Phase III Remedial Investigation Work Plan

for the

Superlon Plastics Site

Tacoma, Washington

Prepared For:

White Birch, LLC
2116 Taylor Way
Tacoma, Washington 98401

and

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1. Introduction

1.1. General

This Phase III Remedial Investigation (RI) Work Plan has been prepared on behalf of White Birch, LLC (White Birch) and E. I. duPont de Nemours and Company (DuPont). These companies are hereafter referred to as the "Companies". The Companies or their authorized agent will complete the work described in this Work Plan in accordance with the State of Washington Model Toxics Control Act (MTCA), Chapter 173-340 of the Washington Administrative Code (WAC) under Agreed Order No. DE 5940. This Work Plan presents the technical approach to be undertaken for conducting a third phase of RI sampling on the Superlon Plastics Project located at and adjacent to 2116 Taylor Way, Tacoma, Washington (Figure 1-1).

The Agreed Order requires that the Companies develop a Draft RI Work Plan (Work Plan) to characterize the extent, distribution, and sources of all hazardous substances detected at the Site and submit to Ecology for review and approval in accordance with WAC 173-340-350(7). The Phase III RI Work Plan expands on the Phase I RI and Phase II Work Plans (PERC/PTC, 2010a/2011) previously approved by Ecology and, has the following goals:

- Assess the type and concentrations of constituents of potential concern (COPC) in soil in selected areas of the Gardner-Fields Property which lies immediately southwest of the Superlon Property;
- Characterize groundwater conditions in the intermediate aquifer underlying the Property to define quality and flow characteristics; and,
- Collect any additional data required to develop the RI report of findings, and to complete a Risk Assessment (RA) and Feasibility Study (FS) for the Site.

1.2. Site Location and Description

The Superlon Plastics Property, which covers 3.1 acres and is generally located at 2116 Taylor Way, Tacoma, Washington (see Figure 1-1). The property is located in a highly industrial area of the Tacoma Tidal Flats between the Blair and Hylebos Waterways. The Superlon Plastics Property is bordered to the northeast by Taylor Way, to the north by a curved rail road right-of-way owned by the City of Tacoma Public Works, to the northwest by Lincoln Avenue and a warehouse operation, to the south and southwest by Port of Tacoma property leased and operated as the Haub Log Yard, and to the southeast by property leased and operated by Gardner-Fields Products, a roofing and waterproofing products manufacturing business. Physical features present on the property are identified on Figure 1-2.

2. Objective and Scope of Phase III of the RI

The objective of the work to be completed under this Work Plan is to expand upon the knowledge learned during the Phase I and Phase II RI to thoroughly characterize existing conditions in groundwater throughout the Superlon Property and to complete characterization of soil at the Site. The Companies will accomplish the objectives of the Work Plan by following the scope of work described below:

- Install seven additional groundwater monitoring wells adjacent to the wells installed during Phase II of the RI. Each of these wells would be advanced into, and screened within, the second sand layer which occurs approximately 25 feet below ground surface (bgs). This layer of sands is approximately 15 to 20 feet thick and represents the immediate aquifer resident at the Superlon Property. In addition a set of two wells; one screened in the upper aquifer and the second screened in the intermediate aquifer, will be installed at SUP_GW_08 as shown on Figure 2-1. This set of wells will complete the wells necessary to characterize groundwater conditions on the property;
- Collect a surface water sample from under Building A and in the former Building B footprint. This will complete the characterization of surface water on or adjacent to the Property;
- If accessible, collect additional soil samples at select locations at the Gardner-Fields property to expand the assessment of the type and concentrations of constituents of potential concern (COPC) in soil. This investigation will occur at up to five locations, and will be used to determine the extent of COPCs in off-site soils (see Figure 2-2). Samples will be collected on a similar grid spacing used on-property during Phase I and II of the RI;
- Re-evaluate COPCs and develop a focused list of Constituents of Concern (COCs) for the Site;
- Develop a conceptual site exposure model that depicts an understanding of actual and potential exposure pathways to the site COCs; and,
- Identify any additional data required to develop the RI report of findings, and to complete a RA and FS for the Site.

3. Background

3.1. Prior Phases of the Remedial Investigation

Phase I RI

In 2010 the Companies completed selected tasks described in the Phase I RI Work Plan, approved by Ecology in January 2010 (PERC/PTC, 2010a). The entire scope of work described within that Work Plan could not be completed, due to weather and physical constraints. The RI tasks completed in 2010 were:

- Collected soil samples underneath Building A to a depth of 2 feet bgs.
- Collected soil samples described in the Phase I RI Work Plan in all grid locations except:
    - Soil sample locations SUP_SL_ 31 which has located under the loading dock; SUP_SL_ 9 which was located in between Building A and B and, thus, inaccessible; and,
    - Under Building B which required demolition prior to collection. The demolition of Building B required more time than expected, and caused the collection of soil samples to be delayed until the winter months when collection of samples was not feasible.
- Collected sediment and surface water samples within the ditch that exists on the southwestern boundary of the property (as described in the Phase I RI Work Plan).
- Reviewed and compiled existing data about the Property and surrounding properties;
- Evaluated new and existing data as they were developed;
- Evaluated the nature and extent of fill material on-property; and,
- Evaluated the potential impacts from on-property surface water and storm water to the ditch located along the southwestern property boundary.

