Memorandum

To:	*Ms. Anne Christopher (Remedial Project Manager, EPA Region 10)*
From:	*Mr. Andy Greazel, R.G. (Senior Geologist, CDM Smith)* *Mr. Derek Wintle, P.E. (Project Manager, CDM Smith)*
Date:	*June 13, 2018*
Subject:	*Final Soil Cap Monitoring and Maintenance Plan – Amendment No. 2, Northwest Pipe and Casing, Superfund Site, Clackamas, Oregon*
Document Control No.:	*3323-071-03447*

1.0 Introduction and Objective

In accordance with activities requested by U.S. Environmental Protection Agency (EPA) Region 10 under Work Assignment No. 071-FSFS-10G8 for the EPA Region 2 Remedial Action Contract (EPA Contract No. EP-W-09-002), CDM Federal Programs Corporation (CDM Smith) reviewed the *Soil Cap Monitoring and Maintenance Plan Northwest Pipe and Casing/Hall Process Company Site* (Soil Cap Monitoring and Maintenance Plan (MMP) [EPA 2005a]) to determine if changes in conditions at the Northwest Pipe and Casing Superfund Site (Site) affect monitoring requirements for the soil cap that was constructed as part of the remedial action for operable unit (OU) 1. Soil Cap MMP Amendment Number (No.) 1 was issued in 2012; therefore, these changes to the Soil Cap MMP will be considered Soil Cap MMP Amendment No. 2. Future cap monitoring and maintenance will continue to be conducted in accordance with the Soil Cap MMP Amendment No. 1 and as modified by this technical memorandum (Amendment No. 2).

2.0 Background

The Site is in Clackamas, Oregon adjacent to the intersection of SE Lawnfield Road and Minuteman Way, approximately 20 miles southeast of Portland, and is zoned for light industrial and commercial purposes. The Site consists of two OUs—OU1 soils and OU2 groundwater. OU1 addresses all contaminated soil and debris on Parcel B. OU2 addresses all contaminated groundwater associated with the Site from both Parcels A and B. The Site covers approximately 53 acres of land and is divided into two parcels (Parcel A and B) for the purpose of site management (see **Figure 1**).

EPA placed the Site on the National Priorities List in 1993 after hazardous substances were found in soil and groundwater on the Site. The hazardous substances include coal-tar compounds,

polychlorinated biphenyls, and volatile organic chemicals and were released during pipe manufacturing and coating activities performed at the property between 1956 and 1986. As described in the OU1 Record of Decision (ROD [EPA 2000]), the selected remedy to address soil contamination included the excavation and removal of the most highly contaminated soil at Parcel B. Because some contaminated soil was left in-place in Parcel B, the selected remedy prescribed that Parcel B be covered with a 2-foot layer of clean soil (soil cap) to protect current and future site occupants and workers from contact with the remaining lesser-contaminated soil. Soil cap construction details are described in the Soil Cap MMP (EPA 2005a) and summarized in Section 4 below as part of the discussion regarding land use conditions and redevelopment activities.

The ROD required long-term monitoring, inspections, and maintenance of the soil cap and wetland to ensure that they remain protective and implementation of institutional controls to limit human exposure to and warn of the hazards associated with the contaminated soil underlying the cap on Parcel B. To assure that these requirements were met, EPA entered into an agreement on May 4, 2001 with Oregon Department of Environmental Quality (ODEQ). , The agreement, "Superfund State Contract Between EPA and the State of Oregon for Remedial Action at the Northwest Pipe and Case Company/Hall Process Company," was amended in May 2003.

The excavation, soil cap, and vegetative cover construction, as required by the OU1 ROD, were completed on July 20, 2004. The remedial action construction completion was documented in the *Combined Final Remedial Action Report for OU1 – Soil and Interim Remedial Action Report for OU2 – Groundwater* (EPA 2004). EPA and ODEQ conducted a joint inspection of the soil and groundwater remedies at the Site on July 20, 2004, at which time EPA determined all construction was complete. The National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulation § 300.435(f)(2), states that, "A remedy becomes 'operational and functional' either one year after construction is complete, or when the remedy is determined concurrently by EPA and the State to be functioning properly and is performing as designed, whichever is earlier." The remedial actions for the Site became operational and functional (O&F) as of July 20, 2005, which was 1 year after construction was complete. The O&F determination officially started the period during which ODEQ is responsible for operation and maintenance of the soil remedy, e.g., the soil cap and wetland. Clackamas County Development Agency (CCDA) then purchased Parcel B from ODEQ in September 2005 and took over the operation and maintenance responsibilities for OU1 in October 2005.

Starting in 2005, soil cap long-term operation and maintenance and the institutional control requirements were memorialized through the creation of the following documents:

- Easement and equitable servitudes (EES) (CCDA 2005; ODOT 2009): The EES documents were prepared to prevent property owner activities from jeopardizing the soil cap's functional integrity and to meet the substantive institutional control requirements set forth in the ROD. The EES grants EPA and ODEQ the right to access and/or use the property without possessing it. In addition, the EES places restrictions on the property to ensure that the soil cap is not breached without proper authority and to prevent new development,

construction, or other physical changes to the property from interfering with the engineered controls implemented during construction of the remedy.

