State of Oregon
Department of Environmental Quality Memorandum

Date: 7/31/2025

To: FILE

Through: Brad Shultz (Cleanup Program Manager) Kaley Major (Toxicologist) and Bruce Scherzinger (Lead Worker)

From: Tina Elayer (Cleanup Project Manager)
Western Region

Subject: Airways Aircraft Refinishing, ECSI # 1120; Staff Memorandum in support of a No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended No Further Action (NFA) determination for the Airways Aircraft Refinishing, in Independence. As discussed in this report, contaminant concentrations in soil and groundwater are below acceptable risk levels.

The proposed NFA determination meets the requirements of Oregon Administrative Rules Chapter 340 Division 122, Sections 010 to 0140; and ORS 465.200 through 465.455.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

1. BACKGROUND

Site location.
The site's location can be described as follows:
- Address: 6080 Wigrich Road, Independence, Polk County, Oregon.
- Latitude 44.8066^{o} North, longitude -123.1577^{o} West
- Map and Tax Lot 09410-00-00601, Township 09 South, Range 04 West, Section 10

Site setting.
The Site is twenty acres and is developed with three buildings that support the operations of BioAg Inc. BioAg Inc. manufactures compost-based products after purchasing compost, peat, and leonardite. These materials are converted into humic and fulvic products using natural biological processes. No wastes are generated from this process. Water used to produce products is collected from roof drains and stored in large bladder-type storage containers behind the buildings. The products are sold to agricultural co-ops and farms. A house located on the north end of the property is used as a private residence and as an office for BioAg Inc. The Site is zoned for exclusive farm use (EFU) with a central planning unit (CPU) to operate an agricultural business. Agricultural fields surround the Site.

Physical setting.
The Site is located within the Willamette Lowland. Driller's logs for borings completed on nearby properties indicate the area is underlain by approximately 25 feet of silt and fine sand that represents alluvial deposits known as Willamette Silt, deposited by the Missoula Floods. The deposits are underlain by alluvial gravels to depths of 50-60 feet below ground surface (bgs). The shallowest occurrence of groundwater in borings completed on the Site was at depths of 8 to 9 feet bgs. Based on the local topography and relative locations of surface water bodies, groundwater flow direction is expected to flow to the east at a low gradient. Properties in the area are served by private water wells. The on-site well was completed to a depth of 40 feet bgs with a static water level measured at 20.5 feet bgs. The nearest perennial surface water body is the Willamette River located approximately 1.3 miles southeast of the Site.

Site history.
The Site was previously the location of Airways Aircraft Refinishing (Airways) that operated from the 1970's to mid-2000's. Airways generated solid waste from stripping and painting aircraft. In August 1990 a waste inspection by DEQ identified a hazardous waste violation (notice of non-compliance) for failure to perform a complete hazardous waste determination on all wastes generated at the Site. Wastewater from a methylene chloride-based stripping operation was reused and recycled.

The previous disposal method for paint stripping waste was reported to DEQ at the time of the Site inspection where the owner would burn the waste in a pile on the east side of the painting building. The practice was supposedly abandoned in October 1990 and the waste was collected in five-gallon buckets. DEQ required the owner to collect a sample of the burn residue and have it analyzed for hazardous characteristics, sample the soil beneath the burn pile, and properly dispose of the burn residue. The owner submitted a laboratory report for two soil samples on March 4, 1991. Sample locations were not included in the report. Various volatile organic compounds (VOCs) were found in the soil samples. The business was sold in 1999 and was later defaulted back to the previous owner in 2001.

A second hazardous waste inspection was conducted by DEQ in January 2003. Changes were made to the waste handling system. A filtration system had been connected to the sump that collected the plane stripper wastewater. The wastewater was no longer being recycled on the Site and instead was discharged into a ditch on the east side of the property, without a permit. The owner was cited and said they would revert the wastewater system back to the previously used recycling technique involving evaporation of the wastewater.