In 2011 the Companies completed the remaining tasks of the (Phase I) RI Work Plan approved by Ecology in January 2010. Completed in 2011 were:

- Collected soil samples underneath the former location of Building B and at site location SUP_SL_9 to a depth of 15 foot bgs;
- Re-evaluated new and existing data as they were developed;
- Re-evaluated the nature and extent of fill material on-property;
- Preliminarily assessed the potential impacts from vapor intrusion;
- Re-evaluated the potential impacts from on-property surface water and storm water to the ditch located along the southwestern property boundary;
- Used data collected during soil and groundwater sampling to evaluate the potential of utility corridors as preference pathways to contaminant migration; and,
- Determined additional information that would be needed to conduct the RA and the FS.

Phase II RI

In 2011, the Companies completed the tasks described in the Phase II RI Work Plan, except as noted below. The tasks that were completed included:

- Performed the UST investigation and collected additional samples upgradient in ditch sediments, as well the majority of the soil sample locations identified in the Phase II RI work plan. No soil samples were collected on the Gardner-Fields property. Gardner-Fields was not responsive to requests for access to this property. This represented the only exception to the scope of work listed in the Phase II RI work plan;
- Compiled all known data about the Property and surrounding properties;
- Evaluated new data as they were developed;
- Assessed the potential impacts from vapor intrusion as new data were developed; and
- Expanded the evaluation of the potential impacts from off-property surface water and storm water to the ditch located along the southwestern property boundary.

4. Phase III Remedial Investigation – Scope of Work

4.1. Overview

During Phase III, the Companies will collect and analyze groundwater and soil samples as defined in *Sections 4.2 through 4.4.* Additionally, if the Companies determine during Phase III that additional data are needed for future studies (FS and RA), the Companies will notify Ecology and, upon Ecology's approval, will collect additional samples during Phase III. Specific methods to be used to complete the field investigation are described in the Sampling and Analysis Plan / Quality Assurance Project Plan (SAP/QAPP) in Appendix A (PERC/PIONEER, 2010c). Tables 1, 2, 3 and 9 of the SAP/QAPP summarize the analytical methods, target reporting limits, and holding times for all media and analytes.

4.2. Groundwater Investigation

Overview

Groundwater sampling conducted during Phase I of the RI identified COPCs with concentrations above MTCA Method B Groundwater Screening Levels in the shallow aquifer. As such, sampling of the intermediate aquifer is required to determine current groundwater conditions and to develop associated hydrogeologic information. In addition, because other properties near the Property may have similar COPCs in groundwater, the evaluation of both the shallow and intermediate aquifers needs to be considered when assessing possible interactions and overlapping of contaminant plumes originating on adjacent or nearby properties. Finally, additional Site-specific hydrogeologic data will be needed for use in developing Site-specific remediation levels in the RA, and for the evaluation of remedial options in the FS.

Monitoring Well Installation

To evaluate groundwater conditions in the intermediate aquifer the Companies will install seven monitoring wells adjacent to the seven wells installed during the Phase I RI (Figure 2-1). Since the aquifer is shallow, screens will be placed to capture the entire length of the aquifer unless during the installation of the well the aquifer thickness is greater than 20 feet. In this unlikely event the screen will be at or near the water table, with the specific depth of the screening interval refined based on the lithologic conditions encountered during drilling. The groundwater level will be monitored on a monthly basis.

Upon review of the analytical data obtained from the Phase I and II RI it became apparent that two additional groundwater wells would be required near the southwest property boundary (Figure 2-1). The first of these wells, MW_8, will be installed to determine groundwater conditions in the shallow/first aquifer. The second, MW_8I, will be installed in the immediate aquifer.

If the RI data reveal information that would affect the placement of the monitoring wells, Ecology will be consulted and, with Ecology's approval, the location of the wells will be adjusted as required to evaluate the hydrogeologic conditions on the Property.

Groundwater Sampling

The Companies will collect groundwater samples on a quarterly basis at each location. Groundwater samples will be analyzed for:

- All well locations for arsenic, lead and cadmium, on a total and dissolved basis, by EPA Method 6101.
- Wells MW-4I, MW-5I, and MW-6I for gasoline and diesel-range petroleum hydrocarbons by Northwest Method TPH-G and TPH-Dx.
- Wells MW-2I, MW-3I, MW-8 and MW-8I for pentachlorophenol by EPA Method 8270C.
- Wells MW-2I, MW-3I for mercury by EPA Method 7241.
- Wells MW-1I, MW-3I, MW-8, and MW-8I for volatile organic compounds (VOCs) by EPA Method 8260B.

