FINAL TECHNICAL MEMORANDUM

Bors Property (ECSI #901) NFA Evaluation

PREPARED FOR:	Oregon Department of Environmental Quality
COPY TO:	Portland General Electric
	Clark County PUD
	General Electric Company
	Acme Trading & Supply Company (ACME)
	PacifiCorp
	Calbag Metals Company
PREPARED BY:	Nathan Williams, PE/CH2M
	Gretchen Gee, RG/CH2M
	Dennis Shelton/CH2M
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The Bors site (ECSI #901) located in Oregon City, Oregon, was an agricultural site where the former owner of the property also conducted salvage operations for obsolete electrical equipment (primarily transformers and mercury vapor streetlights) from approximately 1979 until 1984. In the process of recovering marketable metal parts from the equipment, the operator released hazardous substances, particularly oils containing polychlorinated biphenyls (PCBs), to the environment (DEQ, 2001a). The Potentially Responsible Parties (PRPs) agreed to fund investigation and cleanup, and included Portland General Electric Company (PGE), Clark County Public Utility District (PUD), General Electric Company (GE), Acme Trading & Supply Company (ACME), PacifiCorp, and Calbag Metals Company. Investigation and cleanup of the property occurred from 1989 to 2001 when the Oregon Department of Environmental Quality (DEQ) issued a No Further Action (NFA) determination for the property (DEQ, 2001b).

This technical memorandum was prepared at the request of DEQ to reevaluate site data based on current cleanup levels, and determine whether the basis of the 2001 NFA is still valid. The evaluation included a review of site documents and regulatory records, site visit, development of a database of PCB concentrations likely to remain on site, mapping of site data, and a site-specific risk evaluation. The reevaluation of site data indicates that the original cleanup was complete and consistent with current risk-based cleanup levels, and that the NFA is still valid.

1.0 Background

Before 1979, the original Bors property was utilized for small-scale farming operations including the raising of livestock and crops. The 22-acre property was located at 18247 Grasle Road in Oregon City, Oregon ("Bors Property" on Figure 1). Beginning in 1979, the owner of the property, Mr. Joe Bors, also began purchasing obsolete electrical equipment and salvaging metal parts for resale, specifically copper. The salvage operation primarily took place in the farmyard portion of the original property with access

from Grasle Road through the farm residence portion of the property. Site features and investigation areas are shown on Figure 2.

The process of salvaging the copper windings from the transformers included draining the dielectric fluids (primarily mineral oil containing PCBs), dismantling of the transformers, disposal of the unmarketable parts, and burning the paper coating from the copper (DEQ, 2001a). Some fluids from the transformers are assumed to have leaked to the ground surface during dismantling. Additionally, an onsite underground storage tank (UST) was used for fluid waste storage and some was disposed in the pasture area. A small amount of waste oil was sold or given to a neighboring property owner for weed control ("Ahrens Property" on Figure 1) (DEQ, 2001a). Burning of the transformers generally occurred to the east of Sheds 1 and 2 until complaints by neighbors caused Mr. Bors to move the burn area inside Shed 4 (Figure 2). Unmarketable parts from the transformers, including transformer casings, light fixtures, ceramic parts, and other household solid waste, were disposed of in a pit at the west end of the pasture (Figure 2) (DEQ, 2001a).

In 1991, the Bors property was subdivided into six lots, of which five were sold to Mr. Wayne Walters. Mr. Bors retained the farmyard portion of the original property containing the sheds and disposal pit (Figure 2). In 1995, the neighboring parcel with the farm residence was sold to Mrs. Helen Wolf. During the later investigation phases and cleanup, these parcels were referred to as the "Bors" and "Wolf" properties (Figure 2).

2.0 Site Investigations

Investigation of the site began in 1988 in response to a complaint about possible contamination of the site. The U.S. Environmental Protection Agency (EPA) led the initial investigation and conducted limited soil sampling of the surface soil (EPA, 1988). Results led the EPA to request additional characterization by the property owner (OMNI Environmental Services, Inc., 1989). Following the property owner's investigation, EPA conducted follow-up soil sampling in 1989. Resulting PCB concentrations in soil were found to be below the Toxic Substance Control Act (TSCA) level of 49 parts per million (ppm; that is, milligrams per kilogram) and therefore, site investigation and cleanup was deferred to the Oregon DEQ (Environment and Ecology, Inc., 1989).

Companies which supplied equipment to Mr. Bors for recycling included PGE, PacifiCorp, Clark County PUD, ACME, GE, and Calbag Metals. In 1998, these companies entered into a Voluntary Agreement with DEQ to complete the site investigation and cleanup of the property (DEQ, 2001a). A thorough site investigation and cleanup of the property by PGE and the other responsible parties was conducted between 1998 and 2000. To adequately characterize the site, the site was divided into nine areas of investigation based on geographic location and salvage activities which occurred there:

1. Driveway into the Wolf's property
2. Wolf property, house and immediate yard
3. Wolf property, westernmost part of property
4. Sheds and pens in the main salvage area
5. Westernmost portion of Bors property where debris burial occurred
6. Main salvage area outside the sheds and pens
7. Area to west of main salvage area, behind animal pens
8. Area (10,000 square feet) in western portion of Bors property to be verified as clean for use as a stockpile area for clean debris and materials
9. Fence lines around the Ahrens property where transformer oil was used for weed and grass suppression

These areas are shown on Figure 2 (Areas 1 through 8) 1 (Area 9 – Ahren's property). Individual sampling strategies, both with biased (targeting areas of suspected contamination) and grid-based sampling methods, were designed for each area of investigation based on the suspected sources and activities which could have resulted in contamination (i.e. burn areas, disposal areas, or paths between active salvage areas). Over 330 samples were collected and analyzed for PCBs during site characterization performed between 1998 and 1999 (PGE, 1999, and PGE, 2001). Following this initial characterization, a remedial strategy was proposed by the PRPs and approved by DEQ. Confirmation sampling was performed following removal actions to confirm remedy effectiveness.

