

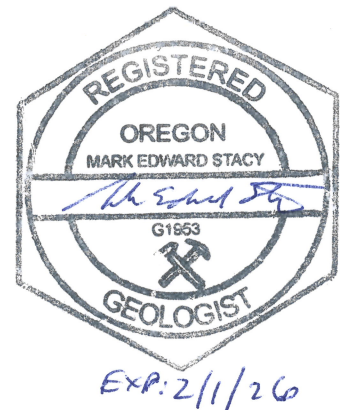
Sampling Plan Vanier Expansion Woodward Mine

Crook County, Oregon



Prepared for:
Knife River Corporation
Prineville, Oregon

Prepared By:



Christopher D. Lidstone
CDLidstone LLC



Mark Stacy, RG
Stantec



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1.0 INTRODUCTION

As outlined here, Knife River intends to collect samples from both groundwater and surface water sites located on or adjacent to the mining and proposed expansion area for at least one year. With regard to groundwater, our plan is to sample 15 shallow and deep aquifer wells quarterly to assess manganese (Mn), aluminum (Al), arsenic and iron (Fe) concentrations. Three additional wells will be constructed during the fourth quarter, 2025 and sampled in accordance with this Sample Analysis Plan (SAP). A representative of the agencies (Oregon Department of Environmental Quality/Oregon Department of Geology and Mineral Industries (DEQ/DOGAMI)) will be available onsite during the construction of these three additional wells. The groundwater monitor wells are presented on **Figures 1** and **1A**. Knife River will sample surface water sites quarterly, including at least three and potentially four sites based on available water and similarly identified on **Figure 1**. Knife River has proposed a sediment sampling program also presented on **Figure 1**.

The mining facility at Woodward and Vanier is underlain by two aquifers: a shallow aquifer and a deep aquifer. The shallow aquifer exists within the unconsolidated sands, silty sands and gravels that extend from the land surface to depths of approximately 50 to 70 feet. This aquifer is unconfined and was encountered as mining progressed toward the east end of the Woodward property. The majority of the mining at Woodward was “dry mining” and the groundwater table was not encountered. Below the shallow aquifer is a thick impermeable bed of clay or silt that ranges in thickness from approximately 110 to 160 feet. This clay layer serves as a confining bed and based on local pumping and potentiometric surface information, isolates the shallow aquifer from the deep aquifer. The stratigraphic top of this lower aquifer ranges from 200 to 230 feet below ground surface (bgs), and the permeable beds range in thickness from 30 to 50 feet. The geologic relationships of the shallow and deep aquifers below the mining facility are illustrated by the geologic cross sections presented on **Figures 2, 3, and 4**. Cross Section A-A’ has been extended to the Crooked River. That extension of Cross Section A-A’ is presented as Cross Section C-C’ in **Figures 5 and 6**. These geologic cross sections were prepared from well completion reports on file with the Oregon Water Resources Department.

Knife River has identified the groundwater flow direction in the shallow aquifer based on monitoring wells they completed at the mining facility. As shown in **Figure 7** and based on the most recent water level measurements collected on October 17, 2024, groundwater in the shallow aquifer flows west and southwest across the mine site. These water level measurements were obtained from the monitoring wells installed at the mine since 2021, as well as one neighboring shallow aquifer well. Completion details for all the wells that Knife River plans to monitor are provided in **Tables 1 and 2**. Borehole logs and well completion data for the Knife River monitoring wells are included in **Appendix A-1**. While October 17, 2024 data are valuable for assessing groundwater flow paths, Knife River recognizes that the static water level within an unconfined aquifer may fluctuate seasonally and over time. To assess these potential variations, monthly water level measurements will be taken for all wells for one year to better capture seasonal changes in hydraulic gradients and flow directions. Based on these data, Knife River will petition to reduce the monthly water level data collection to quarterly after one year. The data from October 2024 and **Figure 7** serve as an illustrative planning tool for this sampling plan. A detailed overview of the sampling locations and proposed frequencies for groundwater, surface water, and sediment/soil monitoring is provided in **Table 3**.

As noted above, Knife River has agreed to add three additional wells to the sampling plan based on direction from the DEQ and DOGAMI. Each of the monitoring wells will be completed

downgradient of the mine disturbance near the west or southwest end of the Woodward site. The proposed locations of the new monitoring wells are shown on **Figure 1A**. Once these wells are completed, the SAP, **Figure 1** and **Table 1** will be revised to include these three wells.

2.0 SAMPLING PLAN

2.1 Sampling Locations

Knife River is planning to sample shallow aquifer wells across the mining facility and based on the shallow aquifer water table map in **Figure 7**, has identified their hydrogeologic position relative to the Woodward Mine. For clarity, "upgradient" refers to wells located hydrologically upstream of mining activities at Woodward, while "downgradient" refers to wells positioned downstream of mining activities at Woodward. Within this area, some references to gradient position are noted with reference to the local area. **Table 3** summarizes the proposed groundwater and surface water sampling plan, detailing the sampling locations and the recommended sampling frequency based on feedback from DOGAMI and DEQ.

The upgradient shallow aquifer wells, relative to the Woodward mine-related disturbance, are located east of the site, as shown on **Figure 1**. These upgradient wells include MW-1, MW-2, MW-3, MW-4, WW-2A, and the Vanier House Well. Although MW-7 is upgradient of the processing ponds, it is not upgradient relative to the mining activities that have already taken place at Woodward. Once the Vanier application is approved and mining begins in the Vanier Expansion Area, the designated upgradient wells will continue to include MW-1, MW-2, and the Vanier House Well. Knife River also proposes to continue monitoring select cross-gradient shallow aquifer residential wells, including MW-3, MW-4, the Mikulski well (3992) and the Johnson well (3320), to further assess groundwater conditions in the area.

With respect to the three wells downgradient of Vanier and upgradient of Woodward (identified as WW-1A, WW-2A and WW-3A), Knife River proposes to sample only one (WW-2A) until site conditions dictate a change in sampling protocol. Such site conditions may include, but are not limited to, a significant change in water level, water chemistry, temperature or field parameters. The three wells drilled in 2021—WW-1A, WW-2A, and WW-3A—are within 100 feet of each other, all completed in the shallow aquifer, with minor elevation differences (ranging from 2928 to 2930 feet), and similar lithologic and well construction characteristics. WW-1A extends to 30 feet bgs (screened 10 to 30 feet), WW-2A extends to 25 feet bgs (screened 10 to 25 feet), and WW-3A extends to 28 feet bgs (screened 13 to 28 feet). The well completion reports for these wells are included in **Appendix A-1**. Given these similarities and the minimal drawdown observed at WW-2A during aquifer testing, only WW-2A will be sampled to represent groundwater conditions in this area.

West of the disturbance area at the mine, the downgradient shallow aquifer wells consist of MW-5 and MW-6. Both wells are situated downgradient from the Process Water Ponds and the Woodward mining operation. Both wells were completed in September 2024 to depths between 62 and 71 feet. Although these two wells (MW-5 and MW-6) represent downgradient site conditions, no baseline data was collected on the shallow aquifer in this area before the mining and processing at Woodward commenced. The samples collected from these wells only reflect current site conditions and do not reflect compliance points where one can compare the current results to an undisturbed baseline. These two wells, MW-5 and MW-6, will continue to be sampled in accordance with permit conditions. In addition to these two wells MW-7, which is a shallow well

downgradient from the majority of mining at Woodward will be sampled. This well is also located upgradient of the Process Water Ponds and adjacent to the deep aquifer well identified as the Production Well.

In addition to these shallow aquifer wells, Knife River, in consultation with DOGAMI and DEQ, has agreed to construct three additional shallow aquifer wells. Knife River proposed locations are identified on **Figure 1A** and include MW-8, MW-9 and MW-10. These three wells will be completed in accordance with DEQ and DOGAMI guidelines. They will be sampled following well completion and development and will be integrated into the fourth quarter, 2025 Knife River sampling plan.

In addition, Knife River is planning to sample several deep aquifer wells, shown on **Figure 1**, at or immediately adjacent to the property, including the Production Well, the Woodward Shop Well, the Mikulski Deep Well (3992-Deep), and the Kriege Deep Well (4144). Knife River has been sampling the Mikulski and Kriege wells since 2016, prior to the beginning of Woodward Mine operations.

As requested by DOGAMI and shown in **Figure 1**, Knife River proposes to sample several surface water bodies, including: Knife River's Process Water Ponds; Knife River's Water Intake near the ditch/slough; and Standing Water within the last unreclaimed mine cell (if water is available) on the Woodward property. Surface water will be sampled from the water's surface to a depth of 30 centimeters (or shallower depending upon the water depth) to the extent that water is available at the time of sampling, following Environmental Protection Agency (EPA) standard procedures (EPA, 1983). At the time of sampling, the sampler will document site conditions with photographs, including water clarity, weather, flow rate, pH, temperature, turbidity, and electrical conductivity. Sample integrity will be preserved by using clean, dedicated equipment, and samples will be properly documented on a Chain of Custody form. With regard to the process water ponds, Knife River will sample these ponds at two locations: Pond 1 (WWSP1), which generally receives "first" water from the processing plant, and Pond 3 (WWSP3). All surface water sources, including the process water ponds, will be sampled to the extent that there is water available to sample (at least 12 inches of water must be present in the respective pond) and the processing plant shall have been operational within the previous 30 days. At the time of sampling, the sampler will document site conditions, including whether makeup water was being added at the time of sampling, makeup water source, how long it has been since makeup water was added and last source of water, whether gravel processing was ongoing during sample collection or if not how long it has been since gravel processing occurred, flow rate, pH, temperature, and other relevant parameters.

With regard to the source of process/makeup water, it is important to note that during the irrigation season, makeup water generally comes from the Water Intake (**Figure 1**), and during the remainder of the year, makeup water is produced from the Production Well (**Figure 1**). The Woodward Processing Plant will operate when an adequate volume of "rock" is available and plant operations are economically justified. The Annual Report submitted by Knife River in accordance with this SAP will identify when the Plant is operating and when the Plant is shut down. . When in operation, make up water is typically added to the largest pond (Pond 4). Water may also be added to any of the other ponds when needed to get them to the proper water level for circulation between the ponds but generally the ponds tend to equilibrate during normal plant operations. During plant operation make up water is added, generally at a rate of 150 gallons per minute (gpm). After weekends, holidays, prolonged shutdowns or at the start of the season ponds are filled at a higher rate, which is dependent on a rate agreed to by the Ochocho Irrigation District and their agreement is based on availability. When Knife River sources "make up" water from their deep aquifer well (Production Well), they can fill the ponds at a higher rate, but again this is generally on a one-time

basis when they are filling the ponds. The Production Well water right allows pumping up to 500 gpm.

The WW-Standing Water (**Figure 1**) sampling point can be the most difficult from which to obtain a valid water sample and may have questionable technical value. It has only been added to this sampling plan based on DOGAMI's request of October 25, 2024. This sampling point varies in available water and is greatly influenced by direct precipitation and stormwater. Generally, Knife River protocol does not endorse sampling standing or stagnant water, but based on DOGAMI's request, Knife River is willing to collect a sample from this location.

In relation to the sediment sampling program, Knife River will sample sediment within the Process Water Ponds depending on the availability of water versus sediment or slimes. Knife River plans to collect sediment samples from Pond 1 (coarsest sediment: SED1) and Pond 4 (finest sediment (SED2). Additional sediment samples will be collected at three other locations: the surface water intake (SED3); reclamation soils in the northeast portion of Woodward (SED4); and native soils near the northeast corner within the Vanier property (SED-5). Soil samples will be collected semiannually and are identified on **Figure 1**.

2.2 Sample Parameters and Frequency

Knife River has surveyed all its completed monitoring wells, including “ground” and “top of casing” measurements, to assess changes in groundwater levels and flow directions during the monitoring period. The new wells (MW-8, MW-9 and MW-10) will be surveyed upon completion. “Top of casing” will serve as the reference point for all static water level measurements. Knife River proposes to install pressure transducers and measure water levels continuously (data recorded at a minimum of 12-hour intervals) in MW-1, MW-2, MW-3, MW-4, WW-2A, MW-5 (or MW-10) and a newly installed downgradient well (MW-8 or MW-9). Data will be downloaded quarterly. For wells with continuous water level monitors, measurements will be manually checked and calibrated monthly for the first three months, then quarterly thereafter. Shallow aquifer monitoring wells without transducers will be manually measured and monitored monthly for a minimum of one year. Changes in the water level measuring schedule will require approval from DOGAMI and DEQ. Additionally, monthly water level measurements will be collected for all offsite shallow aquifer wells including wells 4144, 3992, 3320, and the Vanier House Well for a similar one-year period. Water levels for the deep aquifer wells will be collected on a quarterly basis. **Table 3** presents Sampling Schedule and Frequency.

Static water level measurements will be taken from all monitoring wells (including those with transducers) identified on **Figure 1** at the time of sample collection. Synoptic gauging events (gathering depth to water level measurements at all wells) will be performed before purging and sampling, and wells will be allowed to equilibrate as needed before gauging. Following EPA protocols (EPA, 1991), equilibration is confirmed when water level fluctuations are less than 0.05 feet in three successive measurements after removing any well cap. Knife River will attempt to gather water levels on domestic or industrial water supply wells at opportune times, but it may not always be practical to obtain static water levels on these wells. Water elevation data will be collected quarterly at the “ditch/slough Water Intake” site and ponds. Knife River will set a staff gage at these three locations, and the measurement point will be surveyed and reported.

As monthly water level measurements are made on the monitor wells, Knife River will also visit the surface water sites identified on **Figure 1** and make and record visual observations (e.g. “surface water intake in operation”; “irrigation ditch start/stop”; “filling of ponds and source water for

filling”). Knife River will collect quarterly water quality samples from the wells and quarterly surface water samples to assess seasonal impacts, if any, on water quality from the sources identified in **Figure 1**. The groundwater and surface water data collection will consider hydrologic conditions such as end of summer (i.e., low water condition); springtime (i.e., high water condition); during irrigation season; and after ditches are shut off. After one year, Knife River will petition DOGAMI and DEQ to either continue the current strategy or may petition to adjust monitoring frequency or parameters.

Knife River commits to monthly samples of seven shallow aquifer wells for one four-month irrigation period. These wells will include: MW-2, WW-2A, MW-7, MW-5, MW-6, newly constructed MW-8 and newly constructed MW-9. *Knife River will agree to collect monthly water levels of all shallow wells and if significant changes are encountered in a particular well (as defined by a 20% increase or decrease in saturated thickness), this well will be added to a monthly water quality schedule for a duration up to four months.* Knife River will collect field parameters during well purging and sampling for all field parameters, including pH, conductivity (EC), temperature, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) measured in mV as Eh. In addition to these field parameters, Knife River will utilize a CHEMetrics K-6210 (ferrous and total iron test kit) to address redox conditions using ferrous vs ferric iron in the shallow groundwater as a surrogate during this four-month irrigation period. Following the four-month field testing for ferrous iron, Knife River will make a determination of whether to extend this effort to additional groundwater samples (either deep or shallow aquifer wells). Field parameters will also be measured prior to sampling from surface water sources (**Figure 1**) and will include pH, EC, temperature (°C), DO, ORP, and turbidity (NTU). All EPA sample handling and Chain of Custody protocols will be followed.

Knife River also commits that during one sampling round they will assess whether the use of different well purging methods has any material effect on water quality results. Four monitor wells (MW-2, MW-5, MW-6, and MW-7) will be purged and sampled using both purge methods to compare analytical results and thereby determine if there is any significant difference in analytical results based on the purge method. The purging and sampling of these wells using the two different methods will be completed on two different days within the same quarterly sampling event. Should a significant difference be determined, Knife River will discuss the difference with DEQ and DOGAMI and identify the most applicable and representative protocol for sampling all wells without dedicated pumping equipment during future sampling rounds.

Samples from the groundwater wells and surface water sources will be submitted to an EPA-certified laboratory for analysis. Analytical methods and detection limits are approved by both national and state governing authority including NELAP, **Appendix A2** includes a list of analytic methods, detection limits and reporting limits which are current as of May 2025. These methods, laboratory detection and reporting may change. **Appendix A2** will be updated should these methods, laboratory detection limits or reporting limits change during this investigation. All metals will be analyzed for both total and dissolved species. Knife River intends to submit all water and soil samples to Neilson Research Corporation of Medford, Oregon, for testing. Table B1 in **Appendix B** presents a list of laboratories in Oregon that are certified by both the EPA and the Oregon DEQ. Lab certifications can also be found in **Appendix B**. The general analyte (GA) list that will be performed on all groundwater and surface water samples will include the following:

- Laboratory pH, EC, and Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)

- Dissolved and total manganese (Mn)
- Dissolved and total iron (Fe)
- Dissolved and total aluminum (Al)
- Dissolved and total arsenic (As)
- Dissolved and total copper (Cu)
- Field test for ferrous iron and complete a calculation for ferric iron (applicable to shallow aquifer completions). This will apply to the limited data set tested during the four-month irrigation period. If value is mutually agreed upon, additional field testing for ferrous iron of select wells may be added to the SAP.
- Nitrates (NO₃+NO₂) as N
- Major Cations: calcium, magnesium, sodium, potassium
- Major Anions: fluoride (F), sulfate (SO₄), chloride (Cl), carbonate (CO₃), and bicarbonate (HCO₃)
- Total coliform
- Turbidity (NTU)

Knife River will sample select monitoring wells completed in the shallow aquifer for the following petroleum hydrocarbons (PH):

- Gasoline Range Organics (GRO)
- Diesel Range Organics (DRO)

Specifically Knife River plans to complete the analysis for hydrocarbon constituents one time for all of the shallow aquifer wells, including MW-6 and any new shallow wells completed downgradient of the Process Water Ponds (MW-8, MW-9 and MW-10). After that sampling event, Knife River plans to sample MW-1, MW-2, MW-3, MW-4, and WW-2A quarterly for DRO and GRO to establish a Vanier Baseline for at least one year. If GRO or DRO is detected in any well during any sampling event, Knife River will conduct follow-up sampling for the appropriate parameter, within a month of receiving sample results. No sampling of the deep aquifer wells for these additional analytes is planned.