Groundwater - Survey of Monitoring Wells

A licensed surveyor, on behalf of the Companies, will survey the elevations and locations of each the newly installed monitoring well.

Groundwater - Water Level Monitoring

As part of the hydrogeological investigations, the Companies will measure water levels in the new monitoring wells installed during this RI at periods of high and low tide. To determine the timing for such monitoring, continuous 24-hour water level monitoring units will be installed in five of the new monitoring wells (i.e. MW_1I, MW-4, MW-4I, MW-7, and MW-7I). These units will be operated for a six month period to collect data on:

- The periodicity of the high and low tides on the water levels, if present, at each of the monitoring sites, and
- Whether groundwater flow is in one direction (toward Puget Sound) or in multiple directions as suggested by the location of subject property and its proximity to the Hylebos Waterway to the northeast and to the Blair Waterway to the southwest.

Continuous recording may be necessary for an extended period should any ambiguities in the tidal data be encountered in the data recorded during the six month test period above.

Evaluation of Groundwater Conditions

After receiving the laboratory results and the information collected in the field, the Companies will evaluate the data to determine, where possible, the following information:

- Groundwater flow rate and direction;
- The effects of tidal variation on groundwater flow characteristics;
- The impacts of Site contamination on groundwater quality; and,
- Impacts to the Site groundwater from off-Site sources of contamination.

4.3. Soil Investigation

Data from soil samples collected during Phase I of the RI indicate that an expansion of the sampling grid to off-property locations is required to determine the lateral and vertical extent of contamination. To address these data needs, the Companies propose to collect soil samples as described below.

Soil Sampling

Once access permission is granted, direct push borings will be used to collect off-property soil samples in the locations shown on Figure 2-2. These locations represent a 75-foot expansion of the property grid to evaluate soil conditions in off-property areas. Accessibility may make sampling impossible on the Gardner-Fields Products property, due to the presence of structures (Figure 1-2). Assuming good sample recovery, sample intervals will begin with a one-foot thick sample, collected one foot bgs (representing the 1 to 2 foot sampling interval) and will continue at two-foot intervals (starting at the 2 to 4 foot interval) to a total depth of 15 feet. Soil samples will be analyzed as shown on Table 1.

This investigation was proposed, and subsequently approved by Ecology, in the Phase II RI Work Plan. Access was not obtained from Gardner-Fields Products, and hence that the work could not be completed during the Phase II RI.

Soil samples will be analyzed for:

- All locations for arsenic, lead and cadmium by EPA Method 6101.
- Boreholes SUP_SL-71, SUP_SL-72, and SUP_SL-73 for volatile organic compounds (VOCs) by EPA Method 8260B.

4.4. Surface Water Investigation

A single grab sample of surface water will be collected from surface water under the Building A structure. Additionally, a single grab sample will be collected from a randomly selected sampling port in the footprint of the former Building B. These surface waters will be analyzed for arsenic, lead and cadmium by EPA Method 6020, for mercury by EPA method 7470A, for gasoline and diesel -range petroleum hydrocarbons by Northwest Method TPH -G and TPH-Dx, and for VOCs by EPA Method 8260B.

5. Documentation and Reporting

The Companies or their authorized agents will document RI Phase II activities using field investigation log and report forms, soil sampling records, groundwater sampling records, chain-of-custody forms, photographs, and additional forms, as appropriate. These forms are described or shown as examples in the SAP / QAPP.

5.1. Draft RI Report

The Companies or their authorized representatives will consolidate the information collected during the Phase III RI with that collected during RI Phases I and II and create, in accordance with the schedule set forth in Section 5, the RI Report as described below. The report will be subject to Ecology's approval. If Ecology determines that no other sampling or investigations are necessary, then upon Ecology's approval, this RI report will be the final RI report for the Site. The RI Report will include:

- A description of the site setting, history and historical soil, sediment, surface water, and groundwater data;
- Presentation of the current chemical and geological data from the RI presented in summary tables, and where appropriate, in summary figures;
- An evaluation of the lateral and vertical extent and concentrations of COPCs in soil and groundwater;
- An evaluation to identify contaminants of potential concern (COPC);
- A conceptual site exposure model that will describe the potentially complete exposure pathways;
- A discussion of the potential for impacts from vapor intrusion and the potential for utility corridors to act as preferential pathways for contaminant migration;
- An assessment of the potential for COPC migration and the potentially-affected media;
- A terrestrial ecological evaluation (TEE) for the Site, conducted in accordance with WAC 173-340-7491;
- As appropriate, a discussion of data gaps and identification of additional sampling needed prior to producing the RA and/or FS reports;
- Figures showing current, historical, and planned Site features, including structures and the storm drainage system;
- Groundwater contour maps, both in the shallow and intermediate aquifers, as well as graphical depictions from continuous monitoring efforts; and,
- Laboratory reports, data quality review memos, boring logs, and a photo log included in appendices.

