3.2 below. An ESD for the Site (dated January 13, 2011) recently was completed by the DEQ. Elements of the ESD are summarized in section 3.3.3 and 3.3.4 below.

PDC requested that the DEQ consider an ESD for the Site in fall 2010. The principal elements of the ROD that PDC requested that DEQ consider were the thickness of the surface cap stipulated in the ROD, and the Site-specific risk-based concentrations (RBCs) stipulated in the ROD.

Cap Thickness: The ROD stipulated that surface cap thickness in playground areas be 5 feet. No basis for this decision is provided in the ROD. The level of protectiveness provided by a 5-foot cap versus a 3-foot cap is negligible. Therefore, PDC asked that DEQ re-evaluate the requirement for a 5-foot cap in playground areas. The ROD stipulated that surface cap thickness generally be 3 feet. At numerous other cleanup sites in the area (The Yards at Union Station, Food Innovation Center, SP Tower, Ziba Office Building, etc.) a cap thickness of 2 feet was required. Therefore, the PDC requested a modification to the ROD requirements in areas not otherwise protected by a physical barrier and/or hardscape: 1) that general park areas be modified to 2 feet of capping soil in all vegetated and landscape areas, and 2) that designated children play areas be modified to 3 feet of capping soil in all vegetated and landscaped areas.

Site Specific RBCs: The ROD stipulated unrestricted reuse for soil (including use at the ground surface) with concentrations below Site-specific ON-1 RBCs protective of urban resident children. No consideration of a park use was included in the ROD. Because land use for the Site will be a park, PDC asked that the DEQ consider other less stringent RBCs for application outside

playground areas at the Site. AMEC worked with DEQ toxicology staff in developing a proposed Site-specific park user RBC that considered an exposure duration representative of a typical park user to assure that the Site-specific park user RBC was protective of human health.

The ESD was formally approved on March 10, 2011 following a February 2011 public comment period.

3.3.1 ROD Remediation Requirements - Soil

The selected remedial action for soil stipulated in the ROD includes the following components (Source: Section 7.2.1 of ROD):

1. Excavation and treatment and/or landfill disposal of hot spot soils.
2. Excavation, stabilization (as needed), and landfill disposal of soil containing lead and determined to be a characteristic hazardous waste.
3. Excavation of soil in utility corridors where concentrations exceed the construction work RBCs in the upper 5 feet of soil.
4. Capping of the entire Site with 2 to 3 feet of clean soil, buildings, pavement, or other Site improvements. In park areas where a soil cap is needed, a minimum cap thickness of 3 feet will be used, and playground areas will require a minimum cap thickness of 5 feet.
5. Institutional controls generally consisting of cap maintenance obligations and restrictions on groundwater use.

3.3.2 ROD Remediation Requirements - Groundwater

The selected remedial action for groundwater stipulated in the ROD includes the following components (Source: Section 7.2.2 of ROD): All groundwater remedial activities are being performed under Consent Decree Case #0202-01268 by BNSF dated January 31, 2002.

Site improvements will maintain all established wells, enable groundwater monitoring to be performed, and allow decommissioning of wells upon completion of all DEQ required groundwater monitoring.

1. Groundwater monitoring. Three monitoring wells (LTM-102, LTM-103, and LTM-104) currently being used for groundwater monitoring are located on the Site (Figure 2). LTM-102 is located on Block 22. LTM-103 is located on Block 25, near its southwest corner. LTM-104 is located on Block 25, near its northern boundary with the adjoining railroad right-of-way property. These wells must be protected during Site construction activities to preserve their continued use.
2. Institutional controls, including a deed restriction prohibiting groundwater use at the Site.

3.3.3 ESD Remediation Requirements - Soil

The ESD changed the following soil remedy components:

Surface Cap Thickness: The ROD stipulated a cap thickness of 3 feet for parks in general, and 5 feet for park playground areas. The ESD modified ROD cap thickness requirements to include a cap thickness of 2 feet, except in park playground areas where a thickness of 3 feet is required.

Clarification Regarding Surface Cap Soil Quality: No information was included in the ROD regarding required soil quality standards for surface cap soils except that it be "clean soil". The ESD provides this information. In consultation with DEQ toxicology staff, Site-specific RBCs were developed for the Greater Park Area (Table 3). For the Children's Area, a decision was made to utilize the ON-1 RBCs in the ROD that are protective of urban resident children (Table 3). PDC supports this decision, though the application of an urban resident RBC to even a park playground area is considered to be very conservative. Therefore, existing cap soils located above the demarcation layer may be reused on-Site (for fill and grading that do not disturb the demarcation layer) except within the Children's Area, where imported unrestricted clean fill with contaminant concentrations at or below DEQ clean fill screening values for terrestrial/upland uses will be utilized. These screening values are provided in Table 4 below.