3.0 Remedial Action

The results of sampling and remedial actions were documented in two site remediation reports, the *Bors Site Remediation Report* (PGE, 1999) and the *Wolf Property Remediation Report* (PGE, 2001). Cleanup of the site was based on DEQ's 1997 guidance the *Generic Remedies for Soil Contaminated with PCBs* (PCB Generic Remedy), with the exception of soils from trench 1 (burial pit) in Area 5. Soil from the burial pit was determined to have elevated lead concentrations (exceeding 3,000 ppm) and leachable lead concentrations that exceeded hazardous waste criteria (5 milligrams per liter). Therefore, material excavated from the pit was segregated and managed as hazardous waste. All other areas were determined to be appropriately remediated using the PCB Generic Remedy. Contaminants of interest other than PCBs (total petroleum hydrocarbons, metals, dioxins, and furans) were determined to be co-located with PCBs and effectively remediated using the PCB Generic Remedy. The action level for PCBs at that time, based on the generic human health risk assessment contained in the PCB Generic Remedy, was 1.2 ppm. Based on this action level, the following remedial activities were conducted for the investigation areas of the site (Figure 2):

Area 1 – Driveway into the Wolf's property

- Soil excavation was performed in a portion of the driveway. Approximately 200 cubic yards of soil were removed from an area approximately 200 feet long by 22 feet wide by 6 to 12 inches in depth. The driveway was backfilled with crushed rock.

Areas 2 and 3 – Wolf property residence exterior and yard

- No remediation necessary, but a small shed was removed at the request of the property owner.

Area 4 - Sheds and pens in the main salvage area

- Sheds 1 and 2 (animal pens) – Sheds and concrete pads were removed along with the top six inches of soil below the concrete.
- Shed 4 – Two areas of the shed had concentrations above the action level: the burn area and the northwest corner of the shed. In these areas the concrete was broken out and removed along with the top few inches of soil. In addition, about 6 inches of soil were removed from the front section of the shed.

Area 5 – Westernmost portion of Bors property where debris burial occurred

- Trench 1 (burial pit) – Excavated to remove all visible signs of debris and ash.
- Southwest Corner – Soil excavation based on visible extent of debris was later expanded by an additional 5,000 square feet based on soil sampling in a grid pattern and various vertical depths.

Area 6 – Main salvage area

- Surface soils were excavated to depths of 6 or 12 inches based on sampling characterization.
- UST was removed.

- Large sump – discovered during removal of sheds 1 and 2, sump was completely concrete enclosed and measured 12 feet deep, and contained crushed empty drums. All contents were removed and sump was backfilled with clean fill following confirmation sampling.
- Beneath plastic sheeting in Shed 4 where soil stockpile from earlier investigation was staged – Six inches of soil was removed from under the plastic sheeting.

Area 7 – West of main salvage area

- Soils where contamination was greater than 1.2 ppm were excavated to 6 inches below ground surface and sampled again to confirm concentrations below action level.
- Open burn area – Pit was excavated to remove visible signs of ash in the soil.
- Drainage pathways to burial pit – Six inches of soil excavated in this area.
- Concrete slatted floor – Slatted floor portion of former pig barn was removed and disposed of, remainder of the foundation was left intact following confirmation sampling.

Area 8 – Clean stockpile area

- No remediation, extensive grid-based sampling confirmed area as clean.

Area 9 - Ahrens property (located north of Bors property, see Figure 1)

- No remediation necessary, 12 of 13 samples were nondetect and detected sample was below action level.

4.0 2001 No Further Action

Following remedial actions, DEQ granted the site an NFA. The 2001 NFA was based on the following findings:

- PCBs and lead were released during metal salvaging operations conducted from 1979 to 1984.
- DEQ's *Generic Remedy for Soils Contaminated with PCBs* was applied to guide remediation of contaminated site soils.
- A total of 2,500 tons of PCB-contaminated soil was removed from the Bors and Wolf properties. 2,300 tons of PCB-contaminated soil was removed from Bors property. Of the total, 62 tons of soil were considered TSCA-regulated with PCB concentrations exceeding 49 ppm. In addition, 200 tons of PCB-contaminated soil was removed from the driveway of Wolf property.
- PCBs were not detected inside Wolf residence.
- Residual PCBs (90 percent upper confidence limit on the mean [90% UCL]) in site soil did not exceed the residential cleanup level of 1.2 ppm as recommended by the PCB Generic Remedy (PGE, 1999).
- Approximately 70 tons of lead-contaminated soil and debris was characterized as hazardous waste and disposed of at the Arlington hazardous waste landfill.