5.2. Potential Future Investigations

If, after completing the Phase III RI, Ecology determines that additional investigations are necessary for completing the RA or FS, the Companies will submit a plan and schedule to conduct additional work. The plan will be submitted to Ecology within 90 days of a written request from Ecology to create a plan for any additional investigation work. The plan and schedule will be subject to Ecology's approval. Sampling results from any additional investigation will be reported in the RI Report.

5.3. Electronic Data Submittal

Environmental data generated under this work plan and any subsequent work plans will be submitted to Ecology's Environmental Information Management System database, according to Ecology Toxics Cleanup Program Policy #840.
(http://www.ecy.wa.gov/programs/tcp/data_submittal/Data_Requirements_080415.htm)

6. Schedule

The estimated schedule to complete the RI is summarized as follows:

- RI Phase III Sampling: Mobilization and field work will be completed within 90 work days of Ecology's approval of this work plan (assuming favorable weather conditions).
- Draft RI Report: The Companies will provide Ecology the Draft Final RI Report within 90 calendar days of the receipt of the final QA/QC data report.
- Final RI Report: The Final RI Report will be submitted to Ecology within 45 calender days after responses to Ecology's written comments on the Draft Final RI Report are approved by Ecology. If Ecology determines that no further investigation is necessary, upon Ecology's approval, the Draft Final RI report will be the final RI report for the Site.
- Electronic Data Submittal: The Companies will submit electronic data for each required phase of the RI according to the same schedule as the final written reports.

7. References

Ecology and Environment, Inc. 1991. *Technical Assistance Team Report on Taylor Way Drums.* February 28, 1991.

Landau and Associates. 2008. Phase I Environmental Site Assessment, 2116 Taylor Way, Tacoma, Washington. February 26, 2008.

Landau and Associates. 2008. Soil and Groundwater Investigation, Superlon Pipe Property, 2116 Taylor Way, Tacoma, Washington. February 29, 2008.

PERC/PTC. 2010a. Remedial Investigation Work Plan for the Superlon Plastics Site, Tacoma, Washington. January 2010.

PERC/PTC. 2010b. Sampling and Analytical Plan & Quality Assurance Project Plan for the Superlon Plastics Site, Tacoma, Washington. February 2010.

PERC/PTC. 2010c. Health and Safety Plan for the Superlon Plastics Site, Tacoma, Washington. May 2010.

Tables

TABLE 1
SOIL SAMPLES: Analytes, Analytical Method

Sample ID	Depth Interval	Arsenic	Lead	Cadmium	Mercury	TPH-Dx	PCP	VOCS
SUP_SL_69	0'-1'	No Sample - Introduced gravel						
	1'-2'	1	1	1				1
	2'-4'	1	1	1				1
	4'-6'	1	1	1				1
	6'-8'	1	1	1				1
	8'-10'	1	1	1				1
	10'-12'	1	1	1				1
	12'-14'	1	1	1				1
	14'-16'	1	1	1				1
SUP_SL_70	0'-1'	No Sample - Introduced gravel						
	1'-2'	1	1	1				1
	2'-4'	1	1	1				1
	4'-6'	1	1	1				1
	6'-8'	1	1	1				1
	8'-10'	1	1	1				1
	10'-12'	1	1	1				1
	12'-14'	1	1	1				1
	14'-16'	1	1	1				1
SUP_SL_71	0'-1'	No Sample - Introduced gravel						
	1'-2'	1	1	1				1
	2'-4'	1	1	1				1
	4'-6'	1	1	1				1
	6'-8'	1	1	1				1
	8'-10'	1	1	1				1
	10'-12'	1	1	1				1
	12'-14'	1	1	1				1
	14'-16'	1	1	1				1
SUP_SL_72	0'-1'	No Sample - Introduced gravel						
	1'-2'	1	1	1				1
	2'-4'	1	1	1				1
	4'-6'	1	1	1				1
	6'-8'	1	1	1				1
	8'-10'	1	1	1				1
	10'-12'	1	1	1				1
	12'-14'	1	1	1				1
	14'-16'	1	1	1				1
SUP_SL_73	0'-1'	No Sample - Introduced gravel						
	1'-2'	1	1	1				1
	2'-4'	1	1	1				1
	4'-6'	1	1	1				1
	6'-8'	1	1	1				1
	8'-10'	1	1	1				1
	10'-12'	1	1	1				1
	12'-14'	1	1	1				1
	14'-16'	1	1	1				1