Table 3: Surface Cap Soil Quality Standards

Constituent of Concern	Greater Park Area RBCs (mg/kg)	Children's Area RBCs (mg/kg)
Lead	800	400
Benzo(a)anthracene	2.1	0.39
Chrysene	210	38.70
Benzo(b)fluoranthene	2.1	0.39
Benzo(k)fluoranthene	21	3.87
Benzo(a)pyrene	0.21	0.04
Dibenzo(a,h)anthracene	0.21	0.05
Indeno(1,2,3-cd)pyrene	2.1	0.39
Total Petroleum Hydrocarbons (TPH)	23,000	700

mg/kg = milligrams per kilogram
RBCs = risk-based concentrations

Table 4: Clean Fill Screening Values for Terrestrial/Upland Uses

Constituent	Laboratory Method	Maximum Allowable Limit	Preferred Soil Criteria
Gasoline	NWTPH-Gx	28 mg/mg	Non-detect (<10 mg/kg)
Sum of Diesel and Heavy Oil	NWTPH-Dx	100 mg/kg	Non-detect (<25 mg/kg)
Volatile Organic Compounds	EPA Method 8260B	Non-detect (<0.05 mg/kg)	Non-detect (<0.05 mg/kg)
Polycyclic Aromatic Hydrocarbons	EPA Method 8270 SIM	Non-detect (<0.05 mg/kg)	Non-detect (<0.05 mg/kg)
Metals	EPA 6000/7000 series methods	Arsenic - 7 mg/kg	
		Barium - 200 mg/kg	
		Cadmium - 1 mg/kg	
		Chromium - 42 mg/kg	
		Lead - 17 mg/kg	
		Mercury - 0.07 mg/kg	
		Selenium - 2 mg/kg	
		Silver - 1 mg/kg	

Notes: mg/kg = milligrams per kilogram
EPA = US Environmental Protection Agency

3.3.4 ESD Remediation Requirements - Groundwater

No changes to groundwater remediation requirements stipulated in the ROD were made in the ESD. Site development will not impact and/or exacerbate any groundwater issues.

4.0 EXISTING SITE CONDITIONS

The Site is currently relatively flat, with an elevation of approximately 40 feet above mean sea level (msl). Within approximately 30 feet of the northern property boundary, the Site slopes downward. At the northern Site boundary, the approximate elevation of the Site is 32 feet above msl. Surface conditions generally consist of soil planted in grass, or in areas used recently for construction staging; gravel has been placed on the surface of the Site. There also is a raised gravel strip that crosses Block 25 oriented east-west that formerly was used as a roadway to access Block 22 during construction staging activities.

A continuous surface cap that consists of approximately 3 feet of soil (referred to herein as "Managed Soil") underlain by a demarcation barrier consisting of a black woven geotextile is present across the entire Site. This current condition of the Site is documented in the 2004 Anchor

Environmental Construction Report, and the 2009 AMEC Corrective Action Report. The continuous nature and presence of the demarcation barrier and the thickness of the soil cap have been confirmed by multiple phases of exploration conducted since 2003. Beneath the demarcation barrier lies more fill soil. This underlying fill soil is known to be impacted with petroleum hydrocarbons, PAHs and lead, and is referred to herein as "Special Handling Soil".

5.0 CONTAMINATED SOIL MANAGEMENT

In determining the appropriate methods of disposal/reuse of impacted soil, the following DEQ documents must be considered:

- Site Specific RBC for soils as set forth under the ESD (March 10, 2011);
- Draft Guidelines for Soil Management Determinations (December 10, 2008); and
- Soil/Sediment Clean Fill Screening Table for Terrestrial/Upland Uses (December 2010).

Excess Soil On-Site Reuse: Excess Managed Soil may be reused in all areas of the park in areas above the demarcation layer without further testing, except within the Children's Area. Excess Special Handling Soil may only be reused in deep fill areas located outside the Children's Area that will be covered by a demarcation barrier and a minimum of 2 feet of soil that contains contaminant concentrations below Site-specific park user RBCs.