Finally, Knife River will collect a minimum of two soil samples from the sediment within the wash pond complex, one sediment sample at the Water Intake site, one soil sample from a reclaimed mine cell (SED4) and one soil sample upgradient from the Woodward mining operation (SED5). These five sediment samples will be collected twice during a one-year sampling period (2026) as shown on **Figure 1**. The wash pond samples (SED1 and SED2) will be collected using a California Tube pushed into the sludge and will be near surface samples (depth 0-6 inches). Each sample will be capped and sealed and delivered to the laboratory. SED3, the Water Intake sample will be a near surface sample (0-6 inches) because of the limited depth of sediment and its direct interaction with the irrigation water. The two remaining samples (SED4 and SED5) will be collected from Woodward reclaim and Vanier native soils. These two samples (SED4 and SED5) will be collected at a depth of 12 to 15 inches and where pertinent below the organic horizon. All samples will be placed in a Ziploc bag, labelled, and delivered to the laboratory. The soil samples will be analyzed for manganese and iron using a variety of methods:

- Total Metals (Mn, Al, Fe, As, Nitrate as N). Total Metals indicates as the name states total metals or whole element analysis. It is accomplished after “acidification” (use of a strong acid) of all of the sediment and an analysis of all metals present- whether mobile or immobile.

- Extractable Metals (AB-DPTA) pertinent to Mn and Fe. Extractable metals indicates those metals which can be extracted by an organic solvent (AB-DPTA) and reflect the metal concentration that is likely to go into solution and are available for plant uptake or movement through the unsaturated or vadose zone.
- RCRA-based TCLP extraction pertinent to Mn and Fe. As the name suggests, this is the standard method used in the determination of hazardous waste-recognizing that neither Mn, Al, nor Fe are determined to be a hazardous waste or a hazardous chemical. In fact, there is no maximum contaminant level for Mn and EPA has only established an aesthetic standard and a Health Advisory Level. The TCLP extraction method uses acetic acid and sodium hydroxide as an extraction solvent.

In addition, all soil analyses will be analyzed for nitrate-nitrogen. This analysis will address the impacts of fertilizers on the soils and water courses that may influence shallow aquifer water chemistry.

2.3 Sample QA/QC

1. Knife River plans to collect one duplicate sample and one blank per sampling event. In addition, one rinseate or equipment blank sample will be collected during the monitoring period. As such, the duplicate may be obtained from either a surface water or groundwater source but will be collected to check on the laboratory results. The blank and rinseate samples will provide data regarding field sampling methods. Should a duplicate sample show greater than 25% variance, that sample will be considered compromised and the sampling effort (all samples) will be considered suspect. Knife River will take multiple duplicates, essentially 40% of the samples during the next sampling period will be duplicated. We would have to wait until the next sampling period because the lab turnaround to receive results will likely push the resampling into that quarter. Should a field blank fall outside of an acceptable range (greater than 10X the anticipated level), Knife River will complete a multi-stage process using analytical rules balanced by the sampling objectives. If the variant (contaminant) within the blank is not a parameter of immediate interest, resampling will not be necessary, but a field note will be provided with data results. If the variant is a parameter of immediate interest, resampling within two weeks of receipt of results will be necessary and a change in sampling protocol will be implemented.

2.4 Sample Collection Protocol

Knife River will continue to collect and document sample collection in accordance with EPA protocols and will deliver all samples to the respective laboratory within the required sample holding times. A list of approved Oregon laboratories is included in **Appendix B**. Knife River sampling protocol includes:

- **Equipment and Preparation:** Arrive on-site with laboratory-approved sample bottles, Chain of Custody forms, laboratory-provided preservatives, field filters (as applicable), ice, pumping equipment, and shipping coolers.
- **Site and Well Condition Documentation:** The sampler will document the condition of the well or sampling site (for surface water and soil), including any observations of vandalism, access issues, water use, or whether the well is pumping. Field notes will also record weather conditions, recent heavy rainfall, adjacent land irrigation, standing water on-site, and any recent site activities.

- **Water Level and Well Pumping Observation:** Measure the water level (depth to water for wells using a water level meter) and note if the domestic well is pumping. Wells will be allowed to equilibrate as needed before gauging. Equilibration is confirmed when water level fluctuations are less than 0.05 feet over three successive measurements.
- **Flow and Depth Estimates:** Estimate water flow (for surface water) or the depth for soil sampling. Collect photographs on site of all surface water and sediment locations.
- **Dedicated Tubing:** The sampler may use tubing that is dedicated to each respective well, assuming the tubing was new prior to sampling. This tubing will only be used to purge and sample the same well during each sampling event.
- **Well Purging Procedure (See Section 2.2) for the Assessment of Procedures:** The sampler will calculate the required purge volume using the measured depth to water and total well depth, ensuring the sample represents groundwater from the aquifer rather than the well casing. Based on **Table 3**, either a minimum of three casing volumes will be purged using a dedicated submersible pump already installed in a production or domestic water supply well, or low flow purging principles will be used for wells that do not have dedicated pumping equipment installed. Both methodologies (three casing volume and low flow purge methods) are acceptable EPA protocols for collecting representative groundwater samples for metals (Mn, Fe, Al). In an effort to address EPA/DEQ review comments, Knife River will incorporate both the three casing volumes purging method with parameter stabilization and low flow purging techniques based on the well type and presence of existing pumping equipment.

The purging method to be used for each respective well is identified on **Table 3**. For any well not equipped with dedicated pumping equipment, at least one casing volume will be purged with the pump set in the middle of the screen before sampling under the low flow purging method. Any production or domestic water supply well with dedicated pumping equipment will be purged and sampled using the existing pumping equipment with the pump intake set at its current depth. Under both purging approaches, water quality parameters will be monitored throughout the purging process to identify when water quality parameters have stabilized, and representative aquifer water is being discharged. The revised procedure acknowledges the importance of minimizing drawdown in monitoring wells (<0.3 feet, ideally) regardless of the pumping rate used for purging.

- **Field Parameters Measurement:** Using a handheld water quality meter, the sampler will measure field parameters, including pH, conductivity (EC), temperature (°C), and turbidity (NTU), dissolved oxygen (DO), and oxidation-reduction potential (ORP) as measured in mV (Eh) at roughly 2-to-5-minute intervals throughout the purging period prior to sampling.
- **Field Parameter Stabilization:** If field parameters stabilize after three casing volumes or at least one volume depending upon the purging method used, the sampler will collect the sample, filter in the field as necessary, and/or preserve samples as required. If field parameters do not stabilize or if additional purging is deemed necessary, the sampler will continue purging the well until all field parameters stabilize and the well is yielding groundwater representative of the aquifer as determined by the sampler's professional judgment. According to EPA guidelines (EPA, 2015), parameters are considered stable

when they show minimal variation (typically within $\pm 10\%$) over 15 to 30 minutes, indicating the water is representative of the aquifer. Stabilization thresholds are:

- Water level: 0.3 feet
 - pH: ± 0.5 units
 - Conductivity: $\pm 3\%$ of previous reading
 - Temperature: $\pm 0.2^\circ\text{C}$
- **Final Field Parameter Measurement:** Prior to completing sampling at each well, the sampler will measure a final depth to water while pumping and record the following final parameters: pH, conductivity (EC), temperature ($^\circ\text{C}$), dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity (NTU). All metals samples will be field filtered ($0.45\mu\text{m}$) and preserved so dissolved analysis can be completed.
 - Metals samples (both Total and Dissolved) will be preserved in the field, and the pH will be verified to ensure it is at or below 2.
- **Surface Water Sampling:** Surface water samples and in particular “pond water” samples (WWSP1 and WWSP3) will contain significant volumes of suspended solids. As such field filtration may be difficult. In an effort to meet the analytical requirements for both dissolved and total metals, the sample will either be field filtered ($0.45\mu\text{m}$) or the sampler will cool to 4°C and send to the laboratory in an unpreserved bottle. This will allow the accurate completion of a dissolved analysis in addition to total metals. For pond water samples, the sampler will analyze EC and pH in the field prior to filtration.
- **Soil Sampling Considerations:** For soil samples, the sampler will employ the following methods to ensure accurate and representative soil composition:
 - The sampler will target collecting soil from the mineral layer, avoiding surface layers that may contain excess organic matter. In areas where organic material is prevalent, sampling will focus on the deeper mineral horizon to ensure that the sample reflects the true soil composition. It is anticipated that SED1, SED2 and SED3 will be near surface (0-6 inches) and SED4 and SED5 soil samples will be collected at a depth of 12 to 15 inches.
- **Sample Labeling and Shipping:** All water samples will be labeled and placed in a shipping container or cooler with ice to maintain a temperature of 4°C .
- **Chain of Custody:** The sampler will fill out the Chain of Custody form, coordinate with the laboratory for sample receipt, and ensure the sample is shipped promptly to the laboratory to meet holding times.
- **Holding Times and Preservation:** Holding times are critical and vary depending on the parameter (e.g., coliform has a very short holding time). Based on EPA protocol, the holding time for most unpreserved metals is 48 hours.
- **Soil Sample Shipping:** Soil samples can be placed in plastic Ziploc bags, labeled and shipped to the laboratory for analysis. Chain of Custody forms will accompany soil samples.

- **Decontamination Procedures:** As necessary, decontamination of all multi-use equipment between wells will be performed using an Alconox and distilled water mixture to clean equipment and be rinsed with distilled water.

2.5 Data Analysis Procedure

In compliance with OAR 340-040-0030(2), this sampling plan includes a comprehensive Data Analysis Procedure to evaluate analytical data from groundwater, surface water, and soil/sediment samples. The analysis will use statistical methods such as comparative and trend analysis, data normalization, and spatial variability assessments to evaluate water quality against regulatory standards. Data will be analyzed quarterly to assess trends, detect potential impacts from site operations, and identify exceedances of water quality criteria. Special focus will be placed on seasonal variations, spatial patterns, and the migration of contaminants, particularly manganese.

Potential impacts on groundwater quality will be quantified by comparing manganese concentrations collected at upgradient background wells with those from wells downgradient of facility operations. This interwell analysis will be conducted using the non-parametric Kruskal-Wallis test to determine if there are statistically significant differences in manganese concentrations (mg/L) between samples from background and potentially impacted wells. The Kruskal-Wallis test evaluates the differences in groups but avoids the requirement of normality. Analyses and data visualizations will be conducted using the statistical program R (R Core Team 2024). The frequency of analysis will repeat quarterly to align with ongoing sample collection intervals.

Because a confining layer separates the shallow and deep aquifers, this analysis will focus on monitoring wells that draw groundwater from the uppermost (shallow) aquifer, which is more likely to be affected by site activities. For this analysis, shallow wells are defined as those less than 75 feet deep. The background wells include MW-1 and MW-2, as well as the Vanier House Well, which is located upgradient (Wenck 2021; water table map 2024). These wells are located approximately 1,500 feet northeast of the Woodward property line and about 3,000 feet upgradient from formerly active mining operations. Additional background wells may include MW-3, MW-4 and perhaps 3320 (Dairy Well). The immediately downgradient shallow wells (MW-5, MW-6, MW-7 and after well completion MW-8, MW-9 and MW-10) are also situated on the Woodward Site. Another cluster of shallow wells exist outside the permit area and include CRO 953 (Elbek), CRO 939 (Porfily) and CRO 948 (McCormick). These three wells shall be analyzed in a third group. These wells were sampled by MFA twice and Knife River recommends that DEQ sample them quarterly in conjunction with Knife River's sampling program. If landowner consent could be obtained, Knife River could add these three wells into their sampling program.

Following data collection, Knife River will develop a Conceptual Site Model (CSM) to assess the spatial distribution and migration of contaminants, considering interactions between shallow and deep aquifers, and the influence of subsurface features like improperly abandoned wells or buried channels as appropriate. Findings from the data analysis will guide corrective actions or adjustments to the sampling program to maintain regulatory compliance, with reports reviewed by qualified personnel to determine necessary changes to monitoring protocols or remedial actions.

3.0 DATA EVALUATION AND REPORTING

Knife River will collect, validate, and manage groundwater, surface water, and soil data in a centralized database, ensuring quality control through EPA-compliant validation procedures. Statistical analyses, including trend and spatial variability assessments, will be used to evaluate changes in water chemistry over time. If concentrations exceed regulatory thresholds, further statistical evaluations will be conducted to identify sources and potential impacts, with findings informing updates to the CSM to refine the understanding of contaminant behavior and migration pathways. Knife River has made efforts and will continue to evaluate the high groundwater inflow rates that were observed in the shallow aquifer in 2021 at the east end of Woodward (Stantec, 2021). That information will be considered along with information about potential sources, such as an improperly abandoned deep aquifer well or a buried channel in the shallow aquifer.

Groundwater flow and contaminant transport will be assessed through monitoring well data, potentiometric surface maps, and flow modeling, considering factors such as hydraulic conductivity, groundwater flux, and redox conditions. Results will be compiled into annual reports (spring), including analytical results, statistical trends, appropriate statistical analysis, regulatory comparisons, and CSM updates. Any CSM will be complicated by the fact that no site-specific baseline water quality data were collected prior to mining and historic data suggests manganese “hot spots” are present in the general area of the mine and that these “hot spots” existed prior to mining. Reports will be shared with DEQ, DOGAMI, and stakeholders, with recommendations for monitoring adjustments based on observed trends and regulatory feedback. The annual reporting will also identify data gaps and suggest means to address such data gaps.

4.0 SUMMARY

Knife River has developed a comprehensive sampling and monitoring plan for the Woodward and Vanier properties, which will involve groundwater and surface water sampling over a minimum one-year period. Groundwater monitoring will include shallow and deep aquifer wells, as well as offsite wells where neighbors have granted access for sampling. A total of 15 wells, both shallow and deep, will be sampled quarterly, and the water levels in these wells will be monitored manually monthly and at the time of sampling. Subsequent to the agreement with DOGAMI and DEQ, Knife River will add three additional shallow wells to the sampling program for a total of 18 wells (shallow and deep) and **Table 1** will be updated when these three additional wells are completed. Additionally, Knife River will install pressure transducers in five upgradient monitoring wells and two downgradient wells to continuously measure water levels. Surface water sampling will be conducted quarterly at key locations, including Knife River’s processing ponds, Water Intake, and standing water areas, as identified by DOGAMI. A sediment sampling plan will also be included as part of this effort. The water and sediment samples will be analyzed for a variety of chemical constituents of public concern, including manganese, aluminum, arsenic and iron, as well as major anions, cations, nitrates, and coliforms. In compliance with Crook County land use conditions, groundwater samples from Vanier wells (MW-1, MW-2, MW-3, MW-4 and WW-2A) will also include testing for GRO and DRO. At EPA’s request, Knife River will complete a one-time sampling of all shallow wells for GRO and DRO.

All sample data collection, handling, and delivery to an EPA-certified laboratory will follow strict EPA Sample Handling and Chain of Custody protocols. Quarterly groundwater sampling and quarterly surface water sampling will continue for at least one year, with all data being reported to

regulatory agencies such as DOGAMI, DEQ, and Crook County. Monthly water quality sampling for seven shallow wells will take place over a four-month irrigation period. The data collected will be analyzed for trends and compared to regulatory standards. An annual report, submitted no later than April 30, 2027, will summarize analytical results, trend analysis, and regulatory comparisons, and will include updates to the CSM. Annual reporting will continue each year thereafter until the investigation is terminated in consultation with DOGAMI and DEQ. After one year, based on data analysis and regulatory feedback, Knife River may petition the regulatory agencies for adjustments to sampling frequency, analytical constituents, or sample locations. The full set of field and laboratory certifications will accompany the data reports, ensuring compliance with all relevant regulations.

5.0 REFERENCES

R Core Team. 2024. R: A language and environment for statistical computing. R foundation for statistical computing. Vienna, Austria.

Stantec, 2021, Woodward/Vanier Aggregate Mine Hydrogeologic Characterization. Consultant's report prepared for Knife River Corporation.

United States Environmental Protection Agency. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. June 1996, updated 2015, <https://www.epa.gov/sites/default/files/2015-06/documents/lwflw2a.pdf>.