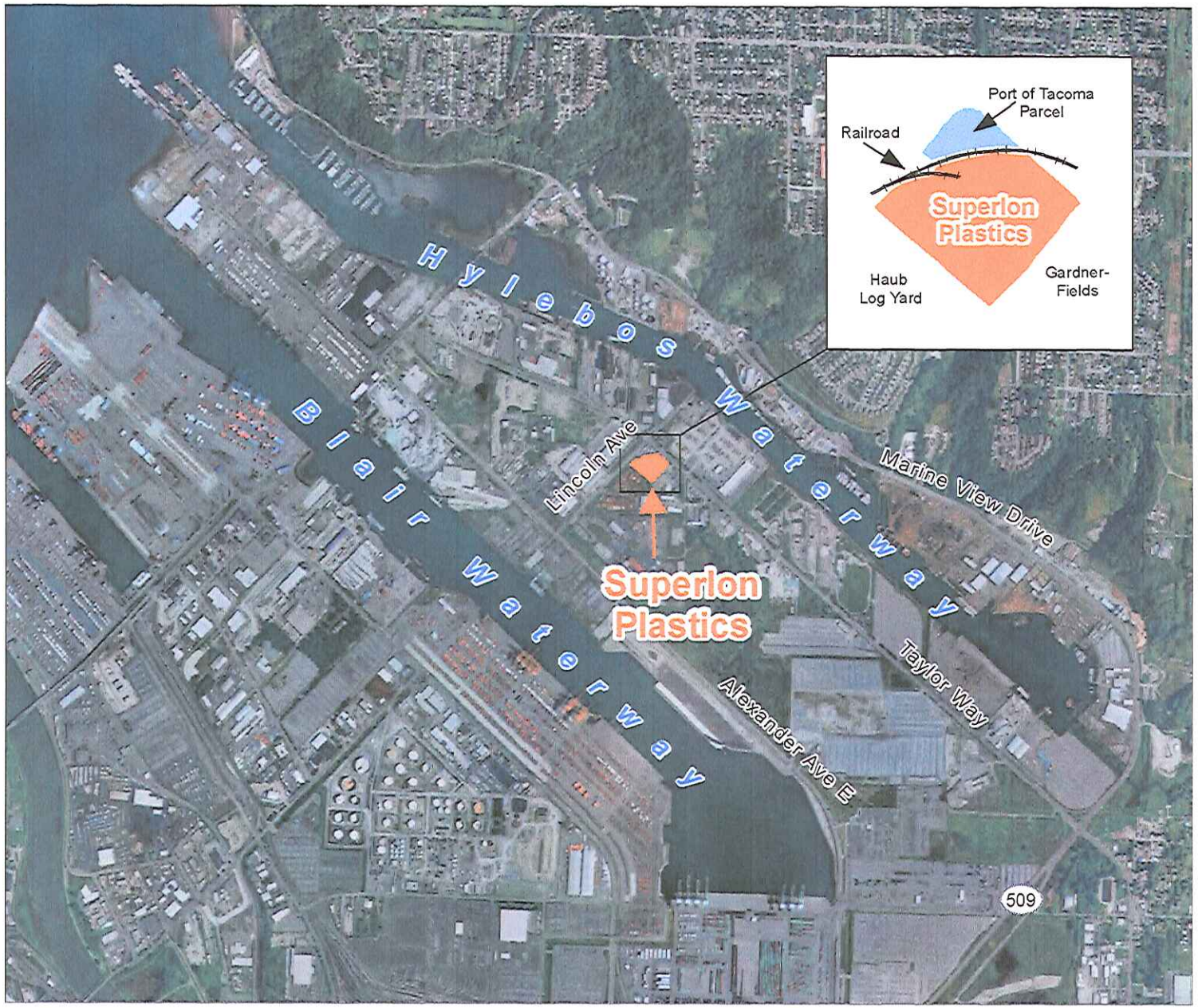
Metals by ICP EPA Method 6010
Mercury by EPA Method 7241
Pentachlorophenol by EPA Method 8270C
Volatile Organics by EPA Method 8260B
Diesel & Heavier Range Organics by Ecology Method NWTPH-Dx

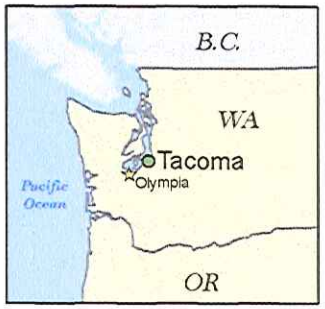
TABLE 2
GROUNDWATER SAMPLES FROM MONITORING WELLS: Analytes, Analytical Method