- Soil Cap MMP (EPA 2005a): The purpose of the Soil Cap MMP is to provide administrative and technical requirements and protocols for inspecting, maintaining, and reporting on the ability of the soil cap to prevent exposure to the underlying soil with residual contamination.

- Waste Management Plan (EPA 2005b): The Waste Management Plan outlines the procedures for identification and management of waste derived from activities that breach and/or penetrate the soil cap at Parcel B.

The Soil Cap MMP (EPA 2005a) specified that: "Inspection, monitoring, and maintenance of the soil cap (after July 20, 2005) on the Property are the responsibility of the Property owner. Routine inspections will be performed quarterly by the Property owner during 2005 and 2006. This frequency is needed to ensure the cap performance is observed during each season (and type of weather) in the first few years of operation. Inspections will be conducted semi-annually thereafter, or more frequently if needed, as determined by the ODEQ. Follow-up inspections will be conducted, as needed, to reevaluate problem areas or confirm the success of repairs."

The property owner (i.e., CCDA) inspected the cap quarterly from 2005 to 2006 and semiannually from 2007 to 2012 in accordance with the Soil Cap MMP and submitted soil cap inspection reports to EPA and ODEQ. Monitoring of the soil cap was discontinued in 2013 at the start of the construction of the Sunrise Corridor Highway Project. Resumption of soil cap monitoring and maintenance was largely predicated on completion of the Sunrise Corridor Highway Project, which was completed in July 2016.

In 2012, the Soil Cap MMP was modified (Amendment No. 1) to include changes to site perimeter fencing that was constructed along the east side of the CCDA property, protecting the portion of the Site being used by Oregon Iron Works/Vigor. In addition, the amendment adopted a specific planting list of materials that they used within the county right-of-way.

The Soil Cap MMP does not address the 1-acre wetland restoration site constructed near the northeast corner of Parcel B. The wetland was constructed, monitored, and maintained through 2008 in accordance with the wetland monitoring and maintenance plan (URS 2003). In 2015 and 2016, removal activities were conducted on-site and resulted in the need to regrade the wetland buffer zone, replace the infiltration drainage system, and revegetate the area (Ecology and Environment, Inc. [E&E] 2017). Evaluation of the current status of the wetland mitigation area and the potential impacts of the removal action to the wetland buffer area will be documented in a separate technical memorandum.

The Soil Cap MMP does not address the groundwater remedial action for OU2.

3.0 Evaluation of the Soil Cap Monitoring and Maintenance Plan

In 2016, EPA completed the third five-year review for the Site (EPA 2016). The third five-year review recommended that operations and maintenance monitoring and maintenance activities should continue and account for effects from the newly constructed highway project and any additional above ground facility or equipment areas. Accordingly, this memorandum was developed to evaluate the Soil Cap MMP and address changes and effects based on current redevelopment activities that have occurred at Parcel B, including:

- New drainage features such as surface water controls, diversions, and collection areas
- New building, landscaping, and pavement conditions
- Other land use changes since the Soil Cap MMP was prepared that could affect the performance of the soil cap remedy

The OU1 ROD (EPA 2000) was reviewed to determine if changes in site conditions would require additional monitoring and maintenance requirements.

4.0 Land Use Conditions and Redevelopment Activities

The following sections provide a summary of the original land use conditions and describe changes associated with site redevelopment that have occurred since the soil cap construction was completed at Parcel B in July 2004. The purpose of these sections is to document the changes in land use to determine the extent of modifications that may be required to the Soil Cap MMP.

4.1 Baseline Land Use Conditions

Construction of the soil cap consisted of three 8-inch lifts to achieve an overall average thickness of 2 feet. The soil cap is a simple soil cover that consists of a permeable blend of silty and sandy soils. A vegetative cover was established on the cap to reduce the potential for erosion and dust generation.

Originally, Parcel B was mostly flat and had an elevation similar to that of adjacent properties. Following construction of the soil cap, the elevation was raised by approximately 2 feet, except for a paved entrance area to the southeast, which had a lower grade. Drainage ditches were located adjacent to Parcel B and flowed north across Lawnfield Road into Dean Creek and eventually Mt. Scott Creek.

In 2004, the soil cap was surrounded by a 6-foot-high chain link fence along the perimeter. An existing partially paved area to the south, along SE Mather Road, was retained and expanded with a new 3-inch layer of asphalt to allow parking for visitor's and maintenance vehicles and space for an office trailer and equipment containers for use by groundwater operations and maintenance

contractors. The asphalt provided the equivalent of a soil cap for the underlying soils. **Figure 2** shows baseline land use conditions following the soil cap construction.