United States Environmental Protection Agency. *Methods for Collecting and Analyzing Groundwater Samples*. EPA/600/4-91/002, 1991.

United States Environmental Protection Agency. *Manual of Methods for Chemical Analysis of Water and Wastes*. Environmental Protection Agency, 1983.

Tables

Table 1. KRC Shallow Aquifer Monitoring Wells

Table 2. KRC Deep Aquifer Monitoring Wells

Table 3. Proposed Sampling Plan Schedule

Table 1. KRC Shallow Aquifer Monitoring Wells

CROO Number	Current Homeowner/ Well Name	Well Owner Name	Tax Lot	Address	Completed Depth	Completed Perf or Screen	Depth to First Water ¹ (ft bgs)	Yield (gpm)	Completed Date	Aquifer Lithology	Interval (ft bgs)	Temperature (deg F)	Measuring Point Elevation NGVD 1929	Static Water Level October 2024
55482	MW1	Knife River	1415140000103	4755 NW Stahancyk Ln. Prineville, OR 97754	36	16	13	5	3/4/2024	WB brown silty sand	17-36	53	2910.9	2906.4
55480	MW2	Knife River	1415140000103	4755 NW Stahancyk Ln. Prineville, OR 97754	36	16	16	10	3/5/2024	WB light brown silty gravel	16-36	53	2923.0	2912.2
55481	MW3	Knife River	1415140000103	4755 NW Stahancyk Ln. Prineville, OR 97754	35.5	16	17	10	3/8/2024	WB silty gravel; WB clayey silt	17-25; 25-35.5	53	2925.6	2910.1
55483	MW4	Knife River	1415140000103	4755 NW Stahancyk Ln. Prineville, OR 97754	36	16	26	10	3/11/2024	Brown silt and clay; clay gravels	20-26; 26-36	53	2927.9	2907.4
55570	MW5	Knife River	1415140000703	4755 Stahancyk Ln. Prineville, OR 97754	71	51	25	20	9/13/2024	Grey sand with silt	51-71	53	2901.9	2880.1
55571	MW6	Knife River	1415140000702	4755 Stahancyk Ln. Prineville, OR 97754	62	42	46	15	9/17/2024	Gravel; silt and sand	24-34; 46-62	53	2904.1	2869.9
55572	MW7	Knife River	1415140000703	4755 Stahancyk Ln. Prineville, OR 97754	54.5	34.5	30	10	9/17/2024	Fine sand	29-45	53	2908.1	2886.4
55017	WW-1A	Woodward Land & Timber LLC	1415140000703	4755 NW Stahancyk Ln. Prineville, OR 97754	30	10	21	NR	1/18/2021	Sand, gravel, and cobbles	0-30	56	2928.0	2907.4
55018	WW-2A	Woodward Land & Timber LLC	1415140000703	4755 NW Stahancyk Ln. Prineville, OR 97754	25	10	20	NR	1/18/2021	Sand, gravel, and cobbles	0-25	56	2927.4	2907.5
55019	WW-3A	Woodward Land & Timber LLC	1415140000703	4755 NW Stahancyk Ln. Prineville, OR 97754	28	13	20	NR	1/20/2021	Sand, gravel, and cobbles	10-28	56	2924.8	2908.3
977	3992/Mikulski	Elmer Self	1415230000111	3992 NW Stahancyk Ln. Prineville, OR 97754	50	30	NR	30	3/29/1969	Sand and gravel	28-50	56	2928.0	2902.1
NR	Vanier	NR	1415140000103	6487 NW Lamonta Rd. Prineville, OR 97754	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
970	3320/Johnson	Ray Fox	1415230000102	3320 NW Stahancyk Ln. Prineville, OR 97754	40	20	23	15	8/16/1982	Fine Sand	22-40	56	NR	NR
Notes: 1 – first occurrence of observable water during drilling and/or installation of the well. ft bgs = feet below ground surface gpm = gallons per minute deg F = degrees Fahrenheit WB = water bearing NR = not reported														

Table 2. KRC Deep Aquifer Monitoring Wells

CROO Number	Current Homeowner/Well Name	Well Owner Name	Tax Lot	Address	Completed Depth	Completed Perf or Screen	Depth to First Water	Yield (gpm)	Completed Date	Aquifer Lithology	Interval (ft bgs)	Temperature (deg F)	Measuring Point Elevation NGVD 1929	Static Water Level October 2024
55536/55470	Knife River	Knife River Production	1415140000703	4755 Stahancyk Ln. Prineville, OR 97754	291	257	7	291	6/24/2024	Fractured claystone	248-291	52	2906.6	2893.5
50140	Woodward	Prineville Sawmill Co.	1415140000702	4755 Stahancyk Ln. Prineville, OR 97754	255	250	60	300	7/15/1996	Gravel and sand	236-255	54	2913.4	2879.6
54339	3992-Deep/Mikulski	Adam Mikulski	1415230000114	3992 NW Stahancyk Ln. Prineville, OR 97754	281	266	30	40	3/11/2016	Fine sand, gravel, and broken claystone	266-281	57	2928.0	2885.5
329	4144/Kriege	Ron Wilkinson	1415230000116	4144 NW Stahancyk Ln. Prineville, OR 97754	260	255	250	14	11/18/1991	Broken claystone	250-260	62	2919.6	2885.1

Table 3 Proposed Sampling Plan Schedule

Location Name/Identifier	Sampling Type	Purging and Sampling Method for Wells ⁴	Sampling Frequency ¹	Sample Parameters ²	Notes ³
MW-1	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Upgradient (east of Woodward mine-related disturbance)
MW-2	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Upgradient (east of Woodward mine-related disturbance)
MW-3	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Upgradient (east of Woodward mine-related disturbance)
MW-4	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Upgradient (east of Woodward mine-related disturbance)
MW-7	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Upgradient of processing ponds
WW-2A	Shallow Aquifer Well Upgradient	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Will be sampled instead of WW-1A and WW-3A; Upgradient of Woodward Mine
Vanier House Well	Shallow Aquifer Well Upgradient	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Included before and after Vanier expansion
Mikulski (3992)	Shallow Aquifer Well (Cross Gradient – Residential)	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Residential Well
Johnson (3320)	Shallow Aquifer Well (Cross Gradient – Residential)	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Residential Well
MW-5	Shallow Aquifer Well (Downgradient)	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Downgradient of Process Water Ponds and mining operation
MW-6	Shallow Aquifer Well (Downgradient)	Low Flow	Quarterly, for a minimum of 1 year	GA & PH	Downgradient of Process Water Ponds and mining operation
MW-8	Shallow Aquifer Well (Downgradient)	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Downgradient of Process Water Ponds and mining operation
MW-9	Shallow Aquifer Well (Downgradient)	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Downgradient of mining operation
MW-10	Shallow Aquifer Well (Downgradient)	3 Well Volumes	Quarterly, for a minimum of 1 year	GA & PH	Downgradient of Process Water Ponds and mining operation
Knife River Production Well	Deep Aquifer Well	3 Well Volumes	Quarterly, for a minimum of 1 year	GA	East of Process Water Pond; Source of process/makeup water when surface water source is not available
Woodward Shop Well	Deep Aquifer Well	3 Well Volumes	Quarterly, for a minimum of 1 year	GA	Southwest of Process Water Pond
Mikulski Deep Well (3992-Deep)	Deep Aquifer Well	3 Well Volumes	Quarterly, for a minimum of 1 year	GA	South and adjacent to Woodward
Kriege Deep Well (4144)	Deep Aquifer Well	3 Well Volumes	Quarterly, for a minimum of 1 year	GA	South and adjacent to Woodward
Knife River Processing Ponds (WWSP1)	Surface Water Sampling Site	NA	Quarterly, for a minimum of 1 year	GA	Process Water Pond 1 (initial processing) when water available
Knife River Processing Ponds (WWSP3)	Surface Water Sampling Site	NA	Quarterly, for a minimum of 1 year	GA	Process Water Pond 3 (3 rd treatment pond before makeup water enters; when water is available.
Knife River Water Intake (ditch/slough)	Surface Water Sampling Site	NA	Quarterly, for a minimum of 1 year	GA	Source of process/makeup water during irrigation season; when water is available
Standing Water (WW Standing Water)	Surface Water Sampling Site	NA	Quarterly, for a minimum of 1 year	GA	Unreclaimed mine cell with ponded water; when water is available
Pond 1 Sediment (SED1)	Coarsest sediment at the bottom of the Process Water Pond 1	NA	Biannually	manganese, aluminum, nitrate as N, arsenic and iron	Sampled near surface (0-6 inches).t; Mn will be run using three extraction methods: Total; ABDTA and TCLP. All other parameters will be analyzed as totals
Pond 4 Sediment (SED2)	Finest sediment at the bottom of the Process Water Pond 4	NA	Biannually	manganese, aluminum, nitrate as N, arsenic and iron	Sampled near surface (0-6 inches).t; Mn will be run using three extraction methods: Total; ABDTA and TCLP. All other parameters will be analyzed as totals
Water Intake (SED3)	Sediment accumulated at the bottom of the irrigation ditch in the vicinity of the Knife River makeup water intake	NA	Biannually	manganese, aluminum, nitrate as N, arsenic and iron	Sampled near surface (0-6 inches).t; Mn will be run using three extraction methods: Total; ABDTA and TCLP. All other parameters will be analyzed as totals
Reclaimed Soil Sample (SED4)	Topsoil sample collected off reclaimed land . Reclamation >3 years	NA	Biannually	manganese, aluminum, nitrate as N, arsenic and iron	Sampled twice per year. Depth 12-15 inches, Mn will be run using three extraction methods: Total; ABDTA and TCLP. All other parameters will be analyzed as Total only
Native Soils Sample (SED5)	Topsoil sample collected off native farmed land	NA	Biannually	manganese, aluminum, nitrate as N, arsenic and iron	Sampled twice per year. Depth 12-15 inches, Mn will be run using three extraction methods: Total; ABDTA and TCLP. All other parameters will be analyzed as Total
Notes 1 – Sampling frequency may be reduced with DOGAMI approval and DEQ consensus if the data demonstrate no operational or seasonal variation. Sampling will continue until DEQ and DOGAMI provide written notice to Knife River. Knife River has agreed to sample 7 shallow wells on a monthly basis for 4 months during the 2026 irrigation season. 2 – Sample parameters listed in Section 2.2. GA refers to the general analytes listed in Section 2.2. These will be analyzed quarterly at all groundwater and surface water sites. PH refers to the GRO and DRO analytes that will be analyzed once at all shallow aquifer wells, and then quarterly at only MW-1, MW-2, MW-3, MW-4, and WW-2A for one year. 3 – Sample locations generally shown on Figure 1 . Once agreed, newly constructed wells (proposed Figure 1A) will be added to Tables 1, 2 and 3 . 4 – Purging and sampling method will be established site specifically following evaluation as discussed. Knife River commits that during one sampling round they will test the applicability of each procedure. Four monitor wells (MW-2, MW-5, MW-6, and MW-7) will be purged and sampled using both purge methods to compare analytical results and thereby determine if there is any significant difference in analytical results based on each respective method.					

Figures

Figure 1	Knife River Monitoring Locations
Figure 1A	Knife River Proposed and Current Water Monitoring Locations
Figure 2	Geologic Cross Section and Well Locations
Figure 3	Geologic Cross Section A-A'
Figure 4	Geologic Cross Section B-B'
Figure 5	Geologic Location Map C-C'
Figure 6	Geologic Cross Section Map C-C'
Figure 7	Shallow Aquifer Water Table Map



NOTE: SEE TABLE 3 FOR FURTHER DETAILS REGARDING MONITORING LOCATIONS AND SAMPLING FREQUENCY

MONITORING LOCATIONS

SCALE: 1" = 300'

LEGEND

- - SHALLOW AQUIFER
- - DEEP AQUIFER
- - SURFACE WATER
- - ADDITIONAL MONITORING WELLS (NOT MONITORED OR SAMPLED AS PART OF THIS SAMPLING PLAN)
- - SEDIMENT SAMPLE LOCATIONS (SED)

VANIER EXPANSION
WOODWARD MINE
CROOK COUNTY
PRINEVILLE, OREGON 97754

**KNIFE RIVER
MONITORING LOCATIONS**



HUDSPETH LAND + WATER

FIGURE

01



MONITORING LOCATIONS

SCALE: 1" = 300'

LEGEND

- - SHALLOW AQUIFER
- - DEEP AQUIFER
- - SURFACE WATER
- - ADDITIONAL MONITORING WELLS
- - PROPOSED (082925) SHALLOW MONITOR WELL LOCATIONS

FIGURE 01A: PROPOSED AND CURRENT WATER MONITORING LOCATIONS (AUGUST 2025). SEDIMENT SAMPLES NOT INCLUDED

VANIER EXPANSION
WOODWARD MINE
CROOK COUNTY
PRINEVILLE, OREGON 97754

KNIFE RIVER
MONITORING LOCATIONS

KNIFE RIVER

HUDSPETH LAND + WATER

FIGURE
01 A

FILE:P:\0827-001 HLM Drafting Services - Various project\0827-001 Vanier Expansion\0827-001_VanierExp_Fig1 Layout: 02 SURFACE WATER AND SOIL SAMPLE LOCATIONS, Plot Date: 11/26/2024 4:44 PM, by: Cameron Johnson



- Legend
- Shallow Water Wells
 - Deep Water Wells
 - Cross-Sections
 - Permit Boundary

- Notes
- Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet
 - Data Sources: Stantec
 - Background: ESRI World Imagery 2023
 - Wells labeled by Oregon Water Resources Department well report number, TD (total depth in feet) and Screen (depth interval in feet) from well report

0 800 1,600 Feet
(At original document size of 11x17)
9,600



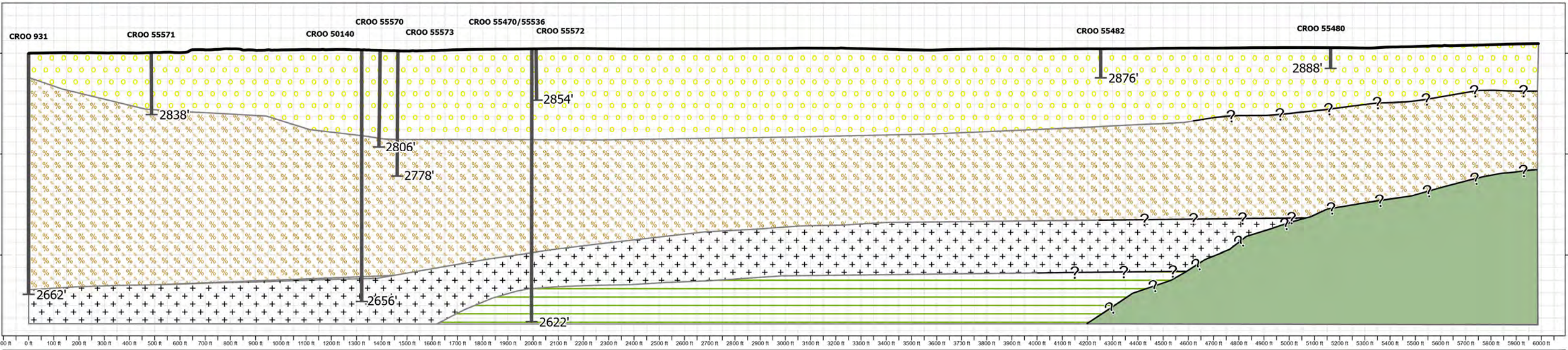
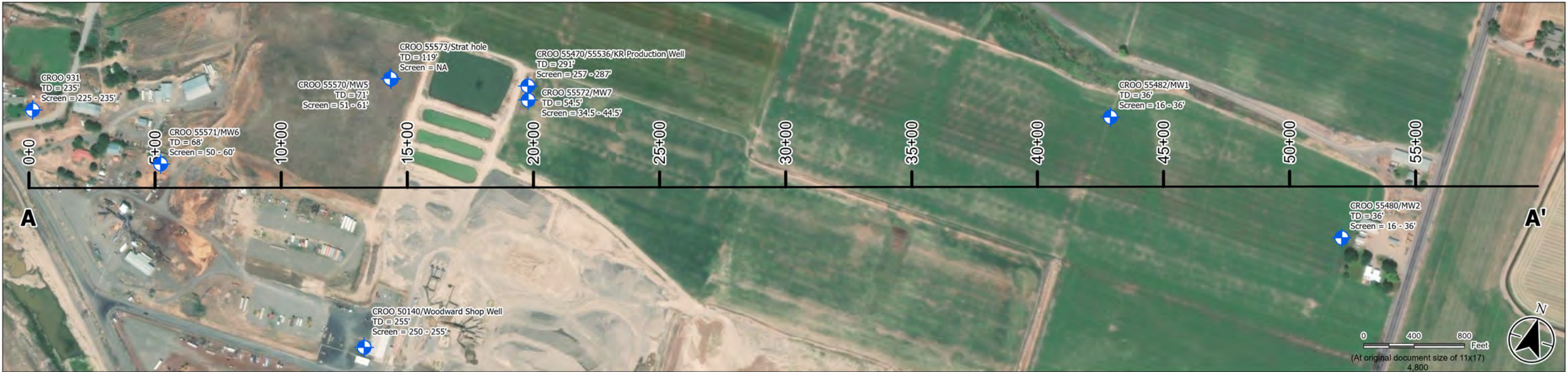
Project Location
T14S, R15E
Prineville, Crook Co., OR

Client/Project
Client: CDLidstone
Project: Woodward/Vanier Gravel Mine

Prepared by KB on 12/2/2024
TR by EZ on 12/2/2024
IR by MS on 12/2/2024
227704752

Figure No.
2

Title
Geologic Cross Section and Well Locations



- Legend**
- Water Wells
 - Cross-Section
 - Drillhole
 - Unknown Geological Contact
 - John Day Formation
 - Clay
 - Claystone
 - Gravel/Sand
 - Sand

Notes

1. Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet
2. Data Sources: Stantec
3. Background: ESRI World Imagery 2023
4. Wells labeled by Oregon Water Resources Department well report number. TD (total depth in feet) and Screen (depth interval in feet) from well report.
5. Cross-Section Profile is for viewing purposes only. Features are not set to an engineering scale.
6. Lithology queried where uncertain.