	METALS TOTAL				METALS DISSOLVED						
Sample ID	Arsenic	Lead	Cadmium	Mercury	Arsenic	Lead	Cadmium	Mercury	TPH-Dx	PCP	VOCS
SUP_MW_1I	1	1	1		1	1	1			1	1
SUP_MW_2I	1	1	1		1	1	1			1	1
SUP_MW_3I	1	1	1		1	1	1			1	1
SUP_MW_4I	1	1	1		1	1	1		1		1
SUP_MW_5I	1	1	1		1	1	1		1		
SUP_MW_6I	1	1	1		1	1	1		1		
SUP_MW_7I	1	1	1		1	1	1		1		
SUP_MW_8	1	1	1		1	1	1		1	1	1
SUP_MW_8I	1	1	1		1	1	1		1	1	1

Metals by ICP EPA Method 6010
Mercury by EPA Method 7241
Pentachlorophenol by EPA Method 8270C
Volatile Organics by EPA Method 8260B
Diesel & Heavier Range Organics by Ecology Method NWTPH-Dx

Figures





Legend

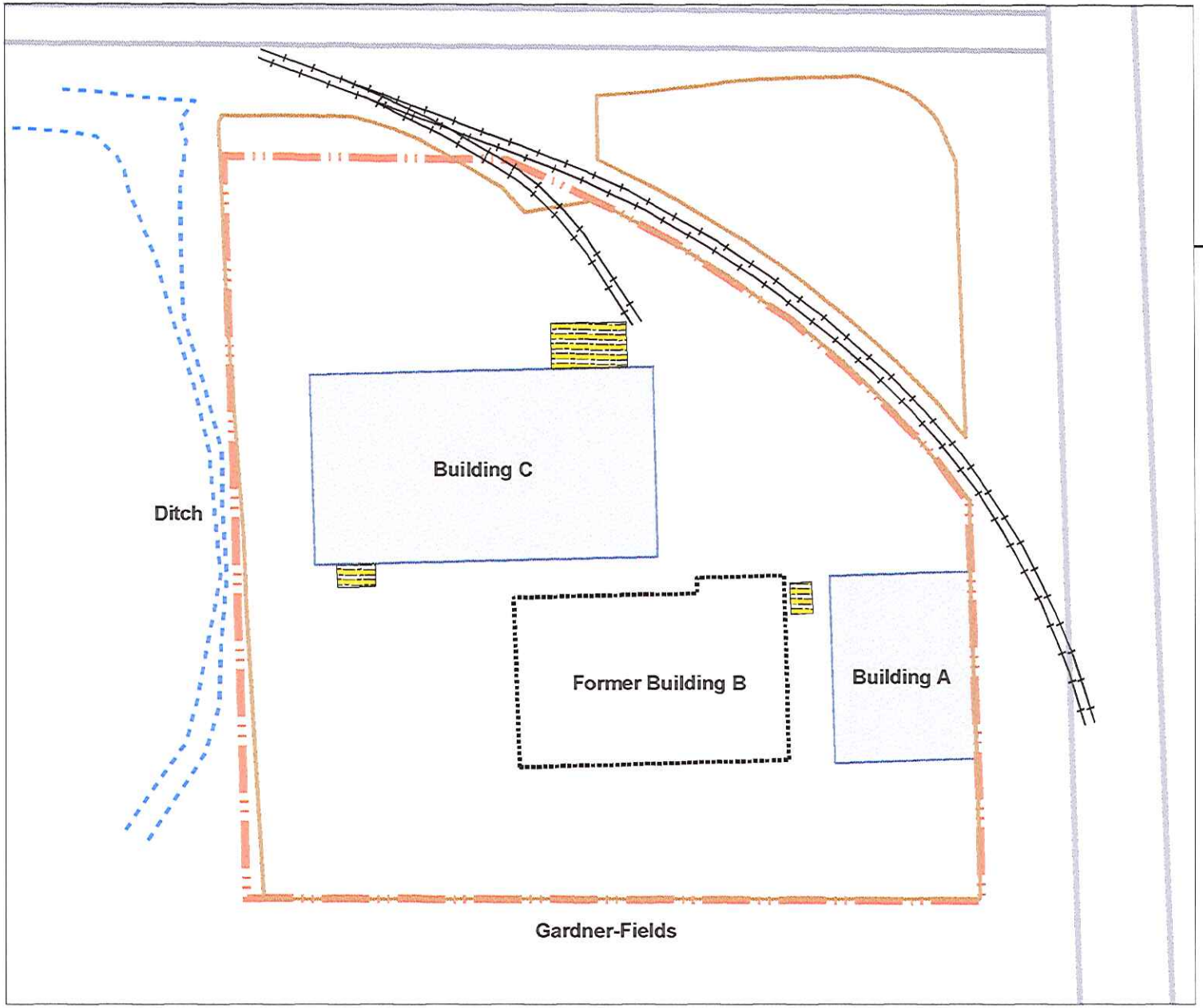
Superlon Plastics Site

0 0.25 0.5 Miles