The incinerator was used to burn a variety of business wastes including, paper, plastics, metals, solvents, and paints. This type of burning violated open-burning regulations and the owner stated in a letter dated March 4, 2003, that they would discontinue this practice. The exact former location of the incinerator and ash pile was located near a wooden utility pole, located near the ditch on the east side of the hangar buildings.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.
The Site is zoned for exclusive farm use (EFU) with a central planning unit (CPU) to operate an agricultural business. Agricultural fields surround the Site. The current owner is operating the BioAg Inc. facility with no plans to change the use.

Groundwater use.
The Site and surrounding properties are all served by private water wells. There is no municipal water service in the area. A figure was provided by Anderson Geological, Inc. (AGI) that shows domestic wells over 1,500 feet north and south of the Site. Depth to groundwater for on-site well is 40 feet bgs.

Surface water use.
The Duck Slough is located approximately 2,000 feet west of the Site. The Willamette River is located approximately 1.3 miles east of the Site. Stormwater is collected from the building roofs and used in the production of composting products. Stormwater not collected flows across the Site and into the ditch on the eastern side of the property. The elevation of the base of the ditch increases to the north and south, essentially creating a long, narrow stormwater detention area located entirely within the Site with no outflow.

3. INVESTIGATION AND CLEANUP WORK

AGI walked the Site with the current business owner to identify areas of environmental concern. There was no evidence of other waste paint burning locations or evidence of spills in the area. Soil borings were advanced in the former incinerator/ash pile and the catch basin outside of former paint-stripping building. Samples B-1 through B-3 were collected from a depth of 0-12" and analyzed for TPH-D, volatile organic compounds (VOCs), and total metals (RCRA 8 list). In addition to the discrete soil samples a composite soil sample was created from two shallow soil samples and analyzed for dioxins/furans using Method 1613B. Groundwater was also sampled from two borings in the incinerator and catch basin areas and from the on-site water well.

No diesel, heavy oil, or VOCs were reported in the discrete soil samples B-1 and B-2 in the former incinerator area. Concentrations of metals were within natural background concentrations.

Various analytes of dioxins/furans were detected in the composite soil sample that was created from B-1 and B-2 discrete soil samples. The toxicity of a mixture of dioxins and dioxin-like compounds can be expressed in a single number, the toxic equivalency (TEQ). It is a single figure resulting from the product of the concentration and individual toxicity equivalency factor (TEF) values of each dioxin congener. The TEF expresses the toxicity of dioxins, furans and PCBs in terms of the most toxic form of dioxin (2,3,7,8-TCDD). The TEF/TEQ concept was developed to facilitate risk assessment. The laboratory reported a TEQ of 8.62 pg/g (ng/kg) in

the composite sample. The concentration is below the occupational RBC (16.0 ng/kg) and above the residential RBC (4.7 ng/kg).

The catch basin discrete soil sample (B-3) had no diesel, heavy oil or volatile organic compounds reported in the samples above the laboratory reporting limits. The concentrations of metals were within natural background concentrations. One soil sample was collected from the north area of the ditch (sample Ditch-1). That sample also didn't have any diesel, heavy oil, or VOCs above laboratory reporting limits but did contain detections of cadmium (3.09 mg/Kg) and lead (59.8 mg/Kg) which exceeded the natural background levels for the southern Willamette Valley. However, none of the metals exceeded risk-based concentrations (RBCs) for occupational property use.

Groundwater samples collected from the borings had no gasoline, diesel, heavy oil, or VOCs above the laboratory reporting limits. Arsenic (1.26 µg/L), barium (13.8 µg/L) chromium (3.02 µg/L) and lead (0.418 µg/L) were reported in groundwater sample B1-W. The groundwater sample was unfiltered for metals and displayed a slight turbidity, and the laboratory reported sediment in the bottom of the sample containers. The containers were preserved with nitric acid, therefore the reported concentrations of metals in sample B1-W are expected to be skewed higher than actual concentrations due to partial dissolving of sediment and leaching of metals from the sediment and into the samples. The results for the Catch Basin GW sample also had no gasoline, diesel, heavy oil, or VOCs above the laboratory reporting limits. Arsenic (1.46 µg/L), barium (16.6 µg/L) chromium (3.02 µg/L) and lead (0.383 µg/L) were reported in groundwater sample B3-W with the same concentrations skewed higher than actual concentrations.