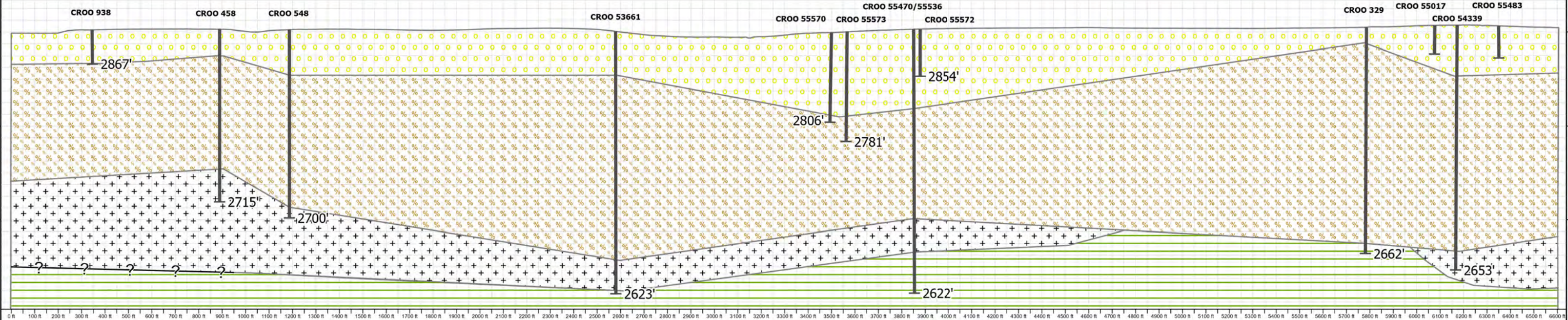
Project Location
T14S, R15E
Prineville, Crook Co., OR

Client/Project
Client: CDLidstone
Project: Woodward/Vanier Gravel Mine

Prepared by KB on 12/2/2024
TR by EZ on 12/2/2024
IR by MS on 12/2/2024

Figure No.
3

Title
Geologic Cross-Section A-A'



- Legend
- Water Wells
 - Cross-Section
 - Drillhole
 - Unknown Geological Contact
 - Clay
 - Claystone
 - Gravel/Sand
 - Sand

- Notes
- Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet
 - Data Sources: Stantec
 - Background: ESRI World Imagery 2023
 - Wells labeled by Oregon Water Resources Department well report number, TD (total depth in feet) and Screen (depth interval in feet) from well report.
 - Cross-Section Profile is for viewing purposes only. Features are not set to an engineering scale.



Project Location
T14S, R15E
Prineville, Crook Co., OR

Prepared by KB on 12/2/2024
TR by EZ on 12/2/2024
IR by MS on 12/2/2024

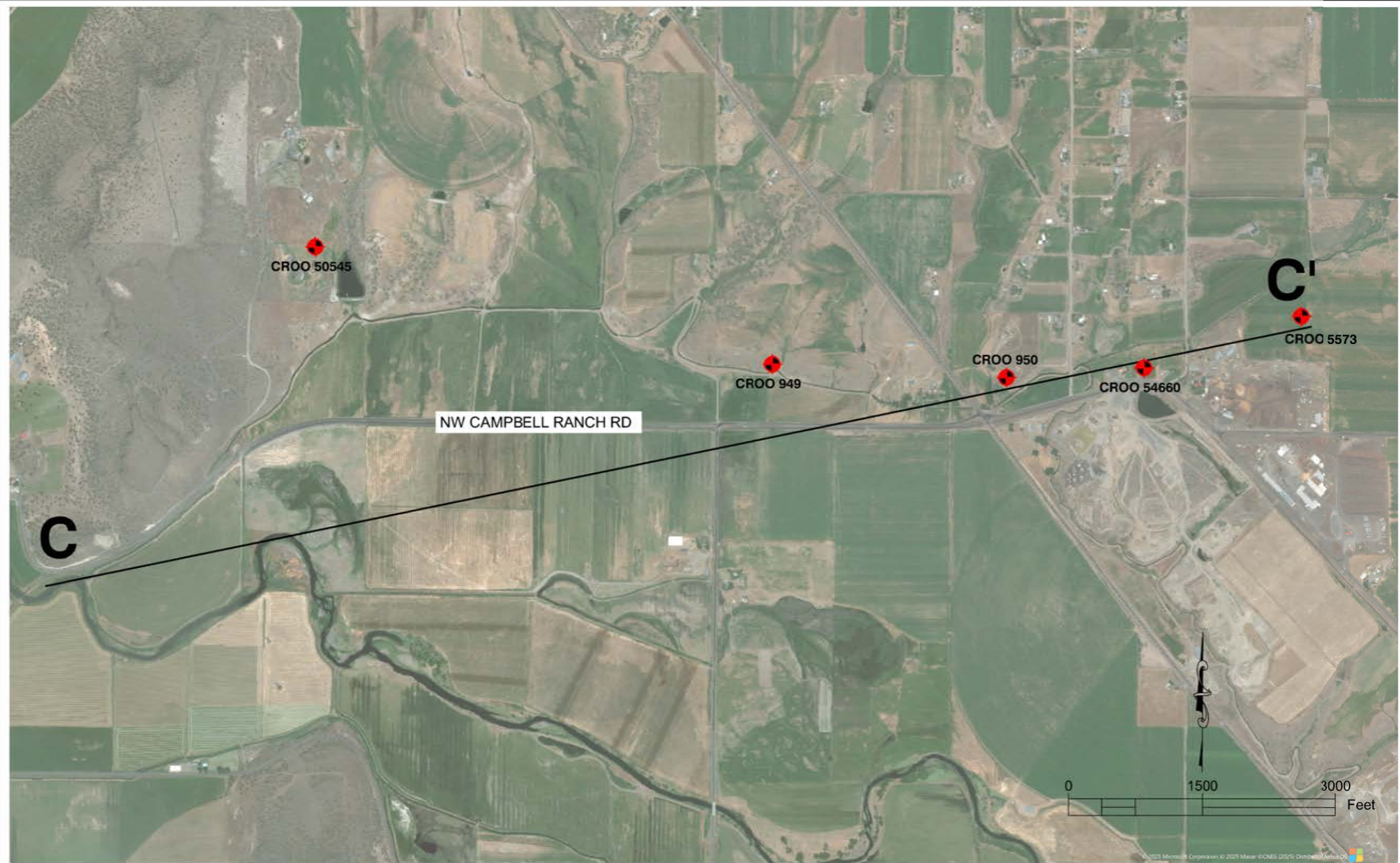
Client/Project
Client: CDLidstone
Project: Woodward/Vanier Gravel Mine

227704752

Figure No.
4

Title
Geologic Cross-Section B-B'

C:\Users\jwh\OneDrive\Documents\CDLIDSTONE - 4025 Automation Way Unit E - Woodard\040 - DEEDNA-A-A CROOKED RIVER XS.dwg, 8/26/2025, 4:48:48 PM, jwh



4025 AUTOMATION WAY
UNIT E
FORT COLLINS, CO,
80525-3448

FIGURE 5

DESIGNER / DRAFTER

JHF

REVIEWER

CDL

PROJECT NUMBER

0RKRC202

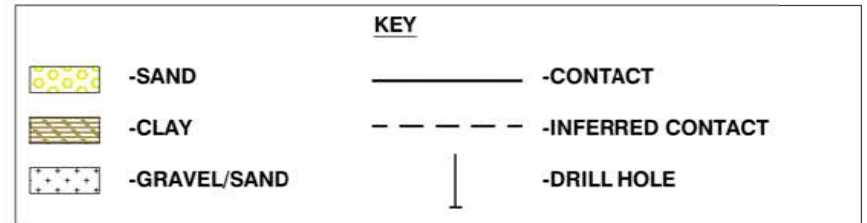
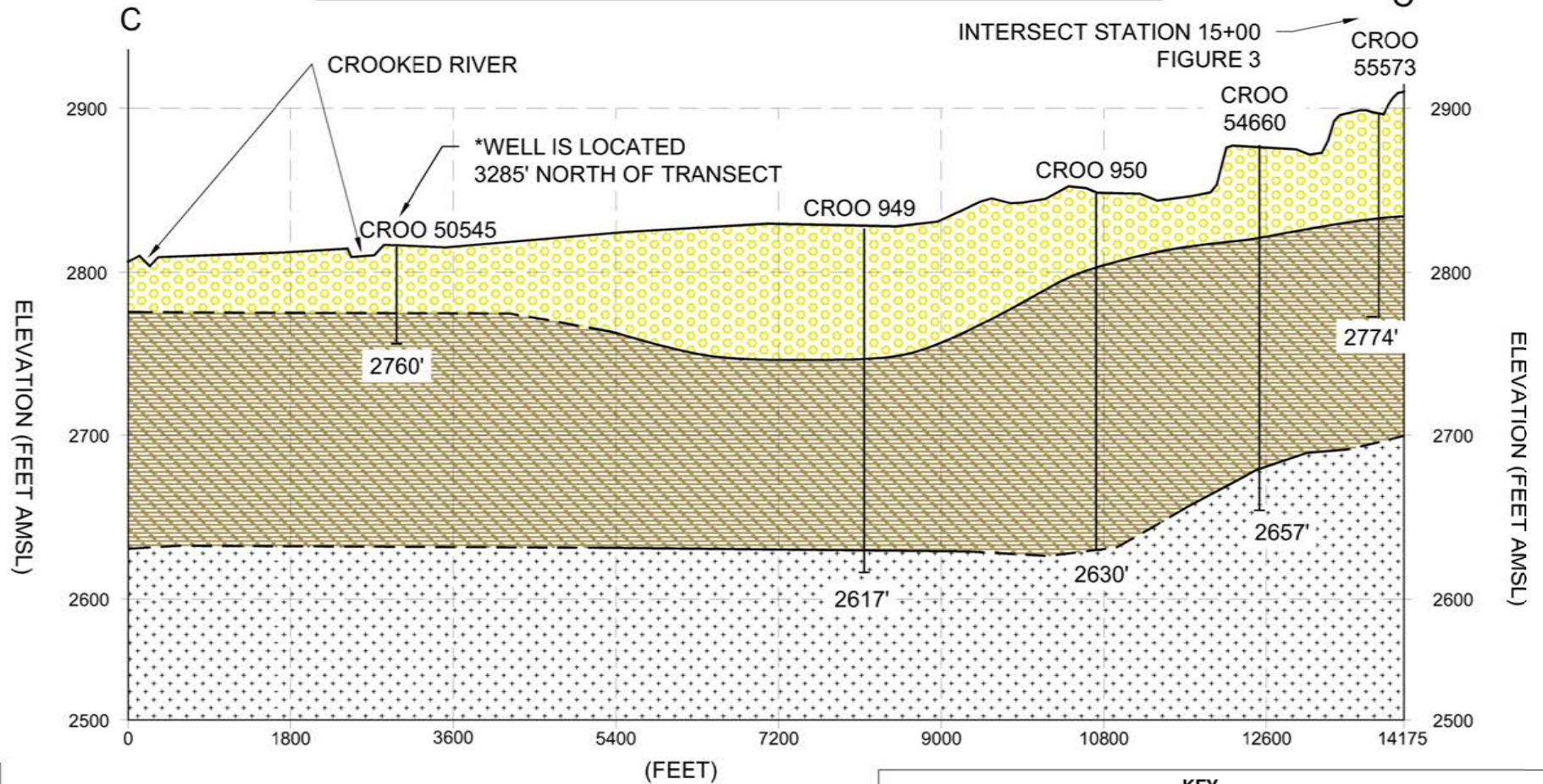
DATE

SURFACE LOCATION

BOOK AND PAGE

LOCATION MAP CROSS SECTION C - C'

C - C' EXTENSION - CROOKED RIVER TO PROCESS WATER PONDS



4025 AUTOMATION WAY
 UNIT E
 FORT COLLINS, CO,
 80525-3448

FIGURE 6

DESIGNER / DRAFTER

JHF

REVIEWER

CDL

PROJECT NUMBER

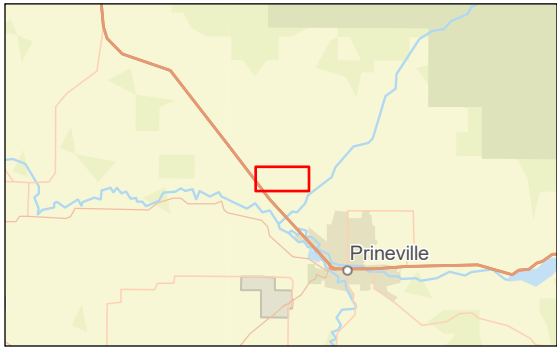
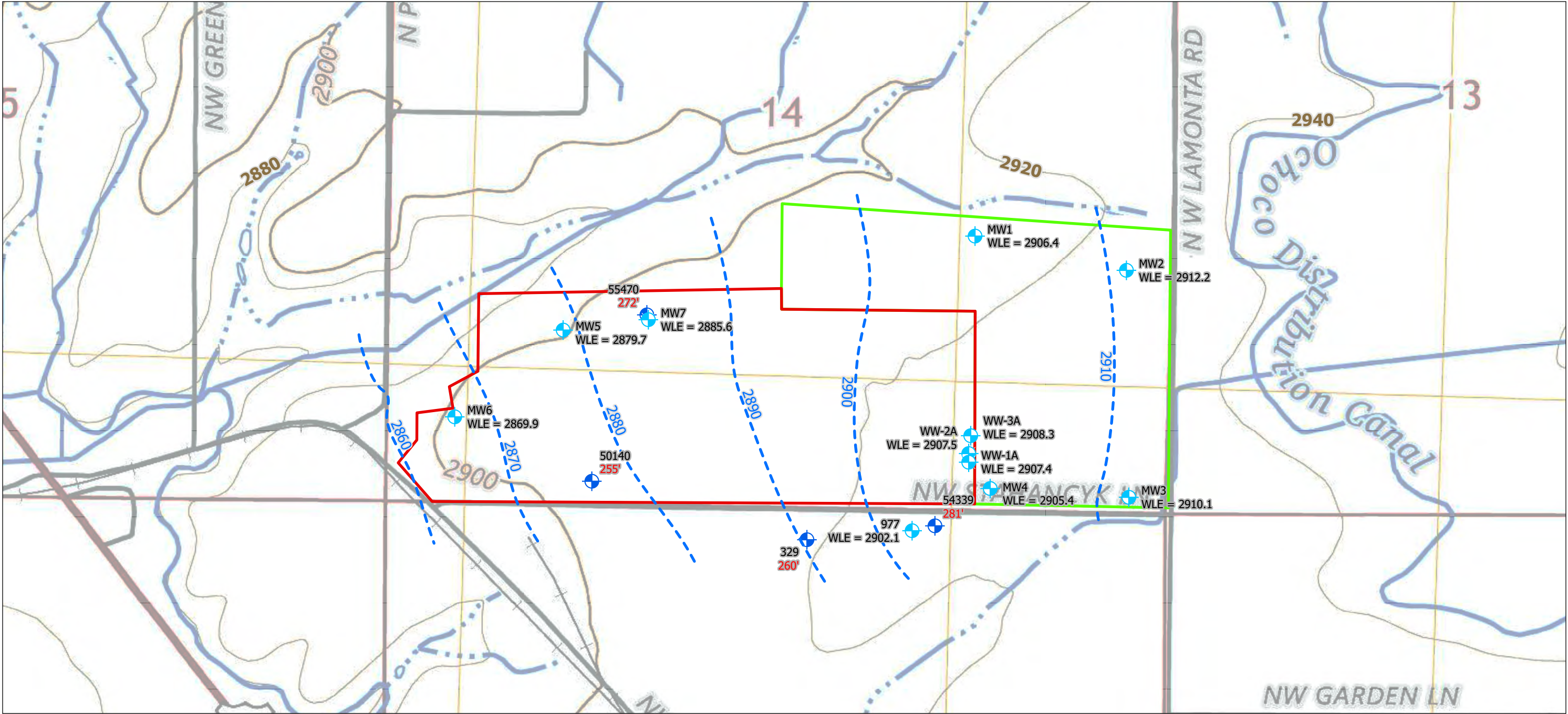
ORKRC202