PIONEER TECHNOLOGIES CORPORATION

Site Location
Phase III RI WorkPlan
Superlon Plastics Site, Tacoma, Washington

DWN:	PROJECT:
SM	Superlon Plastics
DATE:	FIGURE NO.:
March 2012	1-1



Legend

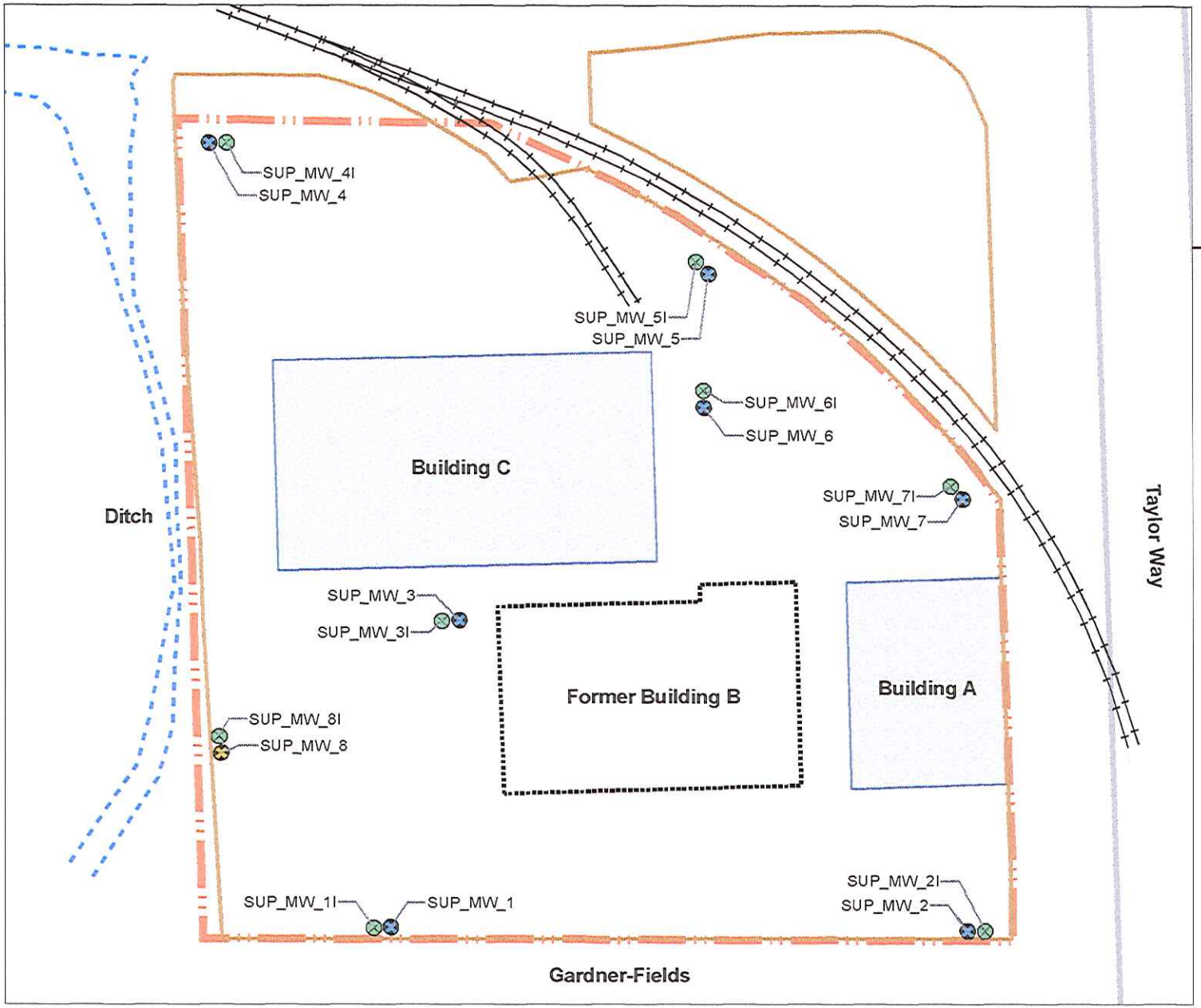
- Property Boundary
- Fence
- Ditch
- Railroad
- Other Buildings
- Concrete Features

0 25 50 100 Feet

PIONEER TECHNOLOGIES CORPORATION

Site Features
Phase III RI WorkPlan
Superlon Plastics Site, Tacoma, Washington

DWN:	PROJECT:
SM	Superlon Plastics
DATE:	FIGURE NO.:
March 2012	1-2



Legend

Existing Monitoring Wells
- Shallow Aquifer

Proposed Monitoring Wells
- Shallow Aquifer
- Intermediate Aquifer
- Property Boundary
- Fence
- Ditch
- Railroad
- Roads