4.2 Changes in Land Use Condition

Following construction completion of the soil cap in July 2004, redevelopment activities have drastically altered and significantly reduced the amount of the soil cap visible for inspection.

In 1997, Parcel B ownership transferred from Wayne Hall to ODEQ, as trustee for EPA and ODEQ. In 2005, ownership of Parcel B transferred from ODEQ/EPA to CCDA through property sale (EPA 2016). The county took over operation and maintenance responsibilities for OU1. CCDA leases the land to Oregon Iron Works (U.S. Army Corps of Engineers 2016), which merged with Vigor in 2014. Vigor uses a substantial portion of Parcel B for laydown of material and equipment.

A site visit was conducted on January 8, 2018 to document changes in conditions at Parcel B. In addition, aerial images obtained from Google Earth between July 2004 and May 2017 were used to verify these changes in condition (see **Attachment 1**). Below is a summary of the land use changes and a brief discussion of how each affects the integrity of the soil cap. Changes at the Site are shown on **Figure 3**.

- **Wood Chip Stockpile Area (2004):** The small wood chip berm installed along the top of the cap slope that was used to dissipate surface water runoff is no longer present. The wood chip berm likely was buried or removed during redevelopment at Parcel B or has decomposed. Additionally, the wood chip pile that was formerly located in the southeast portion of Parcel B has decomposed, and wood chips are no longer available on site for maintenance activities. Because the decomposed pile is still present, it currently serves as a raised buffer to protect the soil cap.

- **South Entrance Parking Area (2004; repaved 2015):** A small area on the south-central side of Parcel B was not capped in 2004. The area was repaved recently, and a concrete apron was installed at the south gate access area.

- **Groundwater Remedy Access Roads (2004):** Approximately 1,300 feet of new access roads were constructed on the soil cap to allow travel across the cap surface and access to the groundwater circulation wells, equipment sheds, and monitoring wells for monitoring and maintenance of the groundwater remedy. The roads were constructed on top of the cap with 3-inch-minus crushed rock. At some locations, a soil/cement mixture was first applied to the soil cap surface to provide a hard base for the road (EPA 2005a). Portions of these roads have been re-used to access areas that have since been redeveloped. These re-purposed roads appear to have had additional gravel installed up to grade. As a result, these roads provide an armored surface on top of the original soil cap.

- **Vigor East Laydown Area (2009/2010; expanded 2015):** The east laydown area was constructed in 2009/2010 for Vigor and was expanded on the east side of the Sunrise

Expressway in 2015. As shown on a grading plan section and detail drawing from Harris Group Inc. (2009), the laydown area consisted of 24 inches minimum of clean crushed rock (approximately 1 ½-inch-minus). The crushed rock was underlain by a nonwoven geotextile fabric, and the existing soil cap was scarified and compacted prior to construction. This laydown area was constructed to support heavy industrial forklifts.

Removal activities performed in the fall of 2015 were planned for an area of the existing gravel pad where Vigor stores equipment and materials. To allow Vigor to move the materials out of the way of the excavation and support area, a new section of gravel pad was constructed on the Vigor property to the immediate west of the existing gravel pad and east of the Sunrise Expressway (E&E 2017).

- **Streetcar Test Track and Maintenance Building (2010/2011):** A streetcar test track and maintenance facility was constructed by Oregon Iron Works (now Vigor) in 2010/2011. Development of Parcel B included the installation of water, sanitary sewer, and electrical lines; service roadway; railroad ballast rock and track; a cantilever pole system; and a streetcar load out area to SE Mather Road (E&E 2017). There is a small vacant area to the south of the maintenance building that contains solar panels, an outbuilding, and a large vegetated mound (formerly wood chips). While the test track and maintenance building serve as a barrier on top of the original soil cap, areas around the test track appear to be the original soil cap surface.

- **Roof Drain Basin (2010; replaced in 2016):** A roof drain basin associated with the streetcar maintenance building was constructed in 2010. An overflow grate is present to prevent overflowing the basin. The basin manages infiltration of stormwater from the streetcar maintenance building and does not affect the performance of the cap. This area was reconstructed in 2016 following completion of the 2015–2016 removal action work activities in that area (E&E 2017).

- **Sunrise Expressway (2014 to 2016):** The Sunrise Expressway was constructed to relieve traffic congestion on nearby roads and opened in July 2016. The Sunrise Expressway bisects Parcel B along the north-south axis. Construction of the expressway required penetrating the soil cap to install two retaining walls (one is 6-feet and the other is 16-feet high), two Oregon Iron Works bridge abutments (west and east), storm sewer utility trenches, drainage ditches, and roadway elements. All contaminated soil encountered during the construction activities was managed in accordance with EPA's *Waste Management Plan* (EPA 2005b). A soil barrier fabric was placed on the soil cap prior to placement of the fill material for the highway. The expressway covers substantial portions of Parcel B and provides a significant barrier above the soil cap due to the raised vegetated berm construction of the highway. A chain link fence along the expressway embankment separates the expressway area from other portions of Parcel B.