Excess Soil Off-Site Disposal: Excess Managed Soil and/or Special Handling Soil will be sampled and subsequently transported to an appropriate disposal facility. Sufficient data exist to obtain a disposal permit for Managed Soil as solid waste at a Subtitle D disposal facility. Special Handling Soil will be tested prior to park construction ground breaking and a waste determination completed. The primary concern with Special Handling Soil is toxicity associated with lead present in Special Handling Soil at a concentration as high as 1,100 milligrams per kilogram. AMEC will consult with the planned disposal facility prior to collecting and testing Special Handling Soils for waste profiling, and at a minimum will test soils for leachable lead using toxicity characteristic leaching procedure (TCLP) methods. If disposal off-Site is being considered, any off-Site disposal decision other than an appropriately permitted landfill must be approved in advance by the DEQ.

5.1 RESPONSIBLE PERSONNEL

AMEC personnel or another qualified environmental consultant will be on-Site during grading and excavation activities to assist the Contractor in determining final disposition of excess soil. The Contractor performing the excavation work will have primary responsibility for classifying soil type,

and all aspects of soil management including temporary stockpiling, and off-Site transportation and disposal.

5.2 SOIL CLASSIFICATIONS AND METHODS OF CLASSIFICATION

Soil excavated during construction at the Site will be classified either as: 1) Managed Soil; 2) Special Handling Soil; or 3) Unanticipated and Unknown Contaminated Soil, which is soil exhibiting evidence of contamination inconsistent with lines of evidence previously noted for soil that has been adequately characterized. Unanticipated and Unknown Contaminated Soil classification will be based on initial field screening to include: photoionization detector (PID) measurements collected during excavation activities, and olfactory lines of evidence such as odor and staining with laboratory confirmation sampling to follow. Each soil type, and the methods that will be used in classifying each soil type, are described below.

5.2.1 Managed Soil

Approximately 3 feet of soil termed “Managed Soil” is present at the ground surface across the entire Site. Managed Soil generally consists of moist, brown silt with some concrete and/or brick debris. Managed Soil does not exhibit a hydrocarbon-like odor and typically does not yield a PID measurement of >10 parts per million (ppm). Managed Soil is underlain be a demarcation barrier.

5.2.2 Special Handling Soil

Soil located beneath the Managed Soil and demarcation barrier across the entire Site is termed “Special Handling Soil”. Special Handling Soil in some cases may exhibit the same physical and olfactory properties as Managed Soil. Special Handling Soil also may be dark grey as a result of hydrocarbon staining, may exhibit a slight to moderate hydrocarbon-like odor, and may yield a PID measurement of up to 50 ppm.

5.2.3 Unanticipated and Unknown Contaminated Soil

Unanticipated and Unknown Contaminated Soil is similar in appearance to Special Handling Soil, but exhibits a light petroleum fraction (gasoline) odor and/or a volatile organic compound (VOC) vapor concentration measured with a PID in excess of 50 ppm. Any soil distinctly different in its physical characteristics also may be classified an Unanticipated and Unknown Contaminated Soil.

5.3 SOIL EXCAVATION OBSERVATION AND MONITORING

During excavation activities close attention will be paid to soil type (Managed Soil or Special Handling Soil). Care will be taken not to mix the two primary soil types, and if mixing occurs, all

mixed soils will be classified as Special Handling Soil. Routine PID screening of Managed Soil and Special Handling soil is not required.

Soils that exhibit a higher than anticipated magnitude of olfactory evidence of impact (odor or staining) will be screened for VOC vapors with a PID. Soils that exhibit a higher than anticipated magnitude of olfactory evidence of impact, and that yield a PID screening measurement of >50 ppm, will preliminarily be classified as Unanticipated and Unknown Contaminated Soil. Testing of these soils will be performed to confirm whether these soils are distinct and different as compared to Managed or Special Handling Soils. Additional information regarding the management of Unanticipated and Unknown Contaminated Soil is provided in Section 5.11.

The following procedure for collecting PID measurements will be used:

- Place a representative portion of the sample into an air-tight, polyethylene bag and seal.
- Agitate the sample to break up large pieces of soil in the sealed bag. Allow the sample to equilibrate for at least 5 minutes.
- Insert the probe of the calibrated PID through the wall of the bag maintaining an air-tight seal. Record the maximum vapor concentration measurement in the field log.
- Maintain daily PID calibration records.