Water supply well groundwater sample (Well-4/25) also had no VOCs but had barium (6.27 µg/L) and lead (0.340 µg/L) reported in the sample. The samples were unfiltered and displayed no evidence of suspended sediment or turbidity.

Recommendations were made by AGI to remove the dioxins/furans impacted shallow soil and dispose of at a landfill authorized to accept the material.

Removal of Dioxin-Impacted Soil

AGI decided that all soils containing dioxins above the residential risk-based concentration (4.7 ng/kg) would be removed from the former location of the incinerator in two phases. The soil was chemically profiled and accepted for landfilling at Coffin Butte Landfill in Benton County, Oregon. All soil samples were analyzed by Ceres Analytical Laboratory for dioxins/furans by EPA Method 1613B.

Phase I (July 2023)

On July 30, 2023, soil was removed from the area identified by AGI as likely containing dioxins above the risk-based screening level. The soils were removed by the client using a backhoe from an area measuring approximately 16 feet (north-south) by 12 feet (east-west) to a depth of 3 feet bgs. The soils were loaded directly onto a dump truck which transported the soil to Coffin Butte Landfill. A total of 32.37 tons of material was removed. AGI collected confirmation soil samples

from the four sidewalls of the excavation from the upper foot of the soil, below the root zone and recent gravel placed in the area.

The laboratory reported 2,3,7,8-TCDD – Total Toxic Equivalency (TEQ) in the samples ranging from 0.74 and 45.3 nanograms per kilogram (ng/kg). The reported TEQ concentrations in the base of the excavation (1.88 ng/kg) and the north sidewall (0.74 ng/kg) did not exceed the risk-based screening level for residential property use (dermal, ingestion and inhalation pathway) of 4.7 ng/kg.

The TEQ concentrations in the west, east and south sidewalls of the excavation (4.73, 21.0 and 45.3 ng/kg, respectively) exceeded the residential screening level. Prior to removing additional soil from these sidewalls, test pits were excavated in each direction for the collection of soil samples to determine the lateral extent of the impacted soils to help guide the soil removal in these areas. Given the proximity of the east sidewall to the ditch, a soil sample was collected from the base of the ditch in lieu of a sidewall sample. The samples contained 31.0 ng/kg (west sidewall), 0.377 ng/kg (south sidewall) and 24.5 ng/kg (east ditch sample).

Based on these findings, “clean” soils (dioxin concentrations below the risk-based concentration) were identified on the north and south sidewalls, and additional sampling was required to the west and within the ditch to define the impact to the ditch and areas to the east. No additional soil removal or assessment was completed until May 2024.

Phase II (May-July 2024)
In May 2024, AGI collected soil samples from test pits completed to the west side of the former excavation, from various locations along the base of the ditch to the east and from the east rim of the ditch, near the east property boundary. This sampling documented locations of dioxin impacted soils below cleanup levels (dig-to locations). A sample from the east rim of the ditch was collected and analyzed to determine if elevated dioxin levels were present on the adjacent property to the east.

Soil samples were collected from the upper foot of soil and analyzed. The laboratory reported 2,3,7,8- TCDD – Total Toxic Equivalency (TEQ) in the samples ranging from 0.0682 and 4.05 nanograms per kilogram (ng/kg). None of the reported TEQ concentrations exceeded the risk-based screening level for residential property use (dermal, ingestion and inhalation pathway) of 4.7 ng/kg. These results defined the lateral extent of the dioxin-contaminated soils around the former incinerator and within the ditch on the east side of the area. The sample collected from the east rim of the ditch (0.115 ng/kg) shows that the adjacent property to the east has not been impacted to a significant degree by airborne particles from the source area.