DATE

SURFACE LOCATION

BOOK AND PAGE

CROSS SECTION C - C'
 AN EXTENSION TO FIGURE 3 (A - A')
 CROOKED RIVER TO PROCESS WATER PONDS



- Legend
- Shallow Aquifer Water Wells
 - Deep Aquifer Water Wells with Well Depth (Red)
 - Groundwater Elevation Contours (Oct. 2024)
 - Permit Boundary Woodward MLRR ID 07-0159
 - Property Boundary Vanier

0 340 680 Feet
(At original document size of 11x17)
8,160



Project Location
T14S, R15E
Prineville, Crook Co., OR

Client/Project
Client: CDLidstone
Project: Woodward/Vanier Gravel Mine

Prepared by KB on 8/27/2025
TR by CB on 8/27/2025
IR by MS on 8/27/2025

227704752

Figure No.
7

Title
Shallow Aquifer Water Table Map

- Notes**
- Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet
 - Data Sources: Stantec and USGS
 - Background: USGS 24k Topo Imagery 2023
 - Wells labeled by Knife River well name. WLE (water level elevation) based on depths to water measured on 10/17/24 and surveyed wellhead elevations.
 - Contour interval of the topographic map is 20 feet

Appendix A-1

Well Completion Reports

WELL I.D. LABEL#	L152274	
START CARD #	1072891	
ORIGINAL LOG #		

4/25/2024

(4) CONSTRUCTION

[illegible][illegible]

CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
	4		1.5	36	SCH 40				

SCREENS

[illegible]

(5) WELL TESTS

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

[illegible]

(8) WELL LOG

[illegible]

Name of person(s) who assisted with construction and Trainee License # / Helper #

Assistant Name

Type

#

ZACHARY MIHEVC

| TRAINEE WATER

8888935

Comments/Remarks

DRILLED TO 51'. BACKFILL TO 39' WITH PEA GRAVEL. BENTONITE
FROM 39'-36'

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CROO 55482

4/25/2024

Map of Hole

STATE OF OREGON WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department

725 Summer St NE, Salem OR 97301
(503)986-0900



LOCATION OF WELL

Latitude: 44.35368000 Datum: WGS84

Longitude: -120.89156000

Township/Range/Section/Quarter-Quarter Section:
WM14.00S15.00E14NESE

Address of Well:

4755 NW STAHANCYK LN PRINEVILLE, OR 97754

Well Label: 152274

Printed: April 9, 2024

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor



WELL I.D. LABEL#	149468	
START CARD #	1072892	
ORIGINAL LOG #		

License Number 758 Date 4/9/2024
 Password : (if filing electronically) _____
 Signed THOMAS PECK (E-filed) _____
 Contact Info (optional) _____

(4) CONSTRUCTION

[illegible][illegible]

CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
	4		1.5	16	SCH 40				
									
									
									
									
									
									
									
									
									
									
									
									
									
									

SCREENS

[illegible]

(5) WELL TESTS

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

[illegible]

(8) WELL LOG

[illegible]

Name of person(s) who assisted with construction and Trainee License # / Helper #

Assistant Name	Type	#
ZACHARY MIHEVC	TRAINEE WATER	8888935

Comments/Remarks

[illegible]

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CROO 55480

4/25/2024

Map of Hole

STATE OF OREGON WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department

725 Summer St NE, Salem OR 97301
(503)986-0900



LOCATION OF WELL

Latitude: 44.35316830 Datum: WGS84

Longitude: -120.88766833

Township/Range/Section/Quarter-Quarter Section:

WM14.00S15.00E14NESE

Address of Well:

4755 NW STAHANCYK LN PRINEVILLE, OR 97754

Well Label: 149468

Printed: April 9, 2024

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor



WELL I.D. LABEL#	L	149464
START CARD #		1072893
ORIGINAL LOG #		

From	To	Description	Amount	Units

4/25/2024

(4) CONSTRUCTION

[illegible][illegible]

CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
	4		1.5	16	SCH 40				
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

SCREENS

[illegible]

(5) WELL TESTS

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

[illegible]

(8) WELL LOG

[illegible]

Name of person(s) who assisted with construction and Trainee License # / Helper #

Assistant Name

Type

#

ZACHARY MIHEVC

| TRAINEE WATER

8888935

Comments/Remarks

[illegible]

STATE OF OREGON WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department

725 Summer St NE, Salem OR 97301
(503)986-0900



LOCATION OF WELL

Latitude: 44.34863300 Datum: WGS84

Longitude: -120.887842

Township/Range/Section/Quarter-Quarter Section:

WM 14S 15E 14 SESE

Address of Well:

4755 NW STAHANCYK LN PRINEVILLE, OR 97754

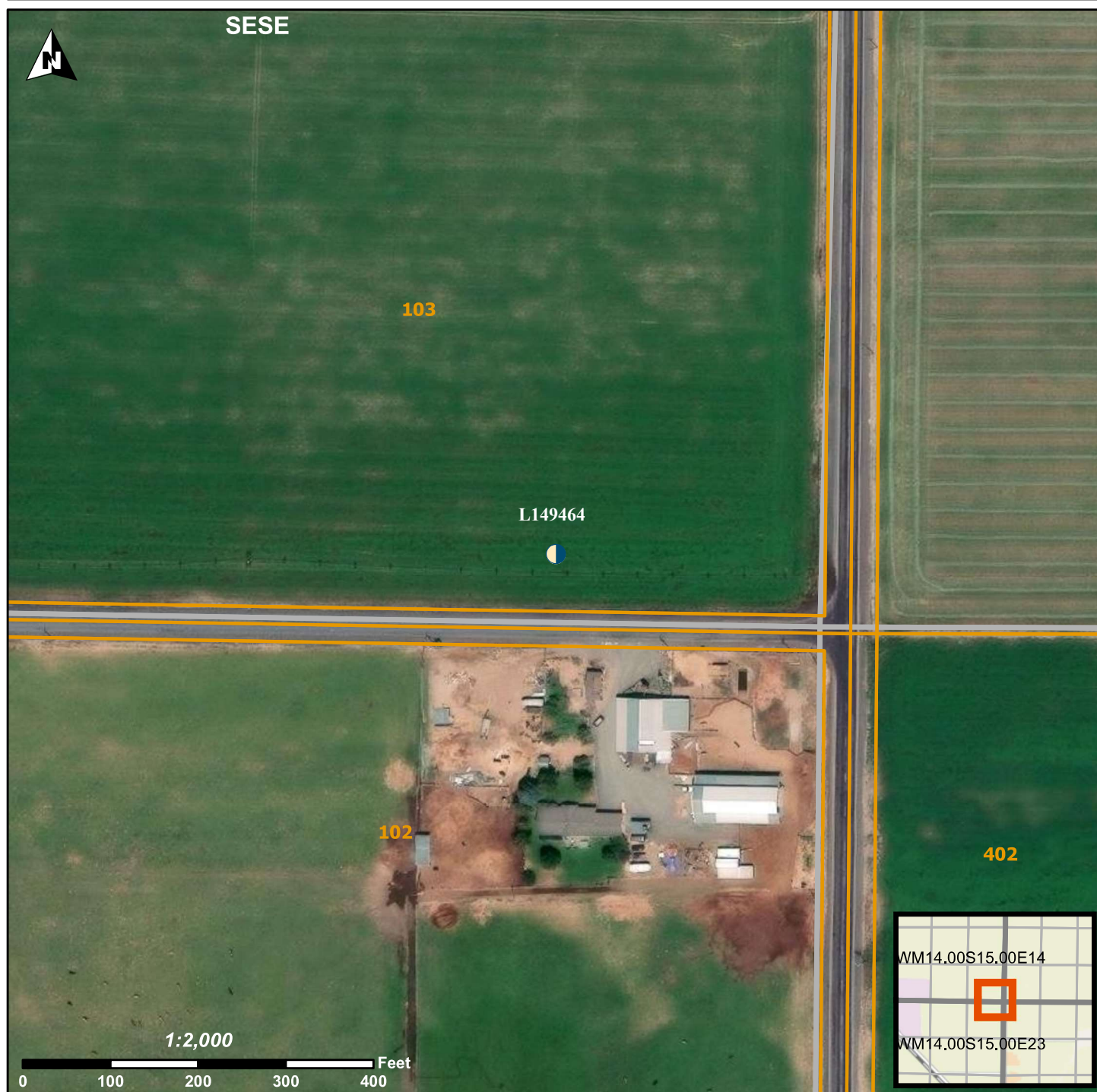
Well Label: L149464

Well Log: CROO 55481

Printed: May 28, 2024

DISCLAIMER: This map is intended to represent the approximate location of the exempt use well provided by the land owner. It is not intended to be construed as survey accurate in any manner.

Generated by OWRD



WELL I.D. LABEL#	149463	
START CARD #	1072894	
ORIGINAL LOG #		

4/25/2024

4/25/2024

(4) CONSTRUCTION

[illegible][illegible]

CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
	4		1.5	16	SCH 40				
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

SCREENS

[illegible]

(5) WELL TESTS

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

[illegible]

(7) STATIC WATER LEVEL

Water Bearing Zones

[illegible]

(8) WELL LOG

[illegible]

Name of person(s) who assisted with construction and Trainee License # / Helper #

Assistant Name

Type

#

ZACHARY MIHEVC

| TRAINEE WATER

8888935

Comments/Remarks

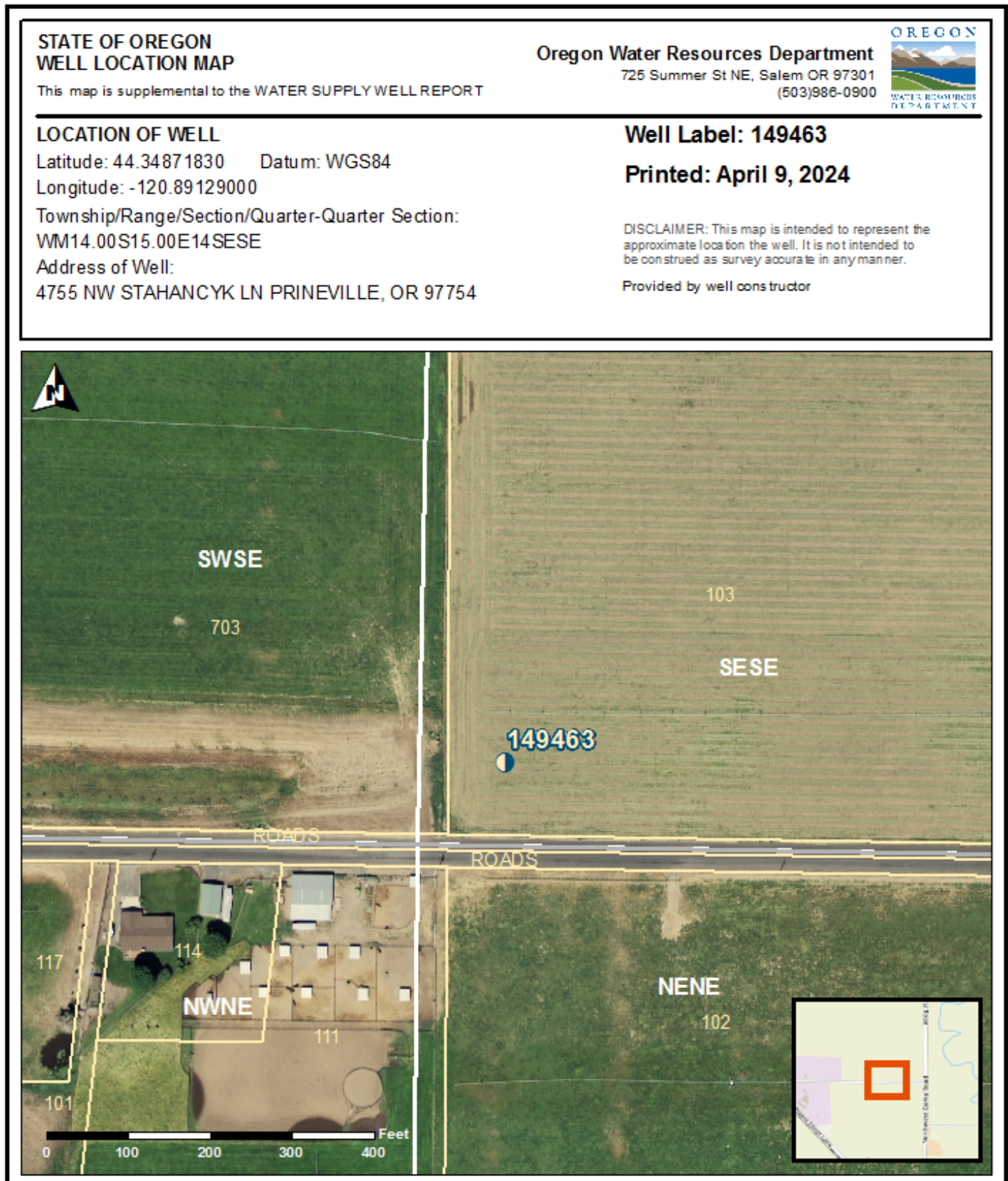
BACK FILLED PEA GRAVEL 46' - 39'. BENTONITE CHIPS 39'-36'

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CROO 55483

4/25/2024

Map of Hole





PROJECT NAME: Woodward

DATE STARTED: 09/10/2024

DRILLING CONTRACTOR: Abbas Well Drilling

FIRST WATER:

Hole Number: MW-5

COMPLETED: 09/10/2024

STATIC LEVEL:

LOGGED BY: B. Houston

GROUND ELEVATION: ~2,893-ft msl

METHOD: Air Rotary

Flow RATE (gpm):

Page:1:2

Depth (ft)	Elevation (ft)	GRAPHIC LOG	DESCRIPTION	Completion as report on CROO 55571		
			Topsoil: Very fine sand and organic matter, brown			Cement from 3-ft to 0-ft.
			Sand with gravel (s: 60-70%; gr: 30-40%)	Water Well Log: CROO 55570		
10						8" steel casing gauge 0.250 from 4.5 to 3-ft
			Very fine sand, brown			
20						
			Cemented sand layer (1-2 cm) at 24-ft bgs			
			Reddish to black cement possible FeO and MnO			
30						
			Very fine sand, brown			Bentonite chips from 51-ft to 4-ft
40						
			Silt, light tan			
			Very fine sand, brown, minor woody debris in returns			Material between 51-ft to 45.5-ft not reported on well log report
50						Sand from 61-ft to 51-ft
						4" Sched 40 PCV Screen Screen slot size 0.200
60						
						Material between 71-ft to 61-ft not reported on well log report
70						
			Blackish-tan, silt, contains sparse freshwater bivalves and minor woody debris in returns			Sand from 72-ft to 71-ft
						Backfill from 91-ft to 72-ft with bentonite chips



PROJECT NAME: Woodward

Hole Number: MW-5

LOGGED BY: B. Houston

Page: 2:2

DATE STARTED: 09/10/2024

COMPLETED: 09/10/2024

GROUND ELEVATION:

DRILLING CONTRACTOR: Abbas Well Drilling

METHOD: Air Rotary

FIRST WATER: 25-ft bgs

STATIC LEVEL: 23-ft bgs

Flow RATE (gpm):

Depth (ft)	Elevation (ft)	GRAPHIC LOG	DESCRIPTION	Completion as report on CROO 55570		
90			Blackish-tan, silt, contains sparse freshwater bivalves and minor woody debris in returns			Backfill from 91-ft to 72-ft with bentonite chips
			Clay, sticky dark gray, easily forms balls and rods TD: 92 - ft bgs			
						Annulus fill material not reported on the water well report from 61-ft to 71-ft



PROJECT NAME: Woodward

Hole Number: MW-6

LOGGED BY: B. Houston

Page: 1:1

DATE STARTED: 09/10/2024

COMPLETED: 09/10/2024

GROUND ELEVATION: ~2,902-ft msl

DRILLING CONTRACTOR: Abbas Well Drilling

METHOD: Air Rotary

FIRST WATER: 46-ft bgs

STATIC LEVEL: 34-ft bgs

Flow RATE (gpm):

Depth (ft)	Elevation (ft)	GRAPHIC LOG	DESCRIPTION	Completion as report on CROO 55571		
			Topsoil: Very fine sand and organic matter, brown			Cement from 3-ft to 0-ft.
10			Sand with gravel (s: 60-70%; gr: 30-40%)			8" steel casing gauge 0.250 from 4.5 to 3-ft
20						
30			Gravel with minor sand (gr: 070-90%; s: 10-30%)			Bentonite chips from 39-ft to 3-ft
40			Clayey silt			
			H ₂ O at 46-ft bgs; Significant volume est. >25 gal./min.			
50			Silty very fine sand, tan to brown			Sand from 52-ft to 39-ft
			Very fine sand, brown			4" Sched 40 PCV Screen Screen slot size 0.200
60						Material between 62-ft to 52-ft not reported on well log report
			Clay, sticky dark gray, easily forms balls and rods			Sand from 62-ft to 63-ft
70			TD: 68-ft bgs			Backfill from 68-ft to 63-ft with bentonite chips