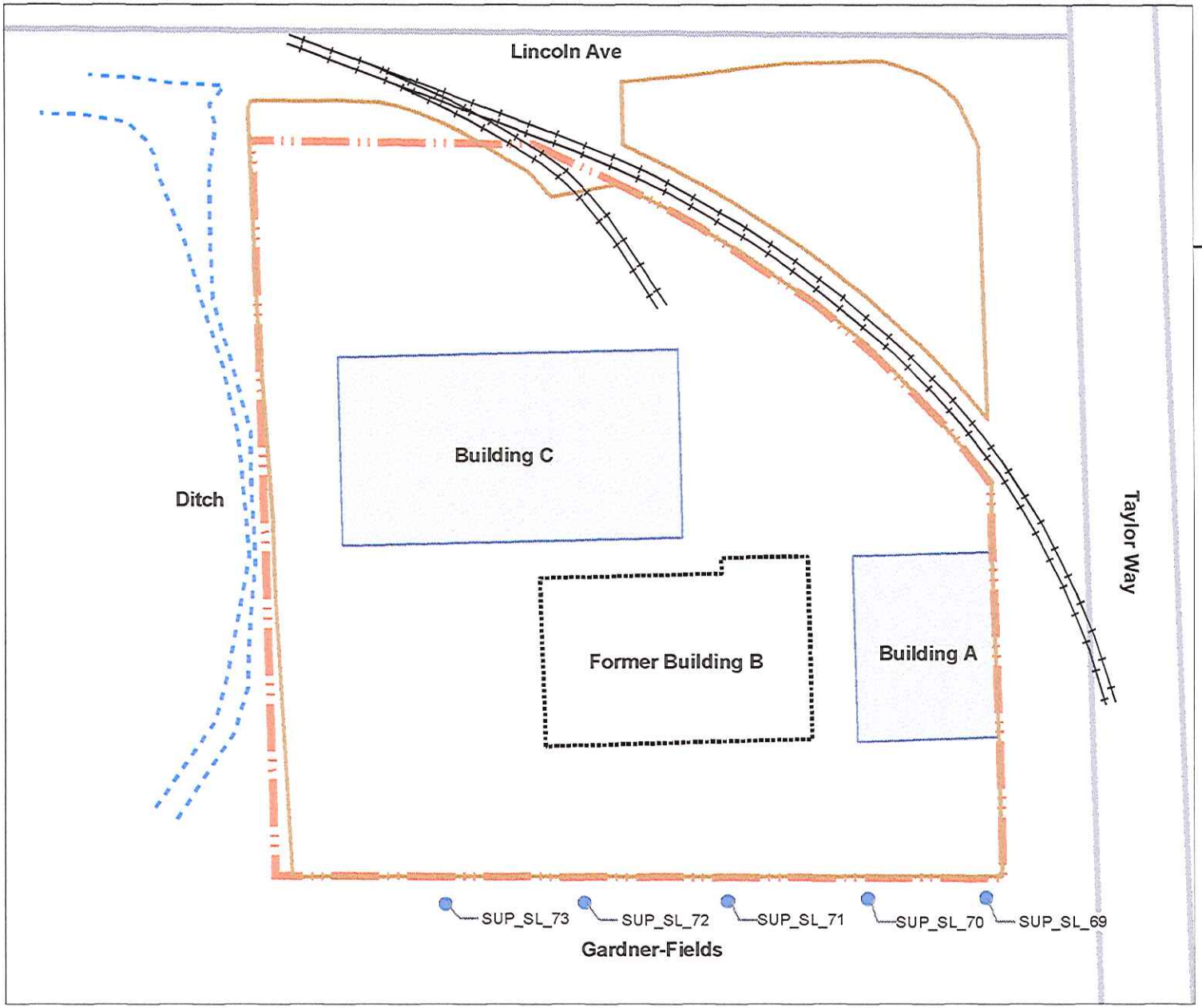
Notes:
The letter "I" denotes wells which will be screened within the Intermediate Aquifer.
Intermediate aquifer monitoring wells will be placed adjacent to existing shallow aquifer monitoring wells.
Well locations shown may differ slightly from actual installation locations.

0 25 50 100 Feet

PIONEER TECHNOLOGIES CORPORATION

Existing and Proposed Groundwater Monitoring Well Locations
Phase III RI WorkPlan
Superlon Plastics Site, Tacoma, Washington

DWN:	PROJECT:
SM	Superlon Plastics
DATE:	FIGURE NO.:
March 2012	2-1



Legend

- Phase III Soil Borings
- Property Boundary
- Fence
- Ditch
- Railroad
- Roads
- Building Was Removed in 2010

0 25 50 100 Feet

PIONEER TECHNOLOGIES CORPORATION

Proposed Soil Sample Locations
Phase III RI WorkPlan
Superlon Plastics Site, Tacoma, Washington

DWN:	PROJECT:
SM	Superlon Plastics
DATE:	FIGURE NO.:
March 2012	2-2