On June 24, 2024, 37.69 tons of dioxin-contaminated soil was removed by the client from the areas on the west, south and east sides of the former excavation, up to the area demonstrated as being below RBCs by the previous sampling. Soil was also removed from the base of the ditch to a depth of approximately 12 inches. The soils were loaded directly onto a dump truck which transported the soil to Coffin Butte Landfill. AGI collected confirmation soil samples from the

upper one foot of soil from two locations in the base of the excavated ditch (samples Ditch-5 [1-2] and Ditch-6 [1-2]). The samples contained 0.0247 and 0.0468 ng/kg dioxins.

On July 10, 2024, an additional 3.80 tons of soil was removed from above a buried high voltage power line that runs between the utility pole and buildings to the west. The soil was removed to a depth of 3 feet, which is the approximate depth of the power line.

Supplemental Investigation

Following remedial actions, DEQ requested BioAg Inc. address data gaps to continue working towards a no further action (NFA) determination for the Site. The request included additional sampling within the drainage ditch to the north of known contamination of the known contamination source area to confirm there was no mobilization of dioxins/furans in surface water run-off toward the Site boundary. In addition, DEQ requested the domestic well water be sampled again for dioxins/furans and indicated that a beneficial water use determination (BWUD) study may be required to determine impact to potable water sources within a 0.5-mile radius of the Site. Results of additional sampling events were to be included as an addendum to the remediation report completed by AGI (2024 Remediation Report).

On May 27, 2025, APEX conducted surface soil sampling in the north drainage ditch area on Site and collected a well water sample to address the data gaps. For the ditch sampling APEX measured an approximately 25-yard-long section of the ditch. The sampling area was completed in a portion of the ditch that becomes shallow towards the north and is located approximately 200 feet north-northeast of the prior area of remedial excavation. The composite sample was analyzed for dioxins/furans using EPA Method 1613B.

According to APEX several individual dioxin and furan compounds were detected in the composite soil sample above laboratory reporting limits; however, the TEQ value was calculated at 2.95 picograms per gram (pg/g), which does not exceed the residential RBC of 4.7 pg/g for dermal, ingestion and inhalation pathway. DEQ's toxicologist reviewed the results and confirmed that the ditch soil sample had a dioxin TEQ below the residential RBC, ranging from 2.95 pg/g to 3.40 pg/g depending on the treatment of non-detects (zeros versus full detection limit).

On May 27, 2025, a well water sample was collected from the supply well at the Site using disposable sampling equipment. The sample was filtered in the field using a 0.45 micrometer metal analysis filter. The water sample was analyzed for dioxins/furans using EPA Method 1613B, and total and dissolved arsenic using EPA Method 200.8. Dioxins/Furans were not detected in the well water sample above laboratory reporting limits. Total and dissolved arsenic were also not detected above laboratory reporting limits. DEQ's toxicologist reviewed the groundwater data for dioxins/furans and concurred that EPA Method 1613B was a reasonable choice and noted that the TEQ RBC for 2,3,7,8-TCDD in groundwater is 0.091 pg/L. Toxicologist also noted that the dioxin/furan detection limits were higher than groundwater RBCs. This is a data gap, but the lack of detection is a line of evidence that dioxin in groundwater is not causing unacceptable risk.

APEX concluded the remedial actions, as detailed in the 2024 Remediation Report, have successfully mitigated contamination at the Site to reduce concentrations below unacceptable risk levels and have provided additional information necessary to address data gaps raised by DEQ. Based on these results, AGI and APEX feels that there is no unacceptable risk remaining at the Site related to historical releases, and conditions are suitable to request a no further action (NFA) determination.

Nature and extent of contamination.
The contaminants of interest at the Site are dioxins/furans, arsenic, barium, cadmium, chromium, and lead. There was also a detection of trichloroethene in an incinerator soil sample in 1991 that exceeded the leaching to groundwater RBC for residential and occupational receptors, but after supplemental sampling the detections were all below lab reporting limits.