5.0 Post-Remediation Soil Conditions

To determine soil conditions existing at the site following remediation, confirmation soil sample data following remedial activities and data from areas with no follow-up remediation were compiled and mapped (Table 1 and Figures 3 and 4). Sample data were obtained from the following sources:

- Areas 1 – 3: *Wolf Property Remediation Report* (PGE, 2001)
- Areas 4 – 9: *Bors Site Remediation Report* (PGE, 1999)

- Area 9 (sample locations): Map of Ahrens property sample locations and concentrations found during DEQ file review

Table 1 provides a list of samples that represent post-remediation conditions at the site, the sample depths, and the remedial actions conducted prior to the confirmation sampling, or if a sample represents an area where no remediation was performed. Nondetect data are presented as less than the reporting limits listed in the respective remediation reports. The locations of samples were georeferenced from sample maps included in the remediation reports and are presented in Figure 3 for the Bors and Wolf properties and Figure 4 for the Ahrens property. Wipe samples were conducted in Area 3, the Wolf residence. All wipe samples from the Wolf residence were nondetect and the data are presented in Table 2.

6.0 2017 Risk Evaluation

Using the soil data set representing post-remediation conditions at the site, residual PCB concentrations were aggregated to compute a 90% UCL concentration, in accordance with DEQ's *Human Health Risk Assessment Guidance* (DEQ, 2010) and Oregon rules [OAR 340-122-0084(1)(f)]. For this risk evaluation, the entire site was considered the exposure area, consistent with conditions that existed at the time the 2001 DEQ NFA was issued. Analytical results from 131 soil samples (74 with PCB detects; 56% detection frequency) were included in the 90% UCL calculation. The 90% UCL was calculated using EPA's statistical program ProUCL, Version 5.1 (EPA, 2015), and the ProUCL output is provided in Attachment 1. The resulting summary statistics from the analysis are as follows:

Analyte	Units	Number of Observations	Number of Detects	Percent Detected	Minimum Non-detect	Maximum Non-detect	Minimum Detect	Maximum Detect	90% UCL	90% UCL Basis
PCBs	mg/kg	131	74	56%	0.05	1	0.06	1.3	0.312	90% Gamma Approximate KM-UCL

The 90% UCL representing existing site conditions was calculated to be 0.31 ppm. Figures 5 and 6 show individual PCB concentrations for each confirmation sample location in comparison to the 90% UCL computed from this risk evaluation.

The 90% UCL is equivalent to the exposure point concentration (EPC) and can be used to compute excess lifetime cancer risk (ELCR) using the following equation:

$$ELCR = \frac{EPC}{RBC} \times TR$$

Where:

ELCR	=	Excess lifetime cancer risk
EPC	=	90% UCL exposure point concentration (0.31 ppm)
RBC	=	Oregon residential risk-based concentration for PCBs in soil (0.23 ppm)
TR	=	Target risk corresponding to RBC (1×10^{-6})

The results of the updated risk evaluation indicate that the ELCR for PCBs at the site under post-remediation conditions equates to 1×10^{-6} [$(0.31/0.23) \times 10^{-6}$], which does not exceed the DEQ acceptable risk threshold for exposure to individual carcinogens of one per one million people potentially exposed (1×10^{-6}) [ORS 465.315 (1)(b)(A)]. According to DEQ guidance (DEQ, 2010) cancer risks are to be represented to only one significant digit. Given these results, the residual PCB concentrations at the site would be considered an acceptable risk from exposure to an individual carcinogen.

In addition to the finding of no unacceptable exposure risk for the property, the detected PCB levels at all individual sample locations (maximum of 1.3 ppm) were well below the DEQ Hot Spot concentration

of 3.3 ppm (DEQ, 2015). Note, at the time of the site investigations, PCB hot spot criteria was considered to be 22 ppm.

7.0 Conclusions

The Bors property was thoroughly investigated and remediated using appropriate guidance for the time. Remediation based on PCB concentrations addressed all constituents of interest and achieved site cleanup. The investigation and remedial action taken at the site warranted the DEQ-issued NFA in 2001.

Since 2001, risk based concentrations for PCBs have changed both for hot spot criteria and residential risk levels. PCB hot spot criteria at the time of investigation and remediation was 22 ppm. Current PCB hot spot criteria is 3.3 ppm. The highest PCB concentration remaining in onsite soil at the time of remediation was 1.3 ppm in two samples out of 131 representing post-remediation conditions. Therefore, no soil remains onsite exceeding either hot spot criteria.

The PCB Generic Remedy applied in 2001 had a residential cleanup level of 1.2 ppm. The current Oregon residential risk-based concentration for PCBs in soil is 0.23 ppm. A site-specific exposure point concentration was calculated for the site (0.31 ppm) and determined to equate to an excess lifetime cancer risk of 1×10^{-6}, which indicates acceptable risk from exposure to an individual carcinogen.

Based on the site review and reevaluation of data using a risk evaluation based on DEQ-approved as described in this memorandum, the 2001 NFA was and remains valid for the site. The site remedial actions were thorough and appropriately conducted to the standards of the time.

8.0 References

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United States Environmental Protection Agency (EPA). 2015. *ProUCL Version 5.1 Technical Guide: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations*. EPA/600/R-07-041. September. http://www.epa.gov/osp/hstl/tsc/ProUCL_v5.1_tech.pdf.