A stormwater detention pond, identified as SWM09 in the *Revised Final Stormwater Management Report* (OBEC Consulting Engineers [OBEC] 2013) for the Sunrise Corridor, was designed and constructed to capture and treat runoff from a large segment of the expressway, including the portion adjacent to Parcel B. This storm drain system conveys runoff from the Sunrise Expressway to the detention pond and passes beneath the formerly named Clackamas County Industrial Way project (i.e., reconfiguration of SE Mather Road and Minute Man Way). The detention pond is located north of the Site, on the north side of SE Lawnfield Road. Stormwater from the expressway does not impact the soil cap.

- **Other Roadways (2014 through 2015):** SE Mather Road and Minuteman Way were reconfigured to accommodate the Sunrise Expressway. The new roadways and associated sidewalks cover the western edge and limited portions of the southern edge of the cap. These roadways include new pavement, curbing, driveway connections, fencing, new concrete sidewalks, and additional fill material that serve to provide additional protection surface above the existing soil cap. A chain link fence runs along the sidewalk and separates the roadways from other portions of Parcel B. This fence now serves as a barrier, separating the new roadway from the remaining soil cap near the western laydown area and the streetcar test track, and forms the western limit of portions of the exposed soil cap area.

  As discussed above, a detention pond was constructed north of the Site to capture and treat runoff as part of the Sunrise Expressway construction project. Due to the size and location of the Sunrise Expressway project storm sewer system, it was decided that it could be merged with the roadway project system and stormwater from both could be treated at the detention pond. As a result, stormwater improvements along SE Mather Road and Minuteman Way included connections to the Sunrise Expressway project stormwater system and connection to the Oregon Iron Works property. The stormwater captured in this system is conveyed via pipe to the north along Minuteman Way, crosses SE Lawnfield Road, and discharges to the offsite detention pond. The *Industrial Way Extension Stormwater Management Report* (Harper Houf Peterson Righellis Inc. 2012) further describes this stormwater conveyance system. Stormwater from the roadway areas does not impact the soil cap.

- **Vigor West Laydown Area (2014/2015):** The west laydown area was constructed west of the Sunrise Expressway during highway construction to support construction activities. The laydown area now serves as an equipment storage area for Vigor. Roadways connect both the east and west laydown areas and were constructed of gravel, which protects the underlying soil cap from vehicle traffic. During the site visit, it was observed that the west laydown area was covered with gravel and asphalt.

- **Groundwater Monitoring Wells (Variable Period):** The Site includes a network of 81 monitoring wells and piezometers (E&E 2017). Monitoring well maintenance activities are not covered by this technical memorandum, but monitoring wells do penetrate the soil cap. As a result, future monitoring well maintenance and decommissioning activities should be

compatible with the design and purpose of the soil cap, and erosion of the soil cap around the base of the monitoring wells should continue to be monitored as per the Soil Cap MMP (EPA 2005a). To eliminate clutter, monitoring well locations are not shown on **Figure 3**.

A small area on the south-central portion of Parcel B, adjacent to SE Mather Road, was not capped in 2004. Based on the literature review, it was not apparent why this area was not capped. Based on aerial images, it appears to have been covered during construction of the streetcar test track in 2010 and reconfiguration of SE Mather Road in 2015.

5.0 Findings and Proposed Changes to the Soil Cap MMP

Current land use activities have resulted in significant changes to Parcel B and in additional materials being placed on top of the soil cap. These changes generally have enhanced the ability of the soil cap to remain protective (i.e., prevent current and future site occupants and workers from contact with the remaining lesser-contaminated soil) and bolstered its integrity. The site inspection and review of available site redevelopment reports (see Section 4), do not indicate that the redevelopment activities compromised the 2-foot soil cap. In addition, recent construction and development activities associated with the Sunrise Expressway were documented and completed in the Site Development Plan (ODOT 2013) in accordance with the EES (ODOT 2009) to ensure that remedial actions were not adversely affected.

Now that the Sunrise Expressway construction is complete, as indicated in the third five-year review (EPA 2016), routine inspection and maintenance should continue, especially throughout the small portions of Parcel B where the soil cap remains visible (see **Figure 3**). The following two features associated with the redevelopment activities at Parcel B have created a potential to impact the remaining soil cap. Even though these features are unlikely to significantly impact the soil cap, they should be specifically monitored during each inspection event.

- **Potential for Erosion along Bridge Abutments:** The Sunrise Expressway bridge abutments may serve as a conduit for surface water and have the potential to scour and erode the soil cap. These areas should be inspected to ensure that erosion does not occur.
- **Potential for Erosion from Stormwater along Sunrise Expressway Embankment:** Stormwater that falls directly onto the expressway is conveyed and managed off-site through a series of stormwater conveyance piping systems. However, stormwater that falls on the expressway embankment is channelized and eventually conveyed off-site. These areas of channeled surface flow should be inspected for erosion, especially where the embankment intersects with areas of the soil cap.