All the soil containing dioxins above residential RBCs for the dermal, ingestion and inhalation pathway have been removed from the impacted area except for approximately two cubic yards of soil left around the utility pole (Figure 4). The impacted soil could not be removed due to safety concerns threatening the physical integrity of the pole and attached power lines.

4. RISK EVALUATION

Conceptual site model.
To evaluate human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered, for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater and air. Table 1 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors

	Pathway	Receptor	Is pathway complete?	Is RBC Exceeded?	Comments
Soil	Ingestion, Dermal Contact, and Inhalation	Residential and/or Urban Residential	Limited	Yes	See note 1.
		Occupational	Limited	No	
		Construction Worker	Limited	No	
		Excavation Worker	Limited	No	
	Volatilization to Outdoor Air	Residential and/or Urban residential	No	No	
		Occupational	No	No	

	Leaching to Groundwater	Residential and/or Urban residential	No	Yes	See note 2.
		Occupational	No	Yes	
Groundwater	Ingestion & Inhalation from Tap Water	Residential and/or Urban residential	No	No	
		Occupational	No	No	
	Vapor Intrusion into Buildings	Residential	No	No	
		Commercial	No	No	
	Groundwater in Excavation	Occupational	No	No	
Soil Vapor	Vapor Intrusion into Buildings	Residential	No	No	
		Commercial	No	No	
Ecological		Terrestrial & Surface Water	No	No	

Notes:
1. Contaminant concentrations are below RBCs except around a utility pole where a de minimis amount of soil could not be removed.
2. One VOC was detected in a soil sample in 1991. The on-site water supply well was tested for VOCs and metals in 2023 and 2024. No contaminants were detected exceeding RBCs.

Contaminant concentrations.
All the soil containing dioxins/furans above residential RBCs for the dermal, ingestion and inhalation pathway have been removed from the impacted area except for approximately two cubic yards of soil left around the utility pole. Soil sample results for dioxins/furans in that area ranged from 0.0247 ng/kg to 0.377 ng/kg. Cleanup level is 4.70 ng/kg.

Human health risk.
There is no human health risk after impacted soil was removed. A small pocket (approximately two cubic yards) of dioxin/furan impacted soil remains around the utility pole. However, contaminant concentrations collected in the vicinity are all below residential RBCs for dermal, ingestion and inhalation pathway.

Ecological risk.
No sensitive ecological habitats are located within the locality of facility (LoF).

5. RECOMMENDATION

Following removal of contamination and based on sample results for soil and groundwater, acceptable risk levels are not exceeded, and a No Further Action determination is recommended for this Site. The No Further Action determination should be recorded in Your DEQ Online (YDO) database (ECSI # 1120) Oregon DEQ - Public Project Records .

6. ADMINISTRATIVE RECORD

Phase II Environmental Site Assessment; 6080 Wigrich Road, Independence, Oregon, DEQ ECSI#1120, prepared by Anderson Geological, Inc., dated May 21, 2023.

Removal of Dioxin-Impacted Soil (2024 Remediation Report); 6080 Wigrich Road, Independence, Oregon, AGI Project #1768.00, prepared by Anderson Geological, Inc., dated July 25, 2024.

Additional Surface Soil and Well Water Sampling to Address Data Gaps (Report); 6080 Wigrich Road, Independence, Oregon, APEX Project 25008264, Task 0001, prepared by APEX, dated June 20, 2025.