Tables

Table 1
Confirmation Soil Samples in Areas 1 - 9
Bors Property Evaluation
Oregon City, Oregon

Area	Sample Name	Description of Location and Remediation Prior to Sampling	Total PCB Concentration (mg/kg)	Depth of Sample (ft bgs)
1	000926-Wolf0	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf1	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf2	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf3	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf3.5	Driveway, after 6 - 12 inches of soil removal	0.073	0
1	000926-Wolf4	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf4.5	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	000926-Wolf5	Driveway, after 6 - 12 inches of soil removal	<0.067	0
1	Area 1-6	Driveway, no remediation	0.35	0
1	Area 1-7	Driveway, no remediation	0.48	0
1	Area 1-8	Driveway, no remediation	0.47	0
1	Area 1-9	Driveway, no remediation	0.24	0
1	Area 1-10	Driveway, no remediation	0.66	0
1	Area 1-11	Driveway, no remediation	0.77	0
1	Area 1-12	Driveway, no remediation	0.27	0
1	Area 1-13	Driveway, no remediation	0.34	0
1	Area 1-14	Driveway, no remediation	0.81	0
1	Area 1-15	Driveway, no remediation	0.81	0
1	Area 1-16	Driveway, no remediation	0.48	0
1	Area 1-17	Driveway, no remediation	0.33	0
1	Area 1-18	Driveway near back door, no remediation	0.37	0
1	Area 1-19	Driveway near back door, no remediation	0.65	0
1	Area 1-fence 18"	Driveway near fence, location of soil stockpile during house remodel, no remediation	0.07	1.5
2	Wolf Step	Wood sample from step into shop, no remediation	<0.5	0
2	Wolf Path 1	Discrete sample from beneath stepping stone between shop and house, no remediation	0.79	0
2	Wolf Path 2	Discrete sample from beneath stepping stone between shop and house, no remediation	0.11	0
2	Wolf Front Door	Soil sample by front door of house, no remediation	0.14	0
2	Wolf Back Door	Soil sample by back door of house, no remediation	0.44	0
3	Area 2 - Wolf 1	East of fence between Bors and Wolf properties, no remediation	0.34	0
3	Area 2 - Wolf 2	East of fence between Bors and Wolf properties, no remediation	0.74	0
3	Area 2 - Wolf 3	East of fence between Bors and Wolf properties, no remediation	0.29	0
3	Area 2 - Wolf 4	East of fence between Bors and Wolf properties, no remediation	0.85	0
3	Area 2 - Wolf 5	East of fence between Bors and Wolf properties, no remediation	0.3	0
3	Area 2 - shed	Under floorboards of shed in location of stain, shed removed, no soil removal	0.34	0
3	Wolf BB1	Old blackberry area, no remediation	0.17	0
3	Wolf BB2	Old blackberry area, no remediation	0.2	0
4	6-SHED1-6-S	Shed 1, concrete slab and 6 inches soil removed	0.71	0.5
4	6-SHED2-6-2	Shed 2, concrete slab and 6 inches soil removed	<0.1	0.5
4	4-SHEDMID1-S	Shed 4, middle, concrete pad and "a few" inches soil removed	0.43	0.25
4	4-SHEDMID2-S	Shed 4, middle, concrete pad and "a few" inches soil removed	0.35	0.25
4	4-SHEDMID3-S	Shed 4, middle, concrete pad and "a few" inches soil removed	0.07	0.25
4	4-SHED4FRONTN-6-SC	Shed 4, front section, 6 inches soil removed	1.3	0.75
4	4-SHED4FRONTM-6-SC	Shed 4, front section, 6 inches soil removed	0.58	0.75
4	4-SHED4FRONTS-6-SC	Shed 4, front section, 6 inches soil removed	<0.05	0.75
4	4-SHED4BURN-1-SC	Shed 4, burn area, areas of concrete broken out and "a few" inches soil removed	0.33	0.25

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Confirmation Soil Samples in Areas 1 - 9
Bors Property Evaluation
Oregon City, Oregon