Areas where additional material were added to the soil cap (i.e., gravel pads, asphalt surfaces, or soil/vegetated cover) also should be inspected to ensure anthropogenic activities at Parcel B have not significantly altered the current land use such that the underlying soil cap has the potential to be disturbed.

Areas within the ODOT right-of-way should be inspected to the extent practicable, and any obvious signs of erosion should be recorded on the inspection form. Issues that require maintenance should be coordinated with ODOT Maintenance District 2B Office, located at 9200 SE Lawnfield Road, Clackamas, Oregon (971-673-6200).

EPA and ODEQ are still required to be notified in accordance with the EES (CCDA 2005; ODOT 2009) and provide site development plans for concurrence if activities are planned that may disturb the soil cap. Therefore, there continues to be a mechanism in place to prevent damage to the soil cap to ensure long-term protectiveness.

Regardless of the changes in land use conditions described above, the Soil Cap Inspection Report Form (see **Attachment 2**) continues to be relevant and has been modified slightly to account for changes in land use. **Figure 3** illustrates these changes in land use and is attached to the inspection form for reference.

It is recommended that soil cap inspection and maintenance continue to be performed annually and during the spring when erosion from stormwater runoff is more likely to occur. It is also recommended that the soil cap inspection be coordinated with the wetland inspection and combined into a single, annual report. Results of future inspection and monitoring may be used to adjust the frequency of monitoring events, as needed.

6.0 Plan Modification Approval

The adopted plan states that the Soil Cap MMP may be modified to address new or changed site conditions but must be approved in writing by both EPA and ODEQ. The memorandum (Amendment No. 2 of the Soil Cap MMP) is intended to serve as the written process for amending the Soil Cap MMP and to receive written approval.

Signatures:

Anne Christopher
Environmental Protection Agency

6/13/18
Date

Oregon Department of Environmental Quality

6/15/18
Date

7.0 References

Clackamas County Development Agency (CCDA). 2005. *Easement and Equitable Servitude.* Clackamas County Development Agency and the Oregon Department of Environmental Quality. Recorded 10 October 2005.

Ecology and Environment, Inc. (E&E) 2017. *2015–2016 Removal Activities Report*. Northwest Pipe and Casing Site, Clackamas, Oregon. July.

EPA. 2016. *Third Five-Year Review Report for Northwest Pipe and Casing Superfund Site* ORD 980988307 Clackamas County, Oregon.

EPA. 2005a. *Soil Cap Monitoring and Maintenance Plan*. Northwest Pipe and Casing/Hall Process Company Site. August 31.

EPA. 2005b. *Waste Management Plan*. Northwest Pipe and Casing/Hall Process Company Property. September.

EPA. 2004. *Combined Final Remedial Action Report for OU1 – Soil and Interim Remedial Action Report for OU2 – Groundwater*. September.

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Harris Group Inc. 2009. *Grading Plan, Section and Detail*. Oregon Iron Works Laydown Yard. August.

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ODOT. 2013. *Site Development Plan, OR212/OR224 Sunrise Corridor JTA Project, Section 10, Township 2S, Range 2E, Clackamas County*. June 7.

URS. 2003. *Wetland Mitigation and Monitoring/Maintenance Plan*. Northwest Pipe and Casing Operable Unit 1 Soil Cap Remedial Action. June.

U.S. Army Corps of Engineers, Seattle District. 2016. *Long-Term Response-Stage Optimization Review Report*. Northwest Pipe and Casing Superfund Site Clackamas, Oregon. April 2016.