7. ATTACHMENTS

1. Figure 1. Site Location Map
2. Figure 2. Site and Vicinity Plan Map
3. Figure 3. General Work Area Map
4. Figure 4. Former Incinerator and Catch Basin Outfall Area Map
5. Figure 5. Soil Removal at Former Incinerator Area Map

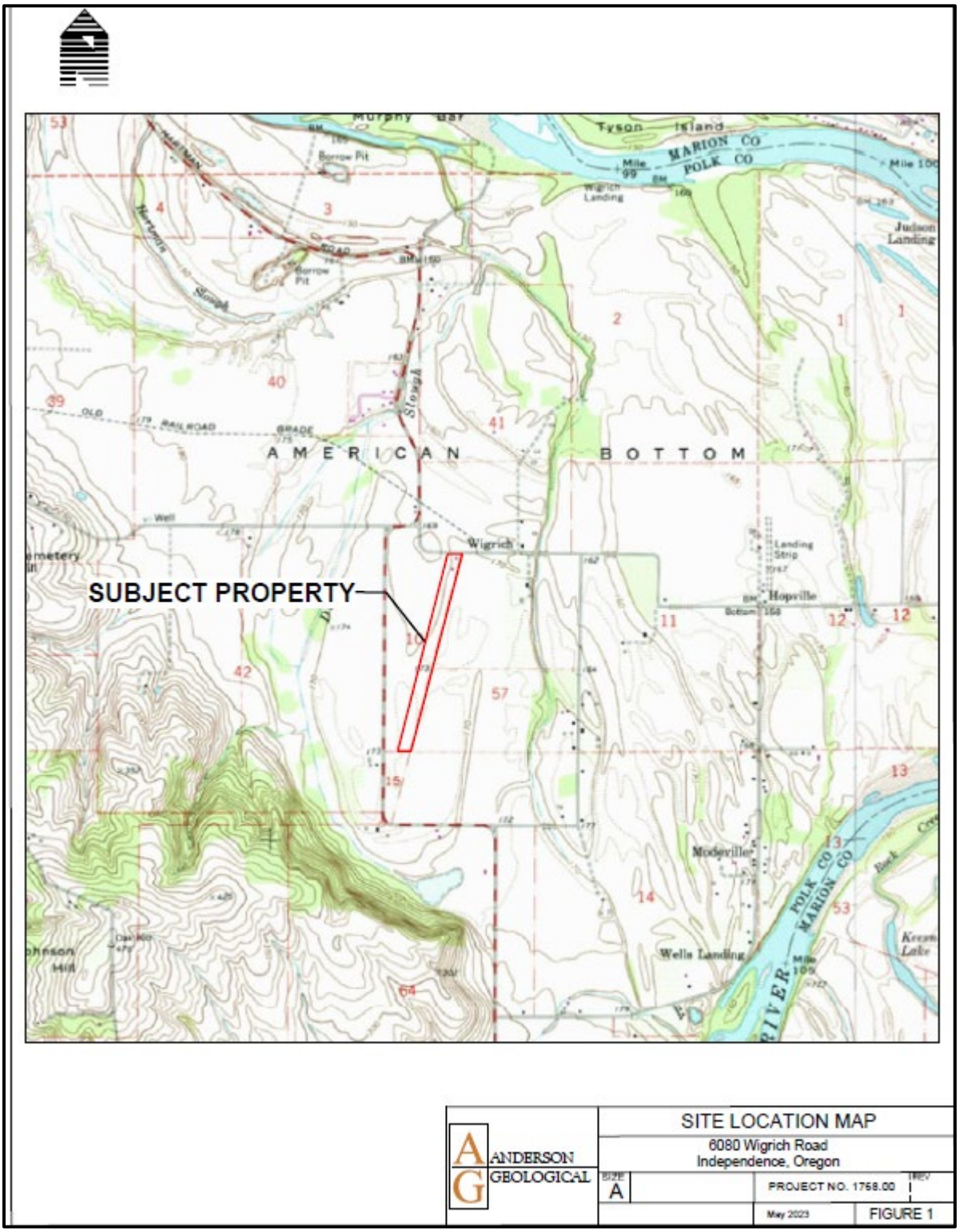

Figure 1. Site Location Map (retrieved from AGI, May 2023).

Figure 2. Site and Vicinity Plan Map (retrieved from AGI, May 2023).

Figure 3. General Work Area Map (retrieved from AGI, May 2023).