AMEC will direct the Contractor to stockpile on-Site any soil preliminarily classified as Unanticipated and Unknown so that it can be profiled. The stockpiled soils will then be sampled to evaluate whether the soil is distinct and different than either Managed or Special Handling Soil, and the subsequent disposal options and/or reuse options for the soil. In areas where Unanticipated and Unknown Contaminated Soil is identified, the Contractor must assist AMEC in collecting samples from the sidewalls and the base of the excavation in which it is identified. No excavation should be backfilled or made inaccessible in some other manner until AMEC has completed soil sampling, received analytical testing data, and has directed the Contractor to initiate excavation backfilling.

5.4 EXCLUSION ZONE AND DECONTAMINATION

Before beginning the grading or excavation of any areas that may generate Special Handling Soil, the Contractor must establish an exclusion zone (EZ) around the proposed work area. Fencing of the EZ is required during the entire duration of the project to minimize access to the EZ by unauthorized persons. Entrance/exit locations to the EZ must be limited, and the boundaries of the EZ must be located wholly within the boundaries of the Site. Designation of the entire Site as the EZ during initial Site grading and excavation activities is acceptable.

Equipment may move freely within the EZ, and washing of equipment while located within the EZ is not required. Special care is required by the Contractor to ensure that Special Handling Soils are not intermixed with Managed Soils. Brooming of loose soil and removal of significant quantities of adhered soil with hand tools shall be performed as necessary to decontaminate equipment prior to leaving the EZ. If practicable, truck loading areas should be located at the boundary of the EZ so that trucks will not enter the EZ and require decontamination. Trucks must be broom cleaned before leaving the loading area. Decontamination procedures for personnel exiting the EZ must be described in the Site specific health and safety plan prepared for the Site by the Contractor.

5.5 CONTROL OF EXCESS SITE SOIL

The Contractor shall use appropriate means and methods to prevent off-Site migration of any visible or measurable Site soils. Unacceptable off-Site migration includes airborne dust, vehicle or personnel track-out, stormwater runoff, or any other unwarranted transport of Site soils. For example, as needed, the Contractor will provide:

1. A water truck to wet dry soils to suppress airborne dust.
2. Broom cleaning of soil from exterior of vehicles before they leave soil loading areas or the Site.
3. Graveled aprons at egress point(s) from the Site.
4. Catch basin sediment filters installed in catch basins located in streets near the Site egress point(s) to prevent Site contaminated soils from entering the City stormwater management system.
5. Silt fences or other erosion control devices to prevent contaminated soils suspended in stormwater from migrating off-Site.

5.6 ON-SITE REUSE OF EXCESS SOIL

During Site construction activities, it is anticipated that excess Managed Soils, and to a lesser degree Special Handling Soils, will be generated. Excess Managed Soil generated from construction/grading activities will be reused on-Site as fill outside the Children's Area to the maximum extent practicable. Excess Special Handling Soil generated from construction/grading activities will be reused on-Site as fill beneath the surface cap outside the Children's Area to the maximum extent practicable. All soil in excess of what can be reused on-Site will be transported for off-Site disposal/treatment by the Contractor.

5.7 TEMPORARY STORAGE OF SOILS

Managed Soil may be temporarily stockpiled in designated areas at the discretion of the Contractor. Managed Soil need not be placed on visqueen. However, Managed Soil stockpiles will be covered with impermeable, reinforced tarps (10-mil minimum) during periods of rain, wind, or inactivity to prevent soil transport. Stockpiles will remain covered whenever not in use. The edges and interior portions of the tarps will be tied down with sand bags and rope, as necessary, to maintain their integrity (see CE 1.0, attached).

Special Handling Soil may be stockpiled but requires additional controls. Special Handling Soil stockpiles must be constructed on a base of 6 inches of crushed rock "wearing surface" underlain by impermeable, reinforced plastic sheeting (10-mil minimum) and surrounded by a silt fencing and hay bale berm. Stockpiled Special Handling Soil also will be covered with reinforced tarps (10-mil minimum) during periods of rain, wind, inactivity, or when not in use to prevent soil transport. Any water runoff from the Special Handling Soil stockpile area(s) should be contained, tested, and appropriately managed. The edges and interior portions of the tarps will be tied down with sand bags and rope, as necessary, to maintain their integrity. An area must be designated for the Special Handling Soil stockpile early in the project, and this area alone shall be used throughout the life of the project. Multiple small Special Handling Soil stockpiles in various areas of the Site will not be permitted. Upon completion of the project all stockpile "wearing surface" crushed rock and plastic sheeting will be disposed in the same manner as Special Handling Soil.