Figures

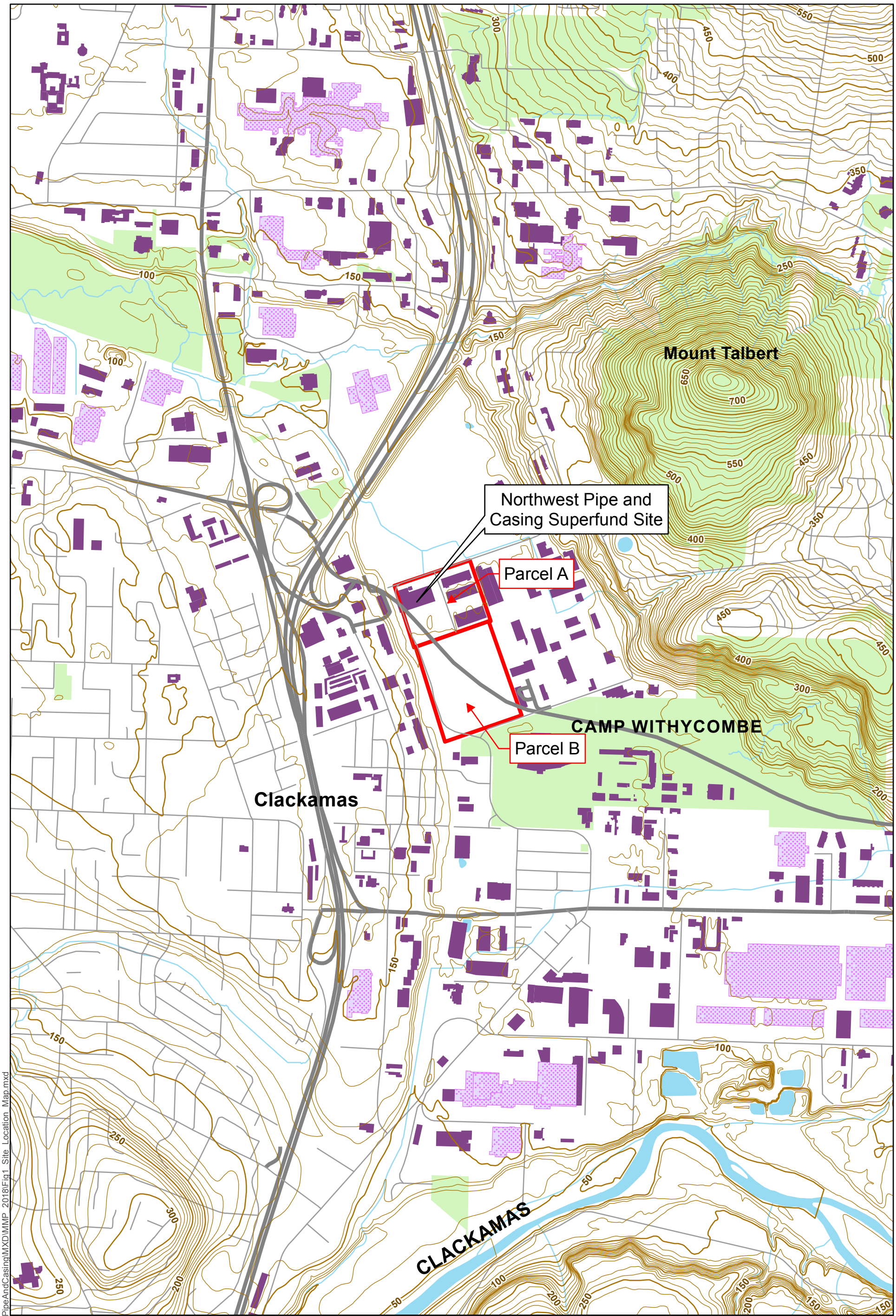


Figure 1 - Site Location Map

Revisions to the Monitoring and Maintenance Plan
Northwest Pipe and Casing Superfund Site
Clackamas, Oregon