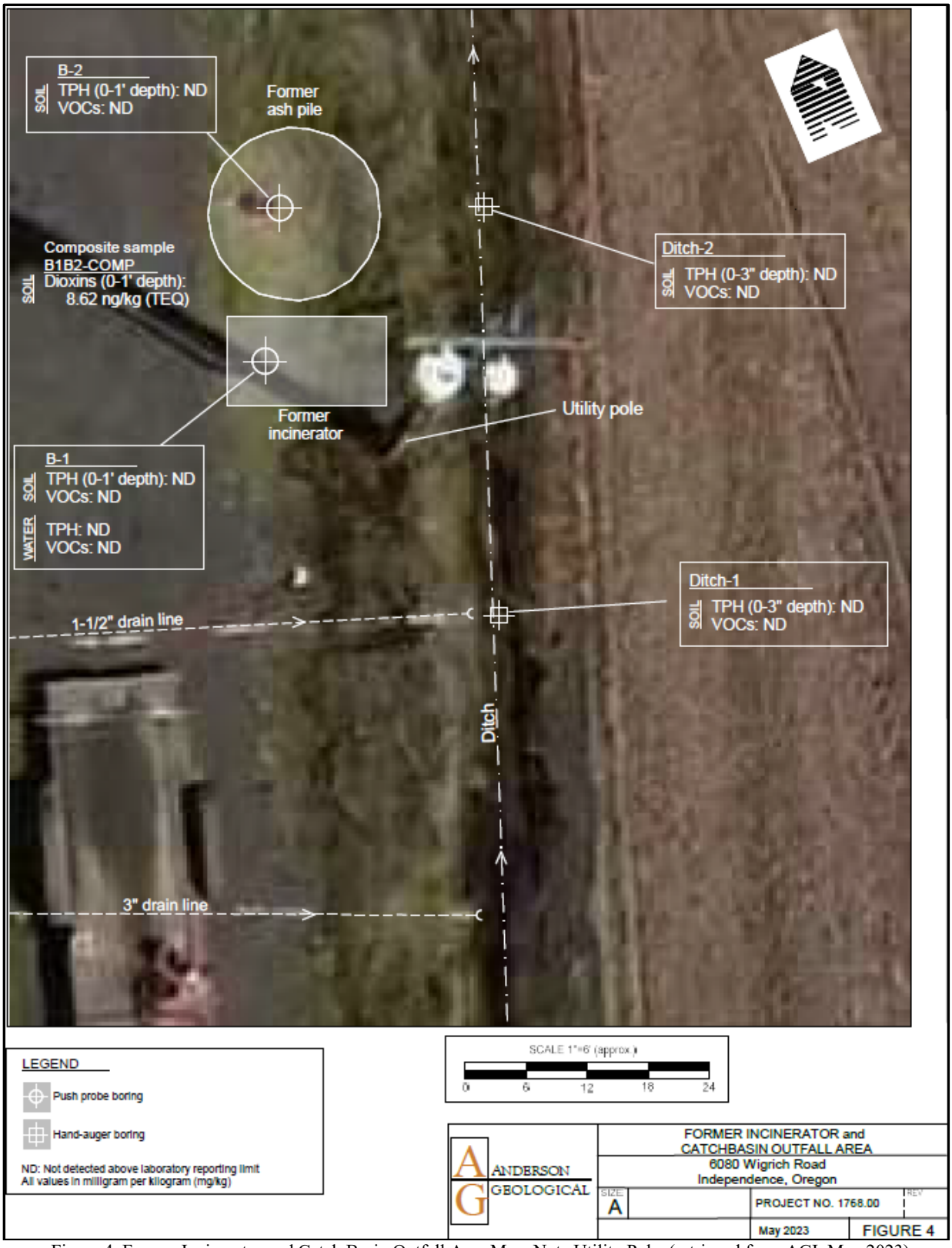

Figure 4. Former Incinerator and Catch Basin Outfall Area Map, Note Utility Pole (retrieved from AGI, May 2023).