Unanticipated and Unknown Contaminated Soil shall be stockpiled separate from Managed Soils and Special Handling Soils. The same stockpile construction and management requirements used for Special Handling Soils shall be used for Unanticipated and Unknown Contaminated Soils.

5.8 EXCAVATION AND LOADING OF SOILS

The Contractor will excavate and load all excess soil using the following procedures:

1. The Contractor will notify AMEC no less than 24 hours prior to beginning excavation activities.
2. The Contractor will use water, as necessary, to prevent the generation of visible dust during excavation activities.
3. Maintain excavation equipment in good working order. The Contractor will immediately clean up any contaminated soil resulting from spilled hydraulic oils or other hazardous materials from equipment.
4. Wet soils with free water will not be loaded into trucks.

5. Load trucks in a manner that prevents the spilling, tracking, or dispersal of soil. All loads will be covered (tarped) prior to exiting the Site.
6. All soil will be removed from the exterior of each truck before the truck leaves the loading area. Any soil collected in the loading area will be placed back into the truck or the stockpile from which it originated.
7. If the loading areas are unpaved, the surface soil should be inspected at the conclusion of loading activities to confirm that contaminated soil is not present. If the loading areas are paved, loose soil should be cleaned from the pavement at the conclusion of loading activities.
8. A gravel apron will be used as a measure to prevent track-off of soil. The performance of the gravel apron must be monitored. If the apron does not prevent all but de minimus track-off, than additional measures such as a wheel wash should be considered.
9. On-Site truck routes should be established to minimize or prevent movement of trucks over contaminated soils.
10. Specific truck haul routes will be established before beginning off-Site soil transport. Off-Site truck routes should be established to reduce the risk of releases of contaminated soils and impact on local traffic.
11. The Contractor will ensure that loaded truck weights are within acceptable limits.

5.9 TRANSPORTATION OF SOILS

When transporting soils off-Site, the Contractor will comply with all applicable federal, state, and local laws, codes, and ordinances that govern or regulate solid waste transportation. The Contractor will ensure that all drivers hauling soil have in their possession all applicable Oregon State and local vehicle insurance requirements, a valid driver's license, and vehicle registration and license documentation. The Contractor will use trucks to transport contaminated soil that are substance compatible, licensed, insured, and permitted pursuant to federal, state, and local statutes, rules, regulations and ordinances. Drivers of haul vehicles transporting soil off-Site will be informed of:

1. The nature of the material hauled;
2. The required routes to and from the disposal site and/or disposal staging area;
3. The applicable City street regulations and requirements, and State of Oregon Department of Transportation codes, regulations and requirements; and
4. The legal maximum load limits per vehicle.

Prior to trucks leaving the Site, the Contractor will decontaminate the equipment to prevent soil from being spilled or tracked off-Site. Decontamination will include broom cleaning to remove all

soil from the exterior of the truck. The loads of each truck will be covered with a well-secured tarp prior to trucks leaving the Site. Trucks will not be allowed off-Site if free liquids are draining from the load. If visible track-off is noted on NW 11th Avenue, the Contractor will have the street cleaned.

5.10 DISPOSAL OF EXCESS SITE SOILS OR OTHER SOLID WASTES

Managed and Special Handling Soils will be transported to a landfill permitted to accept soils impacted by petroleum hydrocarbons, PAHs, and lead. Prior to park construction ground breaking, AMEC will obtain permits for the disposal of both soil types. Any additional soil testing required by the landfill in order for a disposal permit to be obtained (it is anticipated that testing ro leachable lead will be required at a minimum) also will be conducted prior to ground breaking.

Only landfills which take title to the material being disposed, and that are permitted to accept petroleum-containing soil, are acceptable for use. Prior to excavation, loading or transport of the contaminated soil, the Contractor shall provide written acceptance from the proposed disposal landfill. AMEC will provide to the Contractor the required analytical data necessary for the solid waste disposal facility to profile the contaminated soil. The Contractor will then be required to properly manifest the waste with the landfill. Prior to initiating soil hauling/disposal, the Contractor must submit documentation of the disposal facilities' acceptance for AMEC's review and approval.

At least 14 days prior to the start of contaminated soil transport/disposal, the Contractor shall provide AMEC with a contact name and solid waste permit number for each facility that will receive Managed and/or Special Handling Soils. The Contractor shall provide AMEC at least 72 hour notice prior to the initial off-Site transport of contaminated soil, and at least 48 hours notice for all subsequent soil transportation events. PDC reserves the right to prohibit use of a particular disposal facility based on facility construction details and performance record.