Area	Sample Name	Description of Location and Remediation Prior to Sampling	Total PCB Concentration (mg/kg)	Depth of Sample (ft bgs)
4	4-SHED4NW-1-SC	Shed 4, NW corner, areas of concrete broken out and "a few" inches soil removed	0.8	0.25
5	5-TRENCH1A-102-SC	Burial pit (Trench 1), all visible debris and ash excavated	<0.05	8.5
5	5-TRENCH1A-114-SC	Burial pit (Trench 1), all visible debris and ash excavated	<0.05	9.5
5	SWCORN-16	Southwest Corner, excavation until cleanup levels reached	0.71	~4
5	SW CORN 60	Southwest Corner, excavation until cleanup levels reached	<0.05	~4
5	SWCORN-58	Southwest Corner, excavation until cleanup levels reached	0.12	~4
5	SW CORN 59	Southwest Corner, excavation until cleanup levels reached	0.1	~4
5	SW CORN 61	Southwest Corner, excavation until cleanup levels reached	0.06	~4
5	SW CORN 64	Southwest Corner, excavation until cleanup levels reached	<0.05	~4
5	SW CORN 65	Southwest Corner, excavation until cleanup levels reached	0.15	~4
5	SW CORN 71	Southwest Corner, excavation until cleanup levels reached	<0.05	~4
6	BORS AREA 6-1A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.16	0.5
6	BORS AREA 6-2A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.17	0.67
6	BORS AREA 6-3A	Soils in Main Salvage Area, 6 to 12 inches of excavation	<0.1	0.5
6	BORS AREA 6-5A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.16	0.5
6	6-PLASTIC1-6-S	Beneath Plastic Sheeting, contaminated soil staging area from prior investigations	0.17	0.5
6	6-PLASTIC2-6-S	Beneath Plastic Sheeting, contaminated soil staging area from prior investigations	0.3	0.5
6	BORS AREA 6-8A	Soils in Main Salvage Area, 6 to 12 inches of excavation	<0.1	0.67
6	BORS AREA 6-9A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.12	0.67
6	BORS AREA 6-10A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.41	0.5
6	BORS AREA 6-11A	Soils in Main Salvage Area, 6 to 12 inches of excavation	1.2	0.5
6	6-TANK-72-S	UST, UST was excavated and removed, composite sample from both ends of tank area	0.43	6
6	BORS AREA 6-12A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.63	0.67
6	AREA6 SUMP	Sump between Sheds 1 & 2, crushed empty drums removed and sump excavated and removed	<0.1	12
6	BORS AREA 6-24A	Soils in Main Salvage Area, 6 to 12 inches of excavation	0.12	0.5
7	980928PATH9	Pathway to Burial Pit, 6 inches soil removal	0.44	0.5
7	980928PATH8	Pathway to Burial Pit, 6 inches soil removal	1.3	0.5
7	980928PATH3	Pathway to Burial Pit, 6 inches soil removal	0.32	0.5
7	980928PATH2	Pathway to Burial Pit, 6 inches soil removal	0.78	0.5
7	980928PATH1	Pathway to Burial Pit, 6 inches soil removal	0.86	0.5
7	980928PATH13	Pathway to Burial Pit, 6 inches soil removal	0.52	0.5
7	980928PATH12	Pathway to Burial Pit, 6 inches soil removal	0.73	0.5
7	AREA7-DRAIN1	Natural Drainage Area, 6 inches soil removal	0.26	0.5
7	AREA7-DRAIN3	Natural Drainage Area, 6 inches soil removal	0.27	0.5
7	AREA7-DRAIN4	Natural Drainage Area, 6 inches soil removal	0.19	0.5
7	AREA7-DRAIN5	Natural Drainage Area, 6 inches soil removal	0.5	0.5
7	98728BD06	Natural Drainage Area, 6 inches soil removal	0.23	0.5
7	98728BD07	Natural Drainage Area, 6 inches soil removal	1	0.5
7	98728BD08	Natural Drainage Area, 6 inches soil removal	1.1	0.5
7	98728BD09	Natural Drainage Area, 6 inches soil removal	0.65	0.5
7	98728BD12	Natural Drainage Area, 6 inches soil removal	0.99	0.5
7	BORS AREA 7-15A	Soils West of Main Salvage Area, 8 inches soil removal in areas of contamination	<0.1	0.67
7	BORS AREA 7-2A	Soils West of Main Salvage Area, 6 inches soil removal in areas of contamination	0.2	0.5

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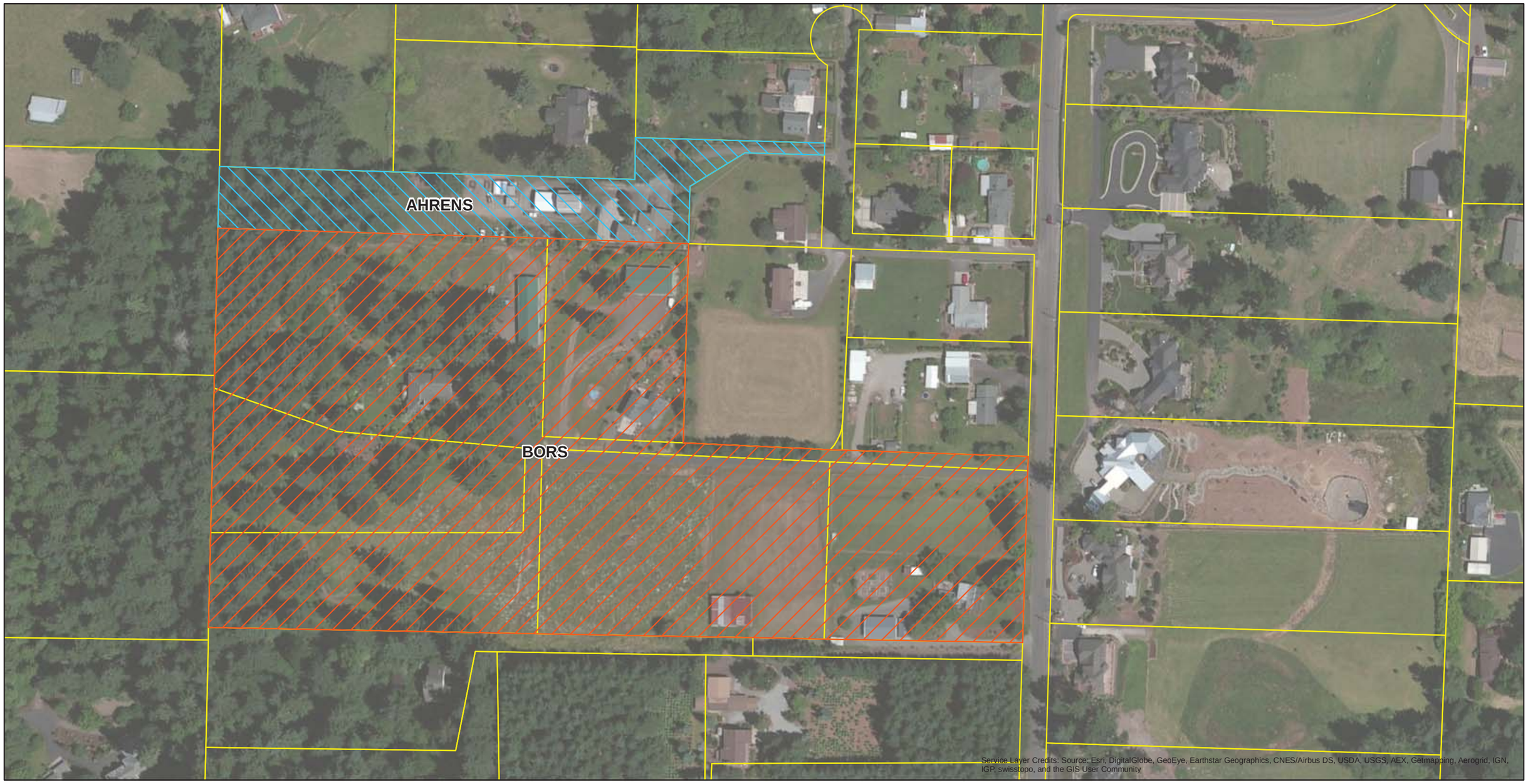
Bors Property Evaluation
Oregon City, Oregon