PROJECT NAME: Woodward

Hole Number: MW-7

LOGGED BY: B. Houston

Page: 1:1

DATE STARTED: 09/18/2024

COMPLETED:

GROUND ELEVATION: ~2,911-ft msl

DRILLING CONTRACTOR: Abbas Well Drilling

METHOD: Air Rotary

FIRST WATER: 30-ft bgs

STATIC LEVEL: 20-ft bgs

Flow RATE (gpm):

Depth (ft)	Elevation (ft)	GRAPHIC LOG	DESCRIPTION	Completion as report on CROO 55572		
			Topsoil: Very fine sand and organic matter, brown			
10			Silty very fine sand, tan to brown	Bentonite Chips	4" Sched 40 PCV Blank	Cement from 3-ft to 0-ft.
20						8" steel casing gauge 0.250 from 4.5 to 3-ft
30			Very fine sand, brown	Sand	4" Sched 40 PCV Screen	Bentonite chips from 31.5-ft to 3-ft
40						4" Sched 40 PCV Screen Screen slot size 0.200
50			Clayey silt	?	?	As reported on the well log report Sand from 55-ft to 31.5-ft
			Clay			As reported on the well log report there is either sand or bentonite chips from 55-ft to 45-ft
60			Very fine sand, brown	Bentonite Chips		As reported on the well log report bentonite chips from 60-ft to 45-ft
			TD: 60-ft bgs			
70						

Depth (ft)	Elevation (ft)	GRAPHIC LOG	DESCRIPTION	SAMPLE INTERVAL	RECOVERY %	NOTES/REMARKS
			Topsoil: Very fine sand and organic matter, brown			
10			Very fine sand, brown			
			Sand with gravel (s: 60-70%; gr: 30-40%)			
20			Very fine sand, brown			H ₂ O at 18-ft bgs; Minor volume est. <5 gal./min.
30						
40						
50						
60			Very fine sand, black (high % of magnetite)	2 to 66-ft		
70			Gray, clayey silt, contains minor woody debris in returns	69 to 105-ft		
			Gravel with minor silt & clay			

Page: 2:2

GROUND ELEVATION: ~2,893-ft msl

METHOD: DR-24HD - Dual Air Rotary

Flow RATE (gpm):

[illegible]

 now part of 	Project:	Woodward	Well Name:	WW-1A
	Location:	44.34941°, -120.89169°	Drilling Method:	Sonic
	Drilled by:	Yellow Jacket Drilling Services	Logged by:	F. Tremblay
	Date started:	1/18/2021	Total depth:	35 Ft.
	Date completed:	1/18/2021	Elevation:	2928 Ft.

Depth (feet)	Well Construction	Lithology	Remarks
0		0-3 Ft.: SILT W/ SAND (ML) : dark brown, rooted and moist with some organic content to 1.5', dries out below, fine sand well graded sand, low plasticity, somewhat cohesive, carbonate concretions at 3', silt is very carbonaceous, trace amounts of gravel at 4'	Water level measured at 20.73 feet bgs on 1/19/2021.
1		3-7 Ft.: SILTY SAND (SM) : brown, medium to low plasticity, dry, fine sand in a carbonaceous silt, massive, carbonaceous concretions, sand is well sorted, poorly graded, platy structure and consolidated at 5', slightly to very carbonaceous, 0.25-0.5" bedding	
2	0-2 Ft.: Neat cement to surface	7-10 Ft.: FAT CLAY (CH) : brown, high plasticity, little to no coarse sediments, platy, medium to dense, cohesive, thinly bedded, non to slightly carbonaceous, 12" layer of medium grained poorly sorted sand at 8.5', some trace gravel, subrounded, back to clay at 9.5'	
3	4" Sched 40 PVC Blank	10-12 Ft.: SILTY SAND (SM) : loose, moist, fine to medium grained sand, non plastic, noncohesive, blocky and semiconsolidated to 11', granular and unconsolidated below that, trace gravel ~1 cm in diameter	
4		12-13 Ft.: SILT W/ SAND (ML) : brown, fine sand in a calcareous silt, loose, low to medium plasticity, cohesive, granular, brittle carbonaceous concretions, very carbonaceous	
5		13-15 Ft.: SILTY SAND (SM) : noncalcareous, similar to 10-12' interval, moist, silt content decreases below 14', medium sorted, medium grained, sub rounded, noncalcareous, trace amounts of gravel ~1cm diameter	
6	2-8 Ft.: 3/8" bentonite chips	15-21 Ft.: WELL GRADED SAND W/ SAND (SW) : brown, loose to medium dense, moist, nonplastic, noncohesive, granular, gravel between 0.5-1.5" in diameter, subrounded, 20-30%, gravel content decreases below 18', silty sand dominates below 19', noncalcareous	
7	4" Sched 40 PVC blank well casing	21-23 Ft.: WELL GRADED SAND W/ SILT & GRAVEL (SW-SM) : loose, dry, fine sand in a calcareous silt, low plasticity, granular, gravel conetent 15-20%, 0.5-2" diameter	
8		23-24 Ft.: WELL GRADED SAND W/ GRAVEL (SW) : loose, moist, medium grained sand, nonplastic, noncohesive, granular	
9		24-29 Ft.: WELL GRADED GRAVEL W/ SAND (GW) : some silt and medium grained sand, gravel between 0.5-3" in diameter, well rounded, wet, sand and silt below 27', mostly gravel, sharp contact with clay layer below	
10	4" Sched 40 PVC Screen	29-32 Ft.: SILTY SAND (SM) : wet, fine sand in a noncalcareous silt, gravel is gone, low to medium plasticity, massive, silt sontent increases significantly below 30', blocky, sand gone below 32'	
11		32-35 Ft.: LEAN CLAY (CL) : wet, medium plasticity, little to no coarse sediments	
12			
13	10-30 Ft.: 4" Schedule 40 PVC 0.020" slot screen		
14	4" Sched 40 PVC Screen		
15			
16			
17	8-30 Ft.: 12X20 silica sand pack		
18			
19			
20	0-35 Ft.: 8.25" diameter borehole		
21			
22			
23	4" Sched 40 PVC Screen		
24			
25			
26	30-35 Ft.: Backfilled hole		
27			
28			
29			
30			
31			
32			
33			
34			
35			

Notes: This figure presents the as-built details for WW-1A located near Knife River's ISR Woodward Property in the SESW of Section 14 of T14S, R15E. This well was drilled and completed by Yellow Jacket Drilling Services of Sandy, OR using sonic drilling methods to assess shallow subsurface alluvial groundwater. Upon completion, the well was developed for three hours via surge block and pumping techniques. Water quality parameters at the end of development were as follows: pH=7.63; EC=571 uS; and T= 11.7 degrees Celsius.

 now part of 	Project:	Woodward	Well Name:	WW-2A
	Location:	44.349494°, -120.891692°	Drilling Method:	Sonic
	Drilled by:	Yellow Jacket Drilling Services	Logged by:	F. Tremblay
	Date started:	1/18/2021	Total depth:	30 Ft.
	Date completed:	1/18/2021	Elevation:	2930 Ft.

Depth (feet)	Well Construction	Lithology	Remarks
0			
1			
2	0-2 Ft.: Neat cement to surface	0-6 Ft.: SILTY SAND (SM) : rooted from 0-1', moist form surface moisture, fine well sorted sand, medium plasticity, carbonate concretions at 2', silt is calcareous from 2-5', clay content increases below 2-5'	
3			
4	4" Sched 40 PVC Blank		
5			
6	2-8 Ft.: 3/8" bentonite chips	6-11 Ft.: LEAN CLAY W/ SAND (CL) : moist at 6', platy, medium plasticity, carbonate leaching, trace fine sand, calcite content decreases below 5', coincides with fine sand increase between 5-7', increases again between 10-11', platy carbonate concretions	
7			
8			
9			
10	0-10 Ft.: 4" Schedule 40 PVC blank well casing		Water level measured at 21.35 feet bgs on 1/21/2021.
11		11-14 Ft.: SILTY SAND (SM) : low plasticity, non calcareous, granular, moist, fine to medium grained sand, silt between 12-13', decreases below 13'	
12			
13			
14		14-17 Ft.: POORLY GRADED SAND W/ GRAVEL (SP) moist, granular, nonplastic, noncohesive, medium grained sand, gravel content 10-15% between 14-15', 0.5-1" diameter, gravel decreases from 15-16'	
15	10-25 Ft.: 4" Schedule 40 PVC 0.020" slot screen		
16			
17	4" Sched 40 PVC Screen	17-19 Ft.: SANDY SILT (ML) : moist, calcareous, medium plasticity, cohesive, some trace gravel, trace roots, massive	
18			
19		19-24 Ft.: POORLY GRADE SAND W/ GRAVEL (SP) :D.O. as 14-17', gravel content low from 20-21.5', noncalcareous	
20	8-25 Ft.: 12X20 silica sand pack		
21			
22			
23			
24		24-26 Ft.: WELL GRADED GRAVEL W/ SAND (GW) : medium to coarse sand, trace silts, gravel betwene 0.5-3" in diameter, well rounded, wet, sharp contact with unit below	
25	0-30 Ft.: 8.25" diameter borehole		
26		26-30 Ft.: SILTY SAND (SM) : wet, medium to low plasticity, cohesive, noncalcareous, clay content increases with depth, prismatic, sand is fine grained and well sorted	
27			
28	25-30 Ft.: Backfilled hole		
29			
30			

Notes: This figure presents the as-built details for WW-2A located near Knife River's Woodward Property in the SESE of Section 14 of T14S, R15E. This well was drilled and completed by Yellow Jacket Drilling Services of Sandy, OR using sonic drilling methods to assess shallow subsurface alluvial groundwater. Upon completion, the well was developed for two hours via surge block and pumping techniques. Water quality parameters at the end of development were as follows: pH=7.58; EC=598 uS; and T= 13.1 degrees Celsius.

WENCK now part of Stantec	Project:	Woodward	Well Name:	WW-3A
	Location:	44.349629°, -120.891684°	Drilling Method:	Sonic
	Drilled by:	Yellow Jacket Drilling Services	Logged by:	F. Tremblay
	Date started:	1/20/2021	Total depth:	30 Ft.
	Date completed:	1/20/2021	Elevation:	2929 Ft.

Depth (feet)	Well Construction	Lithology	Remarks
0			
1			
2	0-2 Ft.: Neat cement to surface		
3			
4			
5			
6	4" Sched 40 PVC Blank		
7			
8	2-11 Ft.: 3/8" bentonite chips		
9			
10			
11	0-13 Ft.: 4" Schedule 40 PVC blank well casing	0-11 Ft.: SILT W/ SAND (ML) : overburden, rooted and moist with some organic content to 1.5', fine well sorted sand, clay content increases below 6', moist at contact	
12			
13		11-14 Ft.: SILTY SAND (SM) : fine to medium grained sand with occasionally calcareous silt, semiconsolidate, trace amounts of gravel <1cm in diameter, some carbonate concretions	
14			
15	11-28 Ft.: 12X20 silica sand pack	14-24 Ft.: POORLY GRADED SAND W/ GRAVEL (SP) : moist, granular, coarsens with depth, nonplastic and noncohesive, medium grained well sorted sand, gravel is 0.5-1" in diameter, some medium plasticity sandy silt zones from 19-20'	
16			
17			
18			
19			
20	13-28 Ft.: 4" Schedule 40 PVC 0.020" slot screen		
21	4" Sched 40 PVC Screen		
22			
23	0-30 Ft.: 8.25" diameter borehole		
24		24-28 Ft.: WELL GRADED GRAVEL W/ SAND (GW) : medium to coarse grained sand, trace silt, well rounded poorly sorted gravel, 0.5-3.5" in diameter	
25			
26			
27			
28		28-30 Ft.: SILY SAND (SM) : fine grained well sorted sand in silt, wet, blocky, well consolidated, noncalcareous, clay content increases with depth	
29	28-30 Ft.: Backfilled hole		
30			

Notes: This figure presents the as-built details for WW-3A located near Knife River's Woodward Property in the SESE of Section 14 of T14S, R15E. This well was drilled and completed by Yellow Jacket Drilling Services of Sandy, OR using sonic drilling methods to assess shallow subsurface alluvial groundwater. Upon completion, the well was developed for 3 hours via surge block and pumping techniques. Water quality parameters at the end of development were as follows: pH=7.62; EC=338 uS; and T= 12.1 degrees Celsius.

Appendix A-2

Laboratory Analytical Methods and Method Detection Limits (Neilson Research)

May 2025

Analyte	Methodology	Method Detection Limit (mg/L)	Reporting Limit (mg/L)
Total Dissolved Solids (TDS)	A2540	18	30
Total Organic Carbon (TOC)	A5310C	0.142	0.5
Dissolved and Total Manganese (Mn)	E200.8	0.000290	0.002
Dissolved and Total Iron (Fe)	E200.7	0.00115	0.015
Dissolved and Total Aluminum (Al)	E200.7	0.0089	0.02
Dissolved and Total Arsenic (As)	E200.8	0.000123	0.0005
Dissolved and Total Copper (Cu)	E200.8	0.000473	0.002
Nitrate Nitrogen, as N	E353.2	0.0401	0.1
Calcium	E200.7	0.139	0.25
Potassium	E200.7	0.312	1.0
Sodium	E200.7	0.193	1.0
Chloride	E300	0.0761	0.1
Fluoride	E300	0.0316	0.2
Sulfate	E99	0.209	0.5
Bicarbonate	A2320	3.64	24
Carbonate	A2320	1.82	12
Total Coliform	A9223B	0.0	0.0
Gasoline Range Organics (GRO)	NWTPHGX	0.0370	0.5
Diesel Range Organics (DRO)	NWTPHDX	0.0326	0.0465

Footnote: 1. Appendix A2 will be updated should these methods, laboratory detection limits or reporting limits change during this investigation

Appendix B

Oregon EPA/DEQ Certified Laboratories Lab Certifications

Table B1. List of EPA and DEQ Certified Laboratories

Lab Name	ORELAP ID	Address	City	State	Zip	Phone	Email
2 River Labs Oregon	4112	2535 N. Ross Ave	Portland	OR	97227	503-493-2535	info@lightscale.com
Camp Rilea Laboratory	OR100059	33168 Patriot Way, Bld. 7239	Warrenton	OR	97146	9713554657	daniel.oldham@omd.oregon.gov
City of Bend Water Quality Laboratory	OR100038	22395 McGrath Rd	Bend	OR	97701	541-317-3017	cwhitman@bendoregon.gov
City of Corvallis Water Quality Laboratory	OR100027	1304 NE 2nd St	Corvallis	OR	97330	541-766-6720	john.hoppner@corvallisoregon.gov
Neilson Research Corporation	OR100016	245 South Grape St	Medford	OR	97501	541-770-5678	https://nrclabs.com/contact/
City of Portland Water Pollution Control Laboratory	4023	6543 North Burlington Avenue	Portland	OR	97203	503-823-5614	Jennifer.Shackelford@portlandoregon.gov
Clackamas Water Environment Services-Water Quality Laboratory	OR100053	15941 S. Agnes Ave., Bldg. B	Oregon City	OR	97045	503-557-2868	ebecker@clackamas.us
Portland Water Bureau Laboratory	OR100014	2010 N Interstate Ave	Portland	OR	97227	503-823-1829	marsha.farooqui@PortlandOregon.gov
SC Laboratories Oregon LLC	4133	15865 SW 74th Avenue, Suite 110	Tigard	OR	97224	503-272-8830	max.duimstra@sclabs.com

Source: Oregon Environmental Laboratory Accreditation Program



Oregon

Environmental Laboratory Accreditation Program



Neilson Research Corporation

OR100016

245 South Grape St

Medford, OR 97501

IS GRANTED APPROVAL BY ORELAP UNDER THE 2016 TNI STANDARDS, TO PERFORM
ANALYSES ON ENVIRONMENTAL SAMPLES IN MATRICES AS LISTED BELOW :

Air	Drinking Water	Non-Potable Water	Solids & Chem. Waste	Tissue
	Chemistry	Chemistry	Chemistry	
	Microbiology	Microbiology		

AND AS RECORDED IN THE LIST OF APPROVED ANALYTES, METHODS, ANALYTICAL TECHNIQUES, AND
FIELDS OF TESTING ISSUED CONCURRENTLY WITH THIS CERTIFICATE AND REVISED AS NECESSARY.

ACCREDITED STATUS DEPENDS ON SUCCESSFUL ONGOING PARTICIPATION IN THE PROGRAM AND
CONTINUED COMPLIANCE WITH THE STANDARDS.

CUSTOMERS ARE URGED TO VERIFY THE LABORATORY'S CURRENT ACCREDITATION STATUS IN
OREGON.