Daily reports should be generated to document management of contaminated soil. These reports should be prepared on the same day in which activity has occurred and should be submitted to the owner the next day. All contaminated soil transport must use a bill of lading or manifest for each off-Site shipment of contaminated soil. The Contractor is responsible for properly preparing bills of lading, or other related documents required by the disposal facility. These documents should include the date and time of shipment, the name of the transportation company, the name of the truck driver, the disposal Site, and a brief description of the contaminated material (e.g., soil). These documents and the associated weight slip showing the weight/volume of the contaminated soil should be provided to the owner upon disposal or re-use at the off-Site facility. At the end of

the project, the Contractor as part of closeout documents must provide a summary list denoting daily scale/load tickets and location of disposal in additional to copies of all waste receipts.

5.11 UNANTICIPATED AND UNKNOWN CONTAMINATED SOIL MANAGEMENT

If suspected "Unanticipated and Unknown Contaminated Soil" is encountered through the monitoring procedures described in Section 5.2.3, the Contractor shall follow the procedures listed below:

1. Upon discovery of suspected Unanticipated and Unknown Contaminated Soil, immediately suspend all activities in the vicinity and notify PDC's oversight consultant (AMEC).
2. Upon notification, AMEC will evaluate whether potential Unanticipated and Unknown Contaminated Soil has been encountered. AMEC may collect and analyze samples or may direct the collection and analysis of samples to complete this evaluation. Analysis methods will depend upon the characteristics of the soil, but at a minimum will include eight Resource Conservation and Recovery Act (RCRA) leachable metals. Approval of the analyses utilized will be obtained from the DEQ prior to executing the analyses. The Contractor will assist in any soil sampling activities and based on direction by AMEC either resequence work and or continue excavation and placement of excavated soil in temporary stockpiles. If it is determined that Unanticipated and Unknown Soils have been encountered, AMEC will immediately notify PDC, and either AMEC or PDC will notify the DEQ within 24 hours.
3. Suspect Unanticipated and Unknown Contaminated Soils must be stockpiled separately from excess Managed or Special Handling Soils. Suspect Unanticipated and Unknown Contaminated Soil must be placed atop plastic sheeting (10-mil minimum) and surrounded by an earthen berm or hay bales. The stockpile also must be covered with tarps during periods of rain, wind, or inactivity to prevent soil transport; and the edges of the tarps must be weighed down to keep them in-place (see CE 1.0, attached).
4. The stockpile must be kept neat at all times.
5. AMEC must approve the location of any and all suspected Unanticipated and Unknown Contaminated Soil stockpiles.

Resource Conservation and Recovery Act (RCRA) and Oregon-hazardous waste are not expected to be encountered at the Site. However, in the event that potentially hazardous Unanticipated and Unknown Contaminated Soil is encountered, as determined by AMEC, the Contractor shall take the following actions:

1. Immediately suspend work in this area, notify AMEC and secure the area as necessary to restrict access, and protect workers and the public from exposure. If it is determined that Unanticipated and Unknown Contaminated Soils have been encountered, AMEC will immediately notify PDC, and either AMEC or PDC will notify the DEQ within 24 hours.
2. Modify the Site-specific Worker Health and Safety Plan (HSP) as necessary to address new contaminants, hazards, and other contaminated media concerns associated with the unanticipated and unknown contamination. AMEC will provide the soil sampling analysis results for the Unanticipated and Unknown Contaminated Soil, in order to assist in making appropriate document modifications. The Contractor shall submit the revised documents for AMEC's review and approval.
3. The potentially hazardous Unanticipated and Unknown Contaminated Soil shall not be excavated, stockpiled or otherwise managed, loaded, hauled, or disposed until directed by AMEC. Once directed, the Contractor shall perform all excavation, temporary stockpiling, management, loading, hauling, and disposal of Unanticipated and Unknown Contaminated Soil in accordance with sections 5.7 through 5.10 of this CMMP.
4. Until authorized by AMEC, do not transport Unanticipated and Unknown Contaminated Soil off-Site. AMEC will direct the disposal of the Unanticipated and Unknown Contaminated Soil. If the sampling results indicate that the contaminated soil is a RCRA or Oregon-hazardous waste, remove and dispose of the soil within 30 days of being directed by AMEC.
5. If underground storage tanks (USTs) are encountered, Contractor is to immediately suspend work in this area and immediately inform AMEC, and manage in accordance with the Oregon Administrative Rules (OAR) 340-122. If it is determined that UST has been encountered, AMEC will immediately notify PDC, and either AMEC or PDC will notify the DEQ within 24 hours. All subsequent UST work will comply with applicable DEQ requirements with qualified personnel, oversight, and reporting.