Service Layer Credits: Oregon DOT, Oregon Water Resources Dept., USGS

Document Path: C:\NorthwestPipeAndCasingMXD\MMP 2018\Fig1 Site Location Map.mxd

2004 Extent of Soil Cap

Existing Fence

N

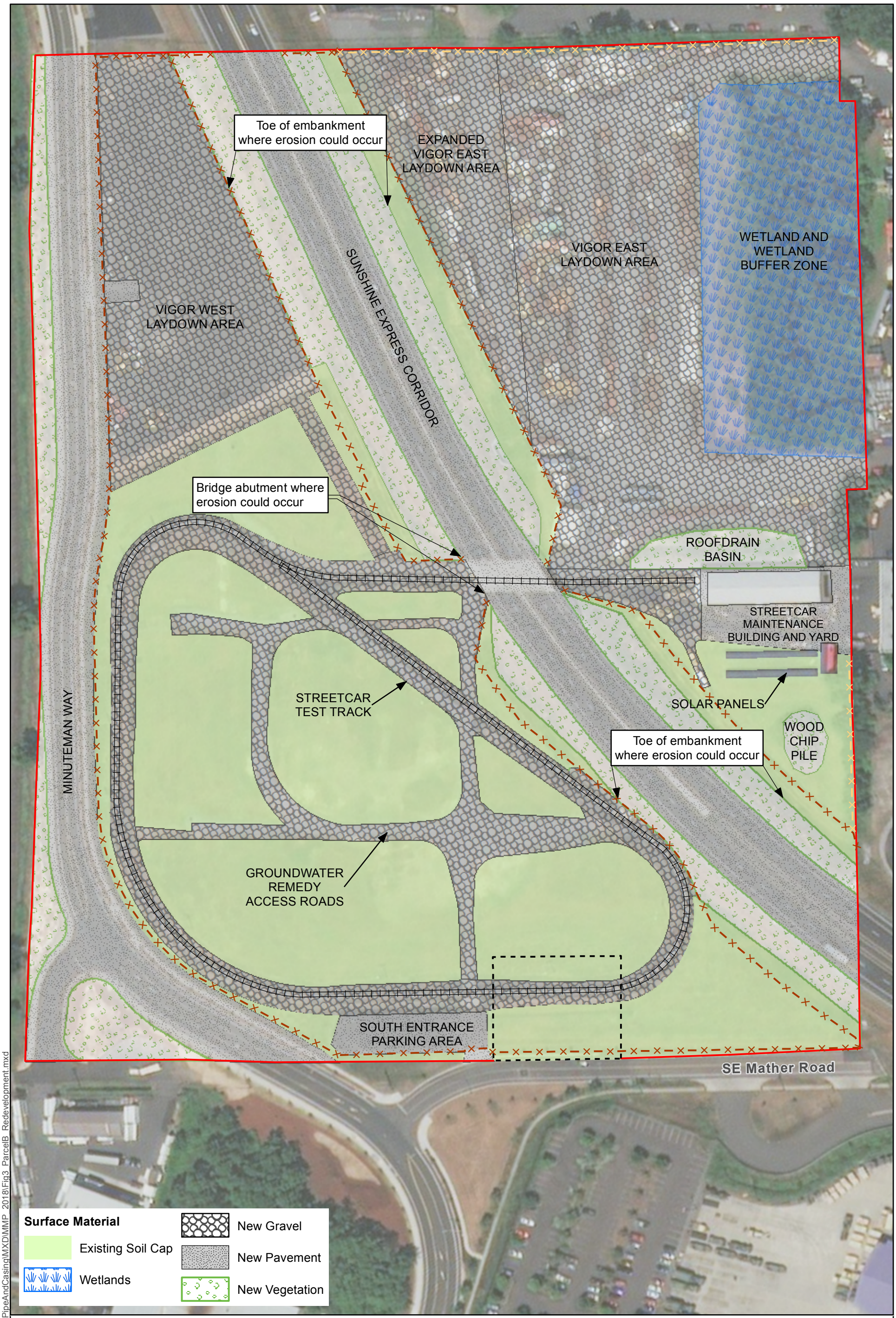
0 50 100 Feet

Service Layer Credits: USGS July 3, 2005 Orthoimagery

Figure 2 - July 2005
Existing Soil Cap Map

Revisions to the Monitoring and Maintenance Plan
Northwest Pipe and Casing Superfund Site
Clackamas, Oregon

Document Path: C:\NorthwestPipeAndCasing\MXD\MMP 2018\Fig2 2005 Site Map.mxd



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 3 - Parcel B Redevelopment Map

Revision to the Monitoring and Maintenance Plan
Northwest Pipe and Casing Superfund Site
Clackamas, Oregon

Document Path: J:\NorthwestPipeAndCasing\MXD\MMP 2018\Fig3 ParcelB Redevelopment.mxd

Attachment 1 - Google Aerial Images

Google Aerial Image

July 2004


Google Aerial Image
May 2010
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
Google earth
800 ft
N


Google Aerial Image
August 2010
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
Google earth
800 ft
N


Google Aerial Image
August 2011
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
N
800 ft
Google earth


Google Aerial Image
July 2014
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
N
800 ft
Google earth


Google Aerial Image
April 2015
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
N
800 ft
Google earth


Google Aerial Image
July 2016
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
Google earth
800 ft
N


Google Aerial Image
May 2017
SE 98th Ct
Bordeaux Ln
SE Mather Rd
SE 94th Ave
Google earth
N
800 ft

Attachment 2 - Soil Cap Inspection Form and Parcel B Redevelopment Map

SOIL CAP INSPECTION REPORT

NORTHWEST PIPE AND CASING SITE
9585 SE MATHER ROAD
CLACKAMAS, OREGON

Background: *Subsurface soils contain elevated concentrations of polynuclear aromatic hydrocarbons, polychlorinated biphenyls and volatile organic compounds. The selected remedial action for the site includes placement of a two-foot layer of clean soil or a three-inch layer of asphalt. Other features in this plan include vegetative cover, perimeter fence/entry gates, and access roads.*

Groundwater treatment systems and monitoring wells are located in several areas of the site. These systems are being operated by the U.S. Environmental Protection Agency.

Note: Photographs should be taken of all areas of concern to document the condition of the cap and its features. Photographic evidence includes pictures of any cap damage and repairs performed.

Inspection Date: _____

Monitoring period covered: _____ to _____

Inspector
(Name, affiliation and phone number)

_____
_____
_____

Weather at time of inspection:

_____
_____
_____

Other parties present at inspection:

_____
_____
_____

SECTION 1: SOIL CAP SURFACE AND SIDE SLOPES

Cracks, Settlement? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Holes, Penetrations? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Animal intrusion, burrowing? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Erosion, rills? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Slope sloughing? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Subsurface debris exposed? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Subsurface soil (>2-feet exposed)? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Ruts from Vehicles? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Invasive vegetation (blackberries, etc.)? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Ponding? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Erosion around structures (bridge abutments, erosion along Sunrise Expressway embankment, buildings, monitoring wells, bollards)? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Drainage Ditches: blockages, flow restrictions, scour? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

SECTION 2: VEGETATIVE COVER

General Description of Vegetation:
(components, height, density, appearance)

_____
_____
_____
_____

Bald spots? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Trampled Vegetation? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Dead/dying vegetation? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Fire danger? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Revegetation needed? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