Oregon State Public Health Laboratory
ORELAP Program Manager
7202 NE Evergreen Parkway, Suite 100
Hillsboro, OR 97124

EFFECTIVE DATE : 12/24/2024

EXPIRATION DATE : 12/23/2025

Certificate No : OR100016 - 032





Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2007.01 & EN 15662: LC-MS/MS					805	Pesticides by LC-MS-MS
		7366	Abamectin				
		7000	Acephate				
		7002	Acequinocyl				
		7003	Acetamiprid				
		5445	Aflatoxin B1				
		5450	Aflatoxin B2				
		5455	Aflatoxin G1				
		5460	Aflatoxin G2				
		7010	Aldicarb (Temik)				
		7076	Azoxystrobin				
		7116	Bifenazate				
		7117	Bifenthrin				
		7128	Boscalid				
		7195	Carbaryl (Sevin)				
		7205	Carbofuran (Furaden)				
		7247	Chlorantraniliprole				
		7329	Chlorfenapyr				
		7300	Chlorpyrifos				
		7966	Clofentezine				
		7345	Cyfluthrin				
		7346	Cypermethrin				
		7348	Daminozide				
		7410	Diazinon				
		8610	Dichlorvos (DDVP, Dichlorvos)				
		7475	Dimethoate				
		7570	Ethoprop				
		7573	Etofenprox				
		7574	Etoxazole				
		7597	Fenoxycarb				
		7598	Fenpyroximate				
		7623	Fipronil				
		7628	Flonicamid				
		7629	Fludioxonil				
		7707	Hexythiazox				
		7718	Imazalil				
		7702	Imidacloprid				
		7747	Kresoxim-methyl				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2007.01 & EN 15662: LC-MS/MS					805	Pesticides by LC-MS-MS
		7770	Malathion				
		7790	Metalaxyl				
		7800	Methiocarb (Mesurol)				
		7805	Methomyl (Lannate)				
		7825	Methyl parathion (Parathion, methyl)				
		7860	MGK-264				
		7893	Myclobutanil				
		7905	Naled				
		5473	Ochratoxin A				
		7940	Oxamyl				
		7947	Paclobutrazol				
		7975	Permethrin (total)				
		8000	Phosmet (Imidan)				
		9550	Piperonyl butoxide				
		8022	Prallethrin				
		8077	Propiconazole				
		8080	Propoxur (Baygon)				
		8247	Pyrethrins (total)				
		8097	Pyridaben				
		8136	Spinosad				
		8137	Spiromesifen				
		8139	Spirotetramat				
		8141	Spiroxamine				
		8174	Tebuconazole				
		8214	Thiacloprid				
		8216	Thiamethoxam				
		5412	Total Aflatoxins				
		8287	Trifloxystrobin				
	AOAC 2020.02			1	2020	50003480	Salmonella species in a Broad Range of Foods and Select Environmental Samples GENE-UP Salmonella Test Method
		2570	Salmonella				
	AOAC 2021.03				2021	50003537	Heavy Metals in a Variety of Cannabis and Cannabis Derived Products by Inductively Coupled Plasma Mass Spectrometry
		1010	Arsenic				
		1030	Cadmium				
		1075	Lead				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
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Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2021.03				2021	50003537	Heavy Metals in a Variety of Cannabis and Cannabis Derived Products by Inductively Coupled Plasma Mass Spectrometry
		1095	Mercury				
	AOAC 966.02 - Gravimetric					810	Moisture in tobacco
		3850	Moisture content				
	AOAC 978.18					809	Water Activity
		8068	Water Activity				
	AOAC PTM #121806			1	2020	50000743	E. coli O157:H7 and Non-O157:H7 STEC by GENE-UP
		2572	Shiga Toxin-producing E. Coli (STEC)				
	J AOAC 2015 V98-6					818	Cannabinoids in Cannabis by HPLC-UV
		5415	Cannabidiol (CBD)				
		5420	Cannabidiolic acid (CBDA)				
		7386	delta-8 Tetrahydrocannabinol (d8 THC)				
		5405	delta-9 Tetrahydrocannabinol (d9 THC)				
		5410	delta-9 Tetrahydrocannabinolic acid (d9 THCA)				
	ORELAP-SOP-001			4.1	2022	90019811	Protocol for Collecting Samples of Usable Marijuana
		1405	Incremental Sampling				
		1441	Sampling				
Solids							
	AOAC 2007.01 & EN 15662: LC-MS/MS					805	Pesticides by LC-MS-MS
		7366	Abamectin				
		7000	Acephate				
		7002	Acequinocyl				
		7003	Acetamiprid				
		5445	Aflatoxin B1				
		5450	Aflatoxin B2				
		5455	Aflatoxin G1				
		5460	Aflatoxin G2				
		7010	Aldicarb (Temik)				
		7076	Azoxystrobin				
		7116	Bifenazate				
		7117	Bifenthrin				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	AOAC 2007.01 & EN 15662: LC- MS/MS	7128	Boscalid			805	Pesticides by LC-MS-MS
		7195	Carbaryl (Sevin)				
		7205	Carbofuran (Furaden)				
		7247	Chlorantraniliprole				
		7329	Chlorfenapyr				
		7300	Chlorpyrifos				
		7966	Clofentezine				
		7345	Cyfluthrin				
		7346	Cypermethrin				
		7348	Daminozide				
		7410	Diazinon				
		8610	Dichlorvos (DDVP, Dichlorvos)				
		7475	Dimethoate				
		7570	Ethoprop				
		7573	Etofenprox				
		7574	Etoxazole				
		7597	Fenoxycarb				
		7598	Fenpyroximate				
		7623	Fipronil				
		7628	Flonicamid				
		7629	Fludioxonil				
		7707	Hexythiazox				
		7718	Imazalil				
		7702	Imidacloprid				
		7747	Kresoxim-methyl				
		7770	Malathion				
		7790	Metalaxyl				
		7800	Methiocarb (Mesurol)				
		7805	Methomyl (Lannate)				
		7825	Methyl parathion (Parathion, methyl)				
		7860	MGK-264				
		7893	Myclobutanil				
		7905	Naled				
		5473	Ochratoxin A				
		7940	Oxamyl				
		7947	Paclobutrazol				
		7975	Permethrin (total)				
		8000	Phosmet (Imidan)				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	AOAC 2007.01 & EN 15662: LC-MS/MS	9550	Piperonyl butoxide			805	Pesticides by LC-MS-MS
		8022	Prallethrin				
		8077	Propiconazole				
		8080	Propoxur (Baygon)				
		8247	Pyrethrins (total)				
		8097	Pyridaben				
		8136	Spinosad				
		8137	Spiromesifen				
		8139	Spirotetramat				
		8141	Spiroxamine				
		8174	Tebuconazole				
		8214	Thiacloprid				
		8216	Thiamethoxam				
		5412	Total Aflatoxins				
		8287	Trifloxystrobin				
	AOAC 2020.02			1	2020	50003480	Salmonella species in a Broad Range of Foods and Select Environmental Samples GENE-UP Salmonella Test Method
		2570	Salmonella				
	AOAC 2021.03				2021	50003537	Heavy Metals in a Variety of Cannabis and Cannabis Derived Products by Inductively Coupled Plasma Mass Spectrometry
		1010	Arsenic				
		1030	Cadmium				
		1075	Lead				
		1095	Mercury				
	AOAC 966.02 - Gravimetric					810	Moisture in tobacco
		3850	Moisture content				
	AOAC PTM #121806			1	2020	50000743	E. coli O157:H7 and Non-O157:H7 STEC by GENE-UP
		2572	Shiga Toxin-producing E. Coli (STEC)				
	EPA 5021A				2003	10284205	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis
		4735	1,4-Dioxane (1,4-Diethyleneoxide)				
		4666	2,2-Dimethylbutane				
		4669	2,3-Dimethylbutane				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 5021A				2003	10284205	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis
		5866	2-Ethoxyethanol (cellosolve)				
		4938	2-Methylbutane (Isopentane)				
		4941	2-Methylpentane (Isohexane)				
		4942	2-methylpropane (Isobutane)				
		4534	3-Methylpentane				
		4315	Acetone				
		4320	Acetonitrile				
		4375	Benzene				
		4555	Cyclohexane				
		4725	Diethyl ether				
		4755	Ethyl acetate				
		4765	Ethylbenzene				
		4785	Ethylene glycol				
		4795	Ethylene oxide				
		4890	Isopropyl acetate				
		4895	Isopropyl alcohol (2-Propanol, Isopropanol)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4930	Methanol				
		4975	Methylene chloride (Dichloromethane)				
		5007	n-Butane				
		4825	n-Heptane				
		4855	n-Hexane				
		5028	n-Pentane				
		5029	n-Propane				
		9511	Neopentane				
		5250	o-Xylene				
		9607	sec-Butyl Alcohol (2-Butanol)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		5143	Total Butanes				
		9469	Total Hexanes				
		5148	Total Pentanes				
		5260	Xylene (total)				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



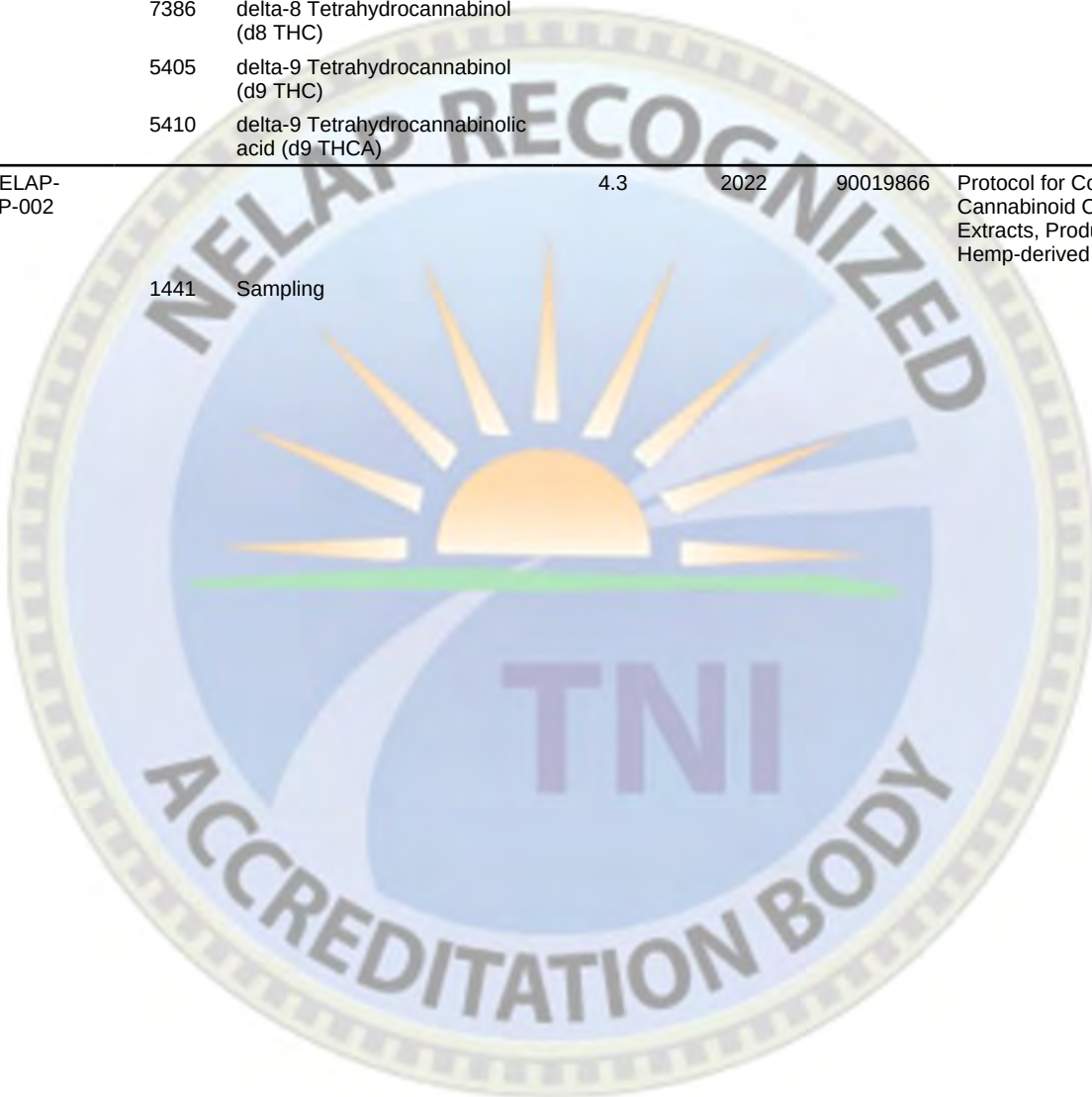
2 River Labs Oregon
2535 N. Ross Ave
Portland, OR 97227

ORELAP ID: 4112
EPA CODE: TNI02466
Certificate: 4112 - 018

Issue Date: 2/6/2025 Expiration Date: 2/1/2026

As of 2/6/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	J AOAC 2015 V98-6					818	Cannabinoids in Cannabis by HPLC-UV
		5415	Cannabidiol (CBD)				
		5420	Cannabidolic acid (CBDA)				
		7386	delta-8 Tetrahydrocannabinol (d8 THC)				
		5405	delta-9 Tetrahydrocannabinol (d9 THC)				
		5410	delta-9 Tetrahydrocannabinolic acid (d9 THCA)				
	ORELAP-SOP-002			4.3	2022	90019866	Protocol for Collecting Samples of Cannabinoid Concentrates, Extracts, Products, and Industrial Hemp-derived Vapor Items
		1441	Sampling				





Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



Camp Rilea Laboratory
33168 Patriot Way, Bld. 7239
Warrenton, OR 97146

ORELAP ID: OR100059
EPA CODE: OR01040
Certificate: OR100059 - 014

Issue Date: 3/4/2025 Expiration Date: 3/3/2026

As of 3/4/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	EPA 150.1				1982	10008409	pH - Electrometric Measurement
		1900	pH				
	EPA 330.5				1978	10059606	Residual Chlorine - DPD kit or DPD spec.
		1945	Residual free chlorine				
	HACH 10267 (UV/VIS)			1.2	2015	60005778	Total Organic Carbon by Automated Spectrophotometry
		2040	Total organic carbon				
	HACH 8322			9	2018	60004026	Sodium, Direct ISE Method
		1155	Sodium				
	OTHER CPI International ColiTag				2001	60030004	Chromogenic/Fluorogenic Qualitative (Colitag®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 2130 B			21st ED	2005	20042608	Turbidity by Nephelometric Method
		2055	Turbidity				
Non-Potable Water	SM 2510 B-97			1997		20048606	Conductivity by Probe
		1610	Conductivity				
	SM 4500-NO ₃ ⁻ D			18th ED	1992	20113206	Nitrate Nitrogen by Selective Electrode
		1810	Nitrate as N				
	EPA 130.2			1971	1971	10007202	Hardness - Titrimetric, EDTA
		1550	Calcium hardness as CaCO ₃				
	EPA 150.1				1982	10008409	pH - Electrometric Measurement
		1900	pH				
	EPA 160.1				1971	10009208	Total Dissolved Solids, dried @ 180 C.
		1955	Residue-filterable (TDS)				
	EPA 160.2				1971	10009606	Total Suspended Solids, 0.2um dried @105C
		1960	Residue-nonfilterable (TSS)				
	EPA 1664A					10127603	Silica Gen Treated N-Hexane Extractable Material (Oil and Grease)
		1860	Oil & Grease				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



Camp Rilea Laboratory
33168 Patriot Way, Bld. 7239
Warrenton, OR 97146

ORELAP ID: OR100059
EPA CODE: OR01040
Certificate: OR100059 - 014

Issue Date: 3/4/2025 Expiration Date: 3/3/2026

As of 3/4/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 330.5					10059402	Residual Chlorine - DPD kit or DPD spec.
		1580	Chlorine				
	EPA 350.3					10064207	Ammonia Nitrogen - Ion Selective Electrode
		1515	Ammonia as N				
	EPA 351.4				1978	10066203	Kjeldahl Nitrogen - Ion Selective Electrode
		1795	Total Kjeldahl Nitrogen (TKN)				
	EPA 375.4				1978	10073800	Sulfate - Turbidimetric.
		2000	Sulfate				
	EPA 410.4			2	1993	10077404	Chemical Oxygen Demand - Colorimetric, Automated.
		1565	Chemical oxygen demand				
	HACH 10238			2	2014	60005665	Copper, Bathocuprine Method
		1055	Copper				
	HACH 8322			9	2018	60004026	Sodium, Direct ISE Method
		1155	Sodium				
	SM 2130 B			21st ED	2005	20042608	Turbidity by Nephelometric Method
		2055	Turbidity				
	SM 2320 B			18th ED	1992	20044808	Alkalinity by Titration
		1505	Alkalinity as CaCO ₃				
	SM 2340 C			21st ED	2005	20047409	Hardness by EDTA Titration Method
		1750	Hardness				
	SM 2510 B-97			1997		20048606	Conductivity by Probe
		1610	Conductivity				
	SM 3500-Ca B			21st ED	2005	20064806	Calcium by EDTA Titrimetric Method
		1035	Calcium				
	SM 3500-K C					20069856	Potassium by Selective Electrode
		1125	Potassium				
	SM 3500-Mg B			21st ED	2005	20070400	Magnesium by Magnesium Calculation Method
		1085	Magnesium				
	SM 4500-Cl B			20th	1998	20783000	Chloride by Iodometric Method I
		1575	Chloride				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