5.12 TESTING OF SOILS IMPORTED FOR USE ON THE SITE

All soil transported to the Site for use as fill must be pre-approved by AMEC and the Owner, and may involve consultation with the DEQ. Depending on the source of the material, approval may be dependent upon testing of the material. With a minimum of 1 week of lead time, AMEC should be informed of plans to import soil. No sampling of crushed rock or topsoil is anticipated unless it shows evidence of contamination. Information provided should include the facility from which the material is sourced, and the type of material. Within 24 hours of notification, AMEC will inform the Contractor whether the material is approved for use, or whether the material requires testing (see Table 4 for a list of required test methods). If testing is deemed necessary, it will be completed

within 72 hours of the Contractor providing AMEC a sample of the material. If large volumes are anticipated, AMEC may perform a composite test of the actual source stockpile. Immediately following the receipt of testing data, AMEC will either approve or deny use of the material. If material is not approved the Contractor shall provide another alternative source and repeat the procedure.

6.0 WATER MANAGEMENT

It is not anticipated that groundwater will be encountered during park construction/remedy implementation activities. During the project, precipitation may accumulate in low spots, trenches, or excavations created during construction activities. This surface water should be allowed to infiltrate naturally. The Contractor should avoid working in areas where soils are saturated, or where surface water sourced from precipitation has accumulated. If unavoidable, and pre-approved by AMEC, surface water can be removed from low spots, trenches, or excavations to facilitate construction activities, but must be placed into a temporary storage tank. Following the completion of the activity that required dewatering to occur, the surface water within the storage tank must be tested to evaluate disposal options, and disposed in accordance with all federal, state, and local rules and regulations. AMEC will assist the Contractor in sampling and testing the water, and in evaluating disposal options. Disposal options may include on-Site disposal, disposal within a nearby public stormwater or sanitary sewer line, or off-Site transport and disposal.

7.0 CONTRACTOR HEALTH AND SAFETY

Soil containing elevated concentrations of PAHs and lead is present at the Site. Therefore, personnel working at the Site should be made aware of the potential for encountering impacted soil. It is the responsibility of each involved entity (Owner, Contractor, Consultant) to conduct their own hazard assessment to determine appropriate health and safety measures for its workers.

7.1 WORKER SAFETY

Each involved entity is responsible for the safety of their respective workers. This includes implementation of any training requirements, safety plans, monitoring, certifications, and any other action or requirement that may be required or prudent prior to beginning Site activities. This CMMP or other notification must be provided to employees who will be working on the Site. Prior to any ground-disturbing activities, a utility locate should be performed to identify potential utilities in proposed work areas. Neither PDC nor PDC's oversight consultant (AMEC) bear any responsibility whatsoever for implementation and/or policing of worker safety compliance. All applicable best management practices (BMPs) regarding engineering and/or health and safety

precautions should be implemented to limit worker direct contact exposure to contaminated material. If excessive dust is generated during construction, dust control or respiratory protection may be required.

Each involved party will make preliminary assessments of potentially contaminated media as it relates to worker safety. Because COC concentrations in Managed and Special Handling Soils do not exceed risk-based levels for protection of worker health, it is anticipated that no personal protective equipment (PPE) or special handling procedures will be required. However, each party involved at the Site must conduct its own hazard assessment in accordance with occupational health guidelines for chemical hazards (i.e., Occupational Safety and Health Administration [OSHA] and National Institute for Occupational Safety and Health [NIOSH]). The evaluation should consider exposure limits (i.e., time-weighted average [TWA], short term exposure limit [STEL], permissible exposure limit [PEL]), exposure symptoms, and PPE. It is recommended that even if this evaluation indicates that PPE or engineering controls are not required to protect workers, that workers be advised and educated regarding means and methods to minimize exposure to impacted soils.

All entities are responsible for notifying and updating others and their employees of potential Site hazards that may be encountered during the project. Testing, management, handling, excavation, transportation, etc., of contaminated soil may require persons with 40-hour Hazardous Waste Operation & Emergency Response ([HAZWOPER] 29 CFR 1910.120) training. Each party involved should assess the need for this training on the basis of current information for the Site. Changes may need to be made should additional contaminated areas be discovered.