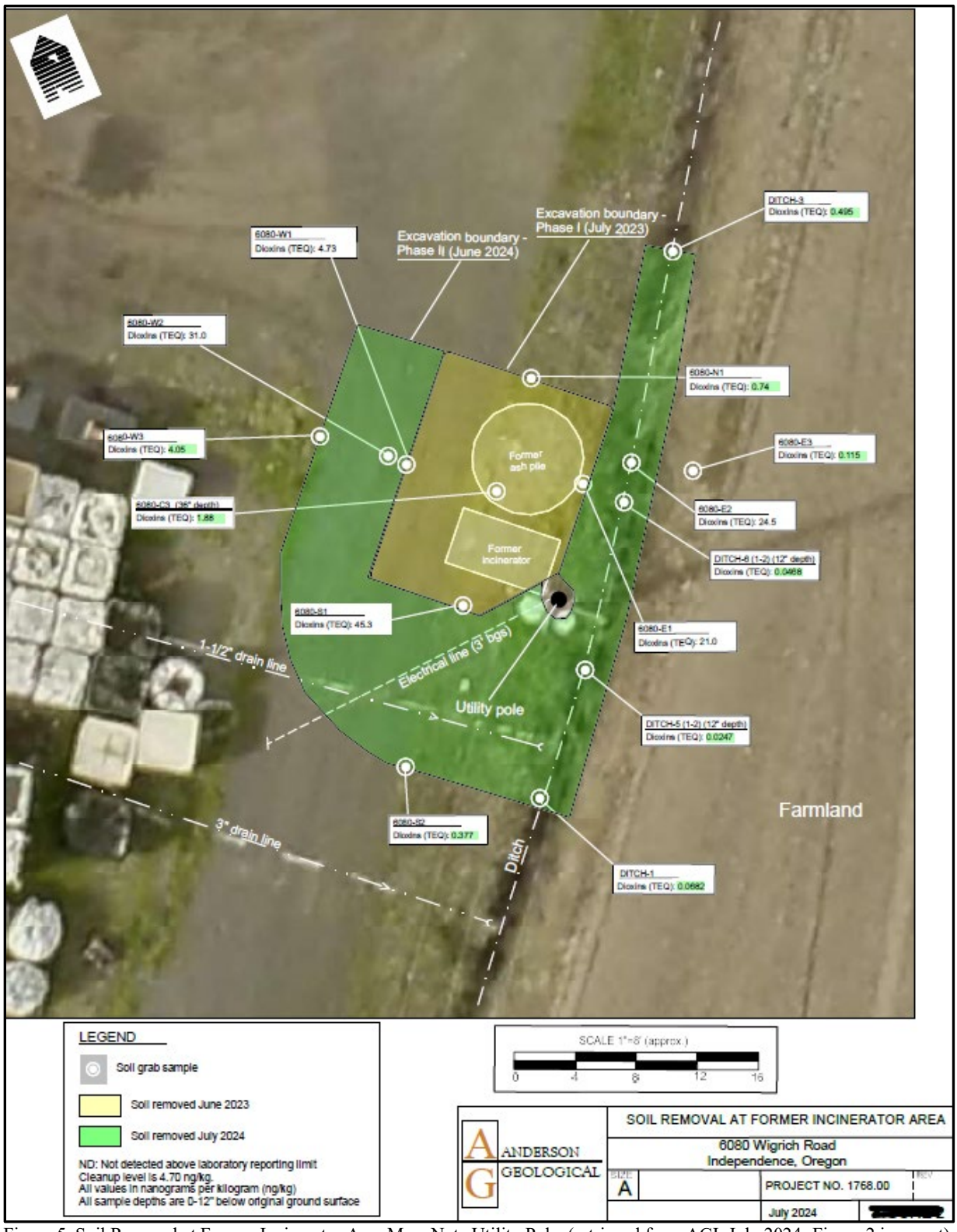

Figure 5. Soil Removal at Former Incinerator Area Map, Note Utility Pole (retrieved from AGI, July 2024- Figure 2 in report).