Area	Sample Name	Description of Location and Remediation Prior to Sampling	Total PCB Concentration (mg/kg)	Depth of Sample (ft bgs)
7	BORS AREA 7-4A	Soils West of Main Salvage Area, 6 inches soil removal in areas of contamination	0.14	0.5
7	BORS AREA 7-8A	Soils West of Main Salvage Area, 6 inches soil removal in areas of contamination	0.38	0.5
7	BORS AREA 7-14A	Soils West of Main Salvage Area, 6 inches soil removal in areas of contamination	0.06	0.5
7	BORS AREA 7-16A	Soils West of Main Salvage Area, 6 inches soil removal in areas of contamination	0.08	0.5
7	7-CSFHOLE 1-S	Concrete Slatted Floor, floor and debris removed, foundation remained, sample from soil under broken concrete	<0.1	0
7	7-CSFHOLE 2-S	Concrete Slatted Floor, floor and debris removed, foundation remained, sample from soil under broken concrete	<0.1	0
7	7-CSFHOLE 3-S	Concrete Slatted Floor, floor and debris removed, foundation remained, sample from soil under broken concrete	<0.1	0
8	BORS AREA 8-1A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-2A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-3A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-4A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-5A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-6A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-7A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-8A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-9A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-10A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-11A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-12A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-13A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-14A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-15A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-16A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-17A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-18A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-19A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-20A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-21A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-22A	Pasture soil staging area, no remediation	<0.1	0
8	BORS AREA 8-23A	Pasture soil staging area, no remediation	<0.1	0
9	98029AHRENS1	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS4	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS6	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS9	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS11	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS14	Ahren's Property, fence line, no remediation	0.06	0
9	98029AHRENS16	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS17	Ahren's Property, fence line, no remediation	<1	0
9	98029AHRENS19	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS21	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS24	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS26	Ahren's Property, fence line, no remediation	<0.05	0
9	98029AHRENS30	Ahren's Property, fence line, no remediation	<0.05	0

Table 2
Wipe Samples in Wolf House Interior
Bors Property Evaluation
Oregon City, Oregon

Area	Sample Name	Description of Location and Remediation Prior to Sampling	Total PCB Concentration (µg/100cm^2)
3	1-furnvent-001	Interior house, furnace vent main floor, no remediation	<1
3	1-entry-001	Interior house, Plastic floor covering in entryway, no remediation	<1
3	1-ltswitch-001	Interior house, Light switch area at base of stairway, no remediation	<1
3	1-backdoor-001	Interior house, Back door to garage at toddler level, no remediation	<1
3	1-Ravent-001	Interior house, 2nd story air vent return, no remediation	<1
3	1-Ravent-002	Interior house, Living room air vent return, no remediation	<1
3	1-entry-002	Interior house, Floor linoleum/vinyl at front entry, no remediation	<1

Figures



LEGEND

- Bors Property
- Ahrens Property
- Clackamas County Taxlots

0 100 200 400
Feet

N

FIGURE 1
Vicinity Map
Bors Property Evaluation
Oregon City, Oregon

ch2m:

\\PDXFPP01\PROJ\PORTLANDGENERALELECT\691939BORSPROPERTY\GIS\MAPFILES\VICINITY.MXD GGEE 4/6/2017 3:12:24 PM

LEGEND

- Site Feature
- Clackamas County Taxlots

Investigation Areas

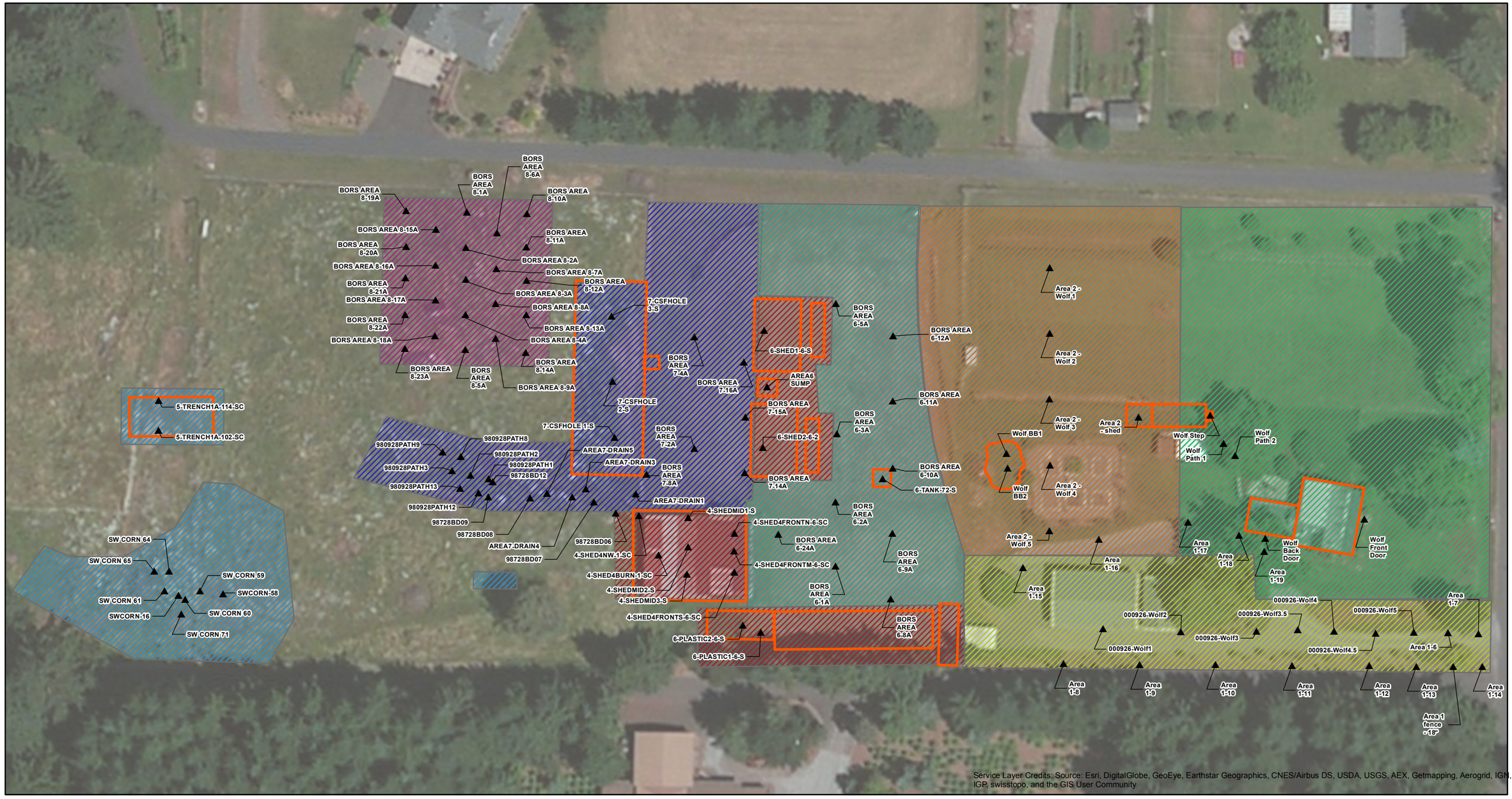
- Area 1: Driveway into Wolf Property
- Area 2: Wolf Property House and Main Yard
- Area 3: Westernmost part of Wolf Property
- Area 4: Sheds and Pens in Main Salvage Area
- Area 5: Westernmost Portion of Bors Property
- Area 6: Main Salvage Area
- Area 7: West of Main Salvage Area
- Area 8: Clean Fill Source Area

N

0 30 60 120

Feet

FIGURE 2
Site Features
Bors Property Evaluation
Oregon City, Oregon



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

- ▲ Confirmation Soil Sample Location
- Site Feature
- Clackamas County Taxlots

Investigation Areas

- Area 1: Driveway into Wolf Property
- Area 2: Wolf Property House and Main Yard
- Area 3: Westernmost part of Wolf Property
- Area 4: Sheds and Pens in Main Salvage Area
- Area 5: Westernmost Portion of Bors Property
- Area 6: Main Salvage Area
- Area 7: West of Main Salvage Area
- Area 8: Clean Fill Source Area

N

0 30 60 120
Feet

FIGURE 3
Confirmation Soil Sample Locations
Bors Property Evaluation
Oregon City, Oregon

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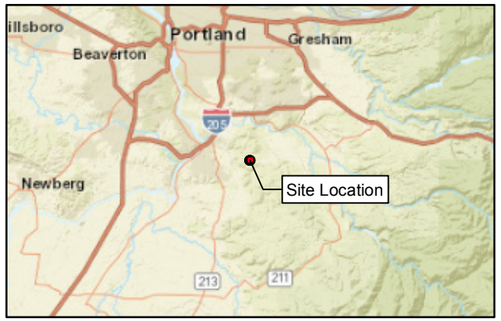