One recommended element of the Contractor's health and safety program is Site-specific training for workers that may come into contact with Managed and/or Special Handling Soil. This training would fulfill requirements for worker notification of potential hazards, and would also educate workers regarding means and methods to minimize exposure to impacted soils.

7.2 HEALTH AND SAFETY PLAN

The Contractor must develop and implement a Site-specific HSP, designed to assure compliance with all applicable worker protection regulatory requirements, including 29 CFR 1910.120, the HAZWOPER rule promulgated by OSHA. The HSP must be submitted to AMEC for review a minimum of 30 days prior to initiation of Site construction activities. The HSP will be reviewed by an AMEC certified industrial hygienist, and comments on the HSP will be provided by AMEC within 10 working days. The Contractor shall revise the HSP to address AMEC comments within 10

working days, and the final HSP will be submitted to DEQ. DEQ will coordinate with OR-OSHA as necessary. No excavation work or soil handling work will occur until the HSP is approved by DEQ.

8.0 PROJECT MANAGEMENT

Oversight of Contractor construction activities at the Site that are subject to this CMMP will be conducted by qualified field staff under the supervision of Leonard Farr, Jr., RG, Levi Collins, PE, and Bill McFarland of AMEC. Mr. Farr will function as the project manager and point of contact with PDC and DEQ. Mr. Collins functions as the assistant project manager. Mr. McFarland will be the field supervisor for AMEC.

Contact information is as follows:

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AMEC will provide DEQ with monthly progress reports following the start of Site construction and will establish monthly on-Site meetings to review progress and discuss any unforeseen issues. After grading/foundation work is largely complete, the frequency of monthly progress reporting may be decreased, or the progress reporting requirement eliminated, as approved by the DEQ.

9.0 REDEVELOPMENT SCHEDULE

Construction activities at the Site, covered under this CMMP are planned to be permitted in Spring 2011, with ground breaking planned to begin in Summer or Fall, 2011. Construction completion is anticipated in 2012.

10.0 CLOSURE REPORTING

At the conclusion of the park construction activities, a closure report will be prepared. The report will include, at a minimum, the following.

- A description of excavation and soil management activities, including sampling activities and results, the amount and types of contaminated soil excavated, and its disposal and/or re-use, and the volume, source location and analysis (if performed) of fill imported to the Site.
- A discussion of handling of water removed during dewatering activities (if any), including temporary storage, sampling activities and results, the volume and/or rate of wastewater disposed, and its disposal location.
- Site maps indicating areas where contaminated soil was removed and where contaminated soil, if any, was re-used.
- The nature of deviations, if any, from this CMMP.
- Photographs of Site activities.
- Copies of analytical laboratory reports, permits and approvals, and disposal manifests and receipts.

The Closure Report will be prepared by AMEC and submitted to DEQ for review and approval. The Closure Report will document all actions set forth under the ROD, ESD, RAP and CMMP.

We appreciate the opportunity to be of service to PDC on this project. If revisions to this CMMP are requested by DEQ, a modified CMMP or addendum will be prepared incorporating the requested revisions and distributed to DEQ and other stakeholders.

If you have any questions or comments regarding this report, please contact the undersigned at (503) 639-3400.

AMEC Earth & Environmental, Inc.

Levi Collins, PE
Staff Engineer

Leonard C. Farr, Jr., RG
Senior Associate/Geologist

LCF/cw

REFERENCES

AMEC Earth & Environmental Inc. (AMEC), 2009, Phase II Environmental Site Assessment, Fields Park Blocks 22 & 25, Dated June, 2009.

AMEC, 2009a, Field Sampling Plan – Fields Park Blocks 22 & 25 Phase II ESA, dated April 16, 2009.

AMEC, 2011, Final Remedial Action Work Plan – The Fields Neighborhood Park, dated March 7, 2011.

Anchor Environmental LLC (Anchor), 2004, Environmental Construction Report – Hoyt Street Phases 3 and 4.

Hahn and Associates, Inc., 2004, Data Package Report for Subsurface Investigation Activities, Blocks 18, 22, and 25.

LIMITATIONS

This report was prepared exclusively for the Portland Development Commission (PDC) by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Contaminated Media Management Plan is intended to be used by PDC for The Fields Park Site only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

FIGURES