SECTION 3: FENCES AND GATES

Cuts in fence fabric? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Posts intact? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Warning signs attached? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Fence Damage? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Gates intact? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Gates operative? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Locks present/working? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

SECTION 4: PAVED AREAS

Cracks, Settling? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Holes, Penetrations? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Subsurface soil exposed? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

Other damage? YES____ NO____
Location: _____
Maintenance Required? YES____ NO____ (Attached repair record if maintenance is required)

SECTION 5: OTHER AREAS INSPECTED

List any other areas inspected and any observations made:

_____
_____
_____
_____
_____
_____
_____
_____
_____

SECTION 6: ADDITIONAL COMMENTS

_____
_____
_____
_____
_____
_____
_____
_____
_____

SECTION 7: CERTIFICATION

Signature: _____

Title: _____

Stamp:

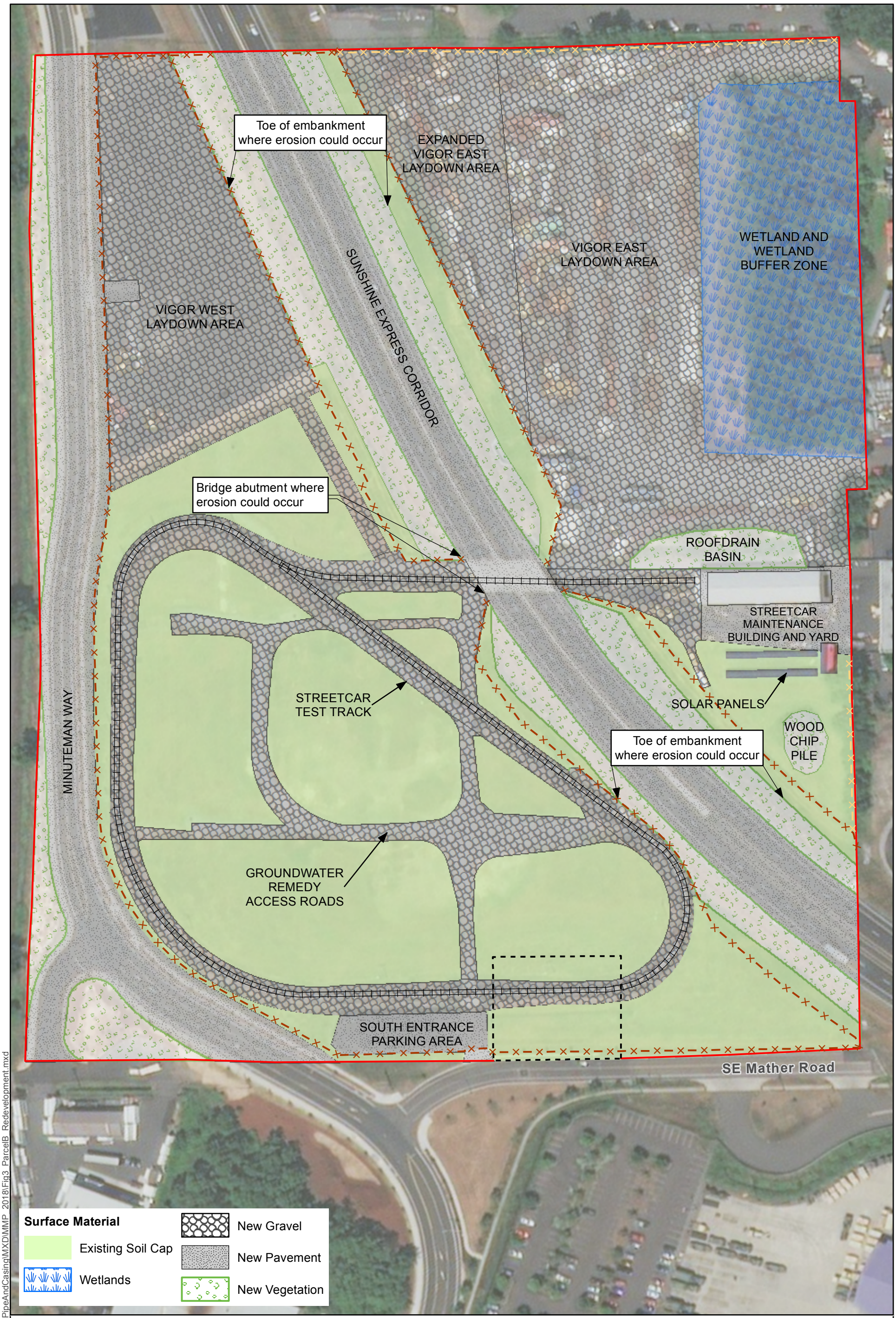


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Figure 3 - Parcel B Redevelopment Map

Revision to the Monitoring and Maintenance Plan
Northwest Pipe and Casing Superfund Site
Clackamas, Oregon

Document Path: J:\NorthwestPipeAndCasing\MXD\MMP 2018\Fig3 ParcelB Redevelopment.mxd