LEGEND

▲ Confirmation Soil Sample Location

DRAFT

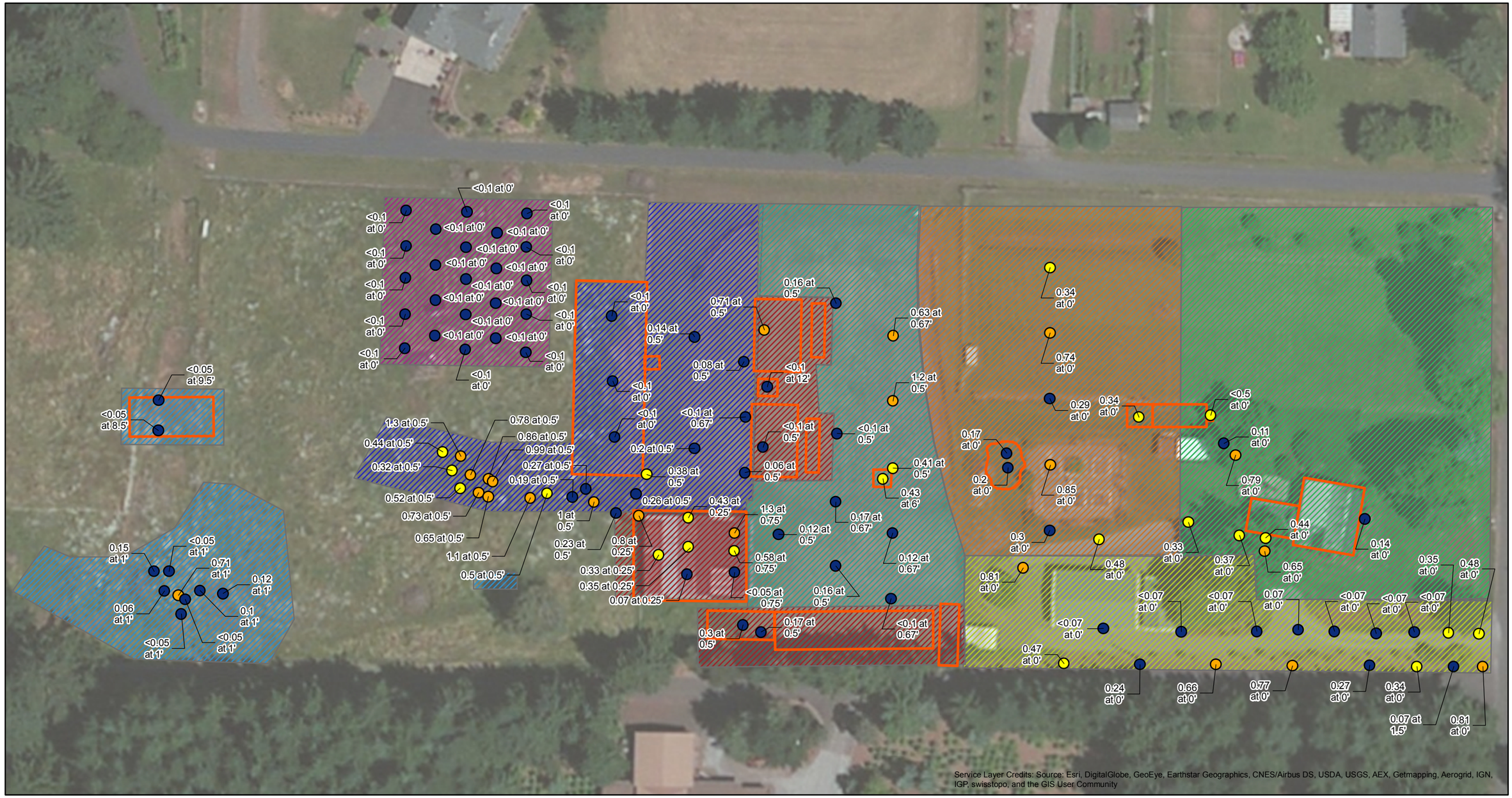
N

0 20 40 80

Feet

FIGURE 4
Confirmation Soil Sample Locations
Ahrens Property
Bors Property Evaluation
Oregon City, Oregon

ch2m.



LEGEND

Confirmation Soil Sample

Color-coded by Concentration of Total PCBs in ppm

- Less than 90% UCL (<0.31)
- 90% UCL to 2x 90% UCL (0.31 - 0.62)
- >2x 90% UCL (>0.62)
- Site Feature

Investigation Areas

- Area 1: Driveway into Wolf Property
- Area 2: Wolf Property House and Main Yard
- Area 3: Westernmost part of Wolf Property
- Area 4: Sheds and Pens in Main Salvage Area
- Area 5: Westernmost Portion of Bors Property
- Area 6: Main Salvage Area
- Area 7: West of Main Salvage Area
- Area 8: Clean Fill Source Area

N

0 30 60 120

Feet

FIGURE 5

Confirmation Soil Sample PCB Concentrations

Bors Property Evaluation

Oregon City, Oregon

ch2m

LEGEND

Confirmation Soil Sample

Color-coded by Concentration of Total PCBs in ppm

- Less than 90% UCL (<0.31)
- 90% UCL to 2x 90% UCL (0.31 - 0.62)
- >2x 90% UCL (>0.62)

N

0 30 60 120

Feet

FIGURE 6
Confirmation Soil Sample PCB Concentrations
Ahren's Property
Bors Property Evaluation
Oregon City, Oregon

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