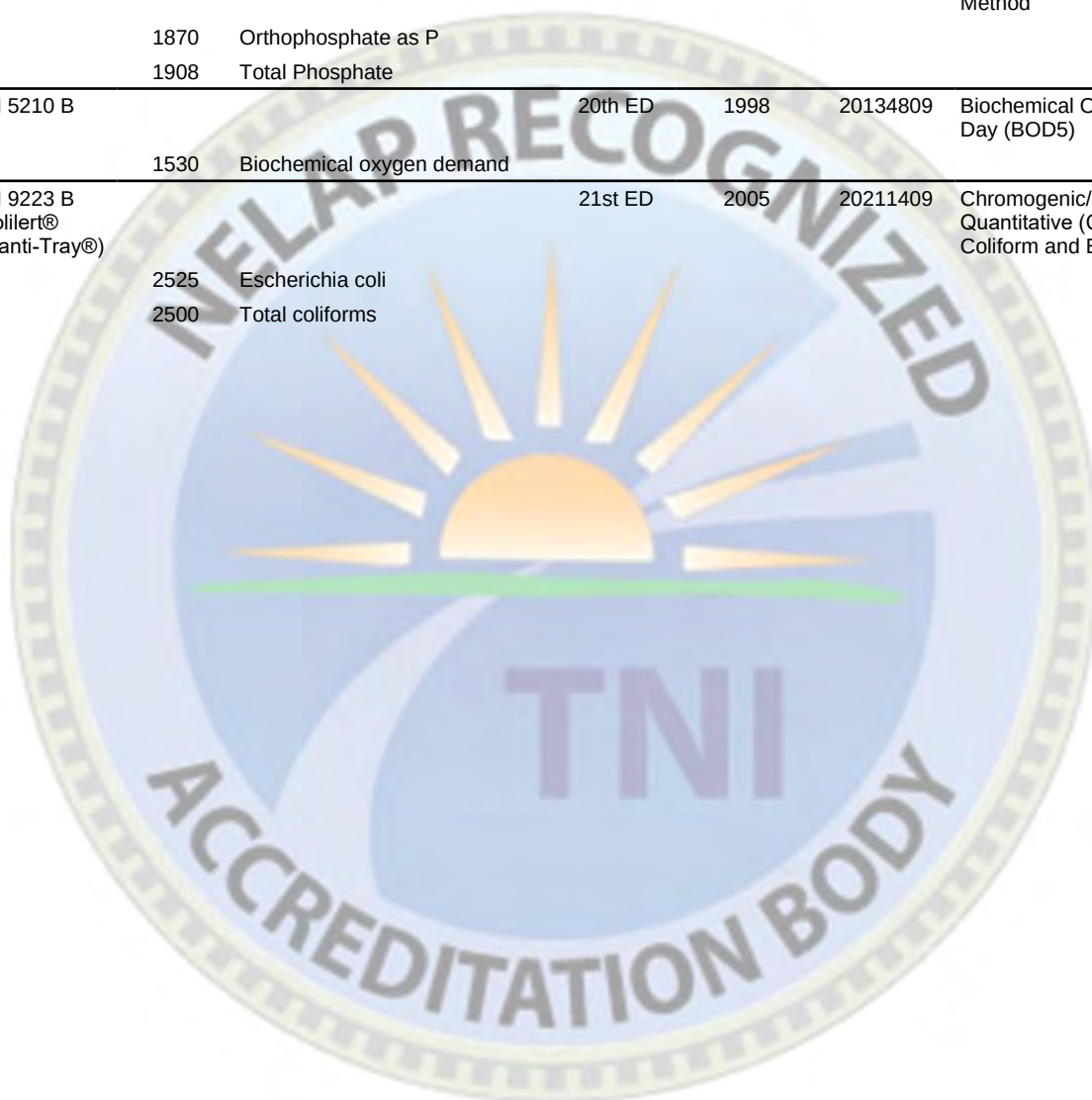
Camp Rilea Laboratory
33168 Patriot Way, Bld. 7239
Warrenton, OR 97146

ORELAP ID: OR100059
EPA CODE: OR01040
Certificate: OR100059 - 014

Issue Date: 3/4/2025 Expiration Date: 3/3/2026

As of 3/4/2025 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	SM 4500-NO ₃ ⁻ D			20th ED	1998	20113604	Nitrate Nitrogen by Selective Electrode
		1810	Nitrate as N				
	SM 4500-P E			21st ED	2005	20124009	Phosphorus by Ascorbic Acid Method
		1870	Orthophosphate as P				
		1908	Total Phosphate				
	SM 5210 B			20th ED	1998	20134809	Biochemical Oxygen Demand, 5-Day (BOD ₅)
		1530	Biochemical oxygen demand				
	SM 9223 B (Colilert® Quanti-Tray®)			21st ED	2005	20211409	Chromogenic/Fluorogenic Quantitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				





Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



City of Bend Water Quality Laboratory
22395 McGrath Rd
Bend, OR 97701

ORELAP ID: OR100038
EPA CODE: OR00056
Certificate: OR100038 - 015

Issue Date: 8/23/2024 Expiration Date: 8/22/2025

As of 8/23/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	SM 9215 E SimPlate®				2004	20185302	Fluorogenic Quantitative (SimPlate®): Heterotrophic Bacteria
		2555	Heterotrophic plate count				
	SM 9223 B (Colilert® Quanti-Tray®)			21st ED	2005	20211409	Chromogenic/Fluorogenic Quantitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®)			21st ED	2005	20212402	Chromogenic/Fluorogenic Qualitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®-18 Quanti-Tray®)			21st ED	2005	20213405	Chromogenic/Fluorogenic Quantitative (Colilert®-18): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®-18)			21st ED	2005	20214408	Chromogenic/Fluorogenic Qualitative (Colilert®-18): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
Non-Potable Water	SM 9223 B (Colilert® Quanti-Tray®)			21st ED	2005	20211409	Chromogenic/Fluorogenic Quantitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®-18 Quanti-Tray®)			21st ED	2005	20213405	Chromogenic/Fluorogenic Quantitative (Colilert®-18): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



City of Corvallis Water Quality Laboratory
1304 NE 2nd St
Corvallis, OR 97330

ORELAP ID: OR100027
EPA CODE: OR00035
Certificate: OR100027 - 019

Issue Date: 10/16/2024 Expiration Date: 10/15/2025

As of 10/16/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	SM 9223 B (Colilert®)-97			online		20212606	Chromogenic/Fluorogenic Qualitative (Colilert®)-97: Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®-18)-97			online		20214602	Chromogenic/Fluorogenic Qualitative (Colilert®-18)-97: Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
Non-Potable Water	SM 2540 D			22nd ED	2011	20051018	Solids - Total Suspended Solids Dried at 103 - 105 deg C
		1960	Residue-nonfilterable (TSS)				
	SM 5210 B			22nd ED	2011	20135017	Biochemical Oxygen Demand (BOD) 5-Day
		1555	Carbonaceous BOD, CBOD				
	SM 9223 B (Colilert® Quanti-Tray®)-97			online	1997	20211603	Chromogenic/Fluorogenic Quantitative (Colilert®)-97: Total Coliform and E. coli
		2525	Escherichia coli				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



City of Portland Water Pollution Control Laboratory
6543 North Burlington Avenue
Portland, OR 97203

ORELAP ID: 4023
EPA CODE: OR00967
Certificate: 4023 - 012

Issue Date: 10/9/2024 Expiration Date: 9/25/2025

As of 10/9/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	ASTM D8083-16				2016	30035202	Standard Test Method for the Determination of Total Nitrogen and Total Kjeldahl Nitrogen by Calculation, in Water by High Temperature Catalytic Combustion with Chemiluminescence /detection
		1827	Nitrogen, Total				
		1795	Total Kjeldahl Nitrogen (TKN)				
	EPA 1311				1992	10118806	Toxicity Characteristic Leaching Procedure
		8031	Extraction/Preparation				
		1466	Toxicity Characteristic Leaching Procedure (TCLP)				
	EPA 1312				1994	10119003	Synthetic Precipitation Leaching Procedure
		8031	Extraction/Preparation				
		1460	Synthetic Precipitation Leaching Procedure (SPLP)				
	EPA 1664B				2010	10261617	N-Hexane Extractable Material (Oil and Grease) by Extraction and Gravimetry
		6142	Hexane Extractable Material - Silica Gel Treated (HEM-SGT)				
		1803	n-Hexane Extractable Material (O&G)				
		1853	Non-Polar Extractable Material (TPH)				
		1860	Oil & Grease				
	EPA 200.8			5.4	1994	10014605	Metals by ICP-MS
		1000	Aluminum				
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1760	Hardness (calc.)				
		1070	Iron				



Oregon

Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



City of Portland Water Pollution Control Laboratory
6543 North Burlington Avenue
Portland, OR 97203

ORELAP ID: 4023
EPA CODE: OR00967
Certificate: 4023 - 012

Issue Date: 10/9/2024 Expiration Date: 9/25/2025

As of 10/9/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 200.8			5.4	1994	10014605	Metals by ICP-MS
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1175	Tin				
		1180	Titanium				
		1755	Total hardness as CaCO ₃				
		1185	Vanadium				
		1190	Zinc				
	EPA 200.8			5.5	1998	10014809	Metals by ICP-MS
		1000	Aluminum				
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1760	Hardness (calc.)				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 200.8			5.5	1998	10014809	Metals by ICP-MS
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1175	Tin				
		1180	Titanium				
		1755	Total hardness as CaCO ₃				
		1185	Vanadium				
		1190	Zinc				
	EPA 300.0			2.1	1993	10053200	Methods for the Determination of Inorganic Substances in Environmental Samples
		1540	Bromide				
		1575	Chloride				
		1730	Fluoride				
		1810	Nitrate as N				
		1840	Nitrite as N				
	EPA 3015A	2000	Sulfate				
					1998	10134006	Microwave Assisted Acid Digestion of Aqueous Samples and Extracts
		8031	Extraction/Preparation				
	EPA 350.1	1430	Microwave-Assisted Acid Digestion of TCLP Extracts				
				2	1993	10063602	Ammonia Nitrogen - Colorimetric, Auto Phenate
		1515	Ammonia as N				
	EPA 351.2			2	1993	10065404	Determination of Total Kjeldahl Nitrogen by Semi Automated Colorimetry
		1795	Total Kjeldahl Nitrogen (TKN)				
	EPA 3510C				1996	10138202	Separatory Funnel Liquid-liquid extraction
		8031	Extraction/Preparation				
		1444	Separatory Funnel Liquid-Liquid Extraction				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 3511				2002	10279808	Organic Compounds in Water by Microextraction
		8031	Extraction/Preparation				
		7538	Organic Compounds in Water by Microextraction				
	EPA 3511				2014	10279819	Organic Compounds in Water by Microextraction
		8031	Extraction/Preparation				
		7538	Organic Compounds in Water by Microextraction				
	EPA 353.2			2	1993	10067604	Nitrate/Nitrite Nitrogen - Automated, Cadmium
		1840	Nitrite as N				
	EPA 365.1			2	1993	10070005	Phosphorous - Colorimetric, Automated persulfate
		1870	Orthophosphate as P				
	EPA 5030C				2003	10284603	Purge-and-Trap for Aqueous Samples
		1406	Aqueous-phase Purge & Trap				
		8031	Extraction/Preparation				
	EPA 6020B			Update V	2014	10156420	Inductively Coupled Plasma-Mass Spectrometry
		1000	Aluminum				
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 6020B			Update V	2014	10156420	Inductively Coupled Plasma-Mass Spectrometry
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1170	Thorium				
		1175	Tin				
		1180	Titanium				
		1185	Vanadium				
		1190	Zinc				
	EPA 608.3 GC-ECD				2016	10296614	Organochlorine Pesticides and PCBs by GC/ECD
		7355	4,4'-DDD				
		7360	4,4'-DDE				
		7025	Aldrin				
		7110	alpha-BHC (alpha-Hexachlorocyclohexane)				
		8880	Aroclor-1016 (PCB-1016)				
		8885	Aroclor-1221 (PCB-1221)				
		8890	Aroclor-1232 (PCB-1232)				
		8895	Aroclor-1242 (PCB-1242)				
		8900	Aroclor-1248 (PCB-1248)				
		8905	Aroclor-1254 (PCB-1254)				
		8910	Aroclor-1260 (PCB-1260)				
		8912	Aroclor-1262 (PCB-1262)				
		8913	Aroclor-1268 (PCB-1268)				
		7115	beta-BHC (beta-Hexachlorocyclohexane)				
		7250	Chlordane (tech.)				
		7240	cis-chlordane (alpha-Chlordane)				
		7105	delta-BHC				
		7470	Dieldrin				
		7510	Endosulfan I				
		7515	Endosulfan II				
		7520	Endosulfan sulfate				
		7540	Endrin				
		7530	Endrin aldehyde				
		7535	Endrin ketone				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 608.3 GC-ECD				2016	10296614	Organochlorine Pesticides and PCBs by GC/ECD
		7120	gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)				
		7245	gamma-Chlordane				
		7685	Heptachlor				
		7690	Heptachlor epoxide				
		7810	Methoxychlor				
	EPA 624.1				2016	10298121	Purgeables by GC/MS
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5185	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4570	1,2-Dibromo-3-chloropropane (DBCP)				
		4585	1,2-Dibromoethane (EDB, Ethylene dibromide)				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4410	2-Butanone (Methyl ethyl ketone, MEK)				
		4500	2-Chloroethyl vinyl ether				
		4535	2-Chlorotoluene				
		4860	2-Hexanone (MBK)				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				



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Non-Potable Water	EPA 624.1				2016	10298121	Purgeables by GC/MS
		4995	4-Methyl-2-pentanone (MIBK)				
		4315	Acetone				
		4325	Acrolein (Propenal)				
		4340	Acrylonitrile				
		4375	Benzene				
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4450	Carbon disulfide				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4625	Dichlorodifluoromethane (Freon-12)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5120	Tetrahydrofuran (THF)				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 624.1				2016	10298121	Purgeables by GC/MS
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5225	Vinyl acetate				
		5235	Vinyl chloride				
	EPA 625.1				2016	10300024	Base/Neutrals and Acids by GC/MS
		6715	1,2,4,5-Tetrachlorobenzene				
		5155	1,2,4-Trichlorobenzene				
		4610	1,2-Dichlorobenzene				
		4620	1,4-Dichlorobenzene				
		4659	2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether				
		6735	2,3,4,6-Tetrachlorophenol				
		6835	2,4,5-Trichlorophenol				
		6840	2,4,6-Trichlorophenol				
		6000	2,4-Dichlorophenol				
		6130	2,4-Dimethylphenol				
		6175	2,4-Dinitrophenol				
		6185	2,4-Dinitrotoluene (2,4-DNT)				
		6190	2,6-Dinitrotoluene (2,6-DNT)				
		5795	2-Chloronaphthalene				
		5800	2-Chlorophenol				
		6360	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)				
		6385	2-Methylnaphthalene				
		6400	2-Methylphenol (o-Cresol)				
		6460	2-Nitroaniline				
		6490	2-Nitrophenol				
		6412	3 & 4 Methylphenol				
		5945	3,3'-Dichlorobenzidine				
		6465	3-Nitroaniline				
		5660	4-Bromophenyl phenyl ether (BDE-3)				
		5700	4-Chloro-3-methylphenol				
		5745	4-Chloroaniline				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 625.1				2016	10300024	Base/Neutrals and Acids by GC/MS
		5825	4-Chlorophenyl phenylether				
		6470	4-Nitroaniline				
		6500	4-Nitrophenol				
		5500	Acenaphthene				
		5505	Acenaphthylene				
		5555	Anthracene				
		5562	Azobenzene				
		5595	Benidine				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				
		5630	Benzyl alcohol				
		5760	bis(2-Chloroethoxy)methane				
		5765	bis(2-Chloroethyl) ether				
		5670	Butyl benzyl phthalate				
		5680	Carbazole				
		5855	Chrysene				
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		5905	Dibenzofuran				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		6265	Fluoranthene				
		6270	Fluorene				
		6275	Hexachlorobenzene				
		4835	Hexachlorobutadiene				
		6285	Hexachlorocyclopentadiene				
		4840	Hexachloroethane				
		6315	Indeno(1,2,3-cd) pyrene				
		6320	Isophorone				
		5875	n-Decane				
		6545	n-Nitrosodi-n-propylamine				
		6530	n-Nitrosodimethylamine				
		6535	n-Nitrosodiphenylamine				



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Non-Potable Water	EPA 625.1				2016	10300024	Base/Neutrals and Acids by GC/MS
		6580	n-Octadecane				
		5005	Naphthalene				
		5015	Nitrobenzene				
		6590	Pentachlorobenzene				
		6605	Pentachlorophenol				
		6615	Phenanthrene				
		6625	Phenol				
		6665	Pyrene				
	EPA 8082A				2000	10179201	Polychlorinated Biphenyls (PCBs) by GC/ECD
		8880	Aroclor-1016 (PCB-1016)				
		8885	Aroclor-1221 (PCB-1221)				
		8890	Aroclor-1232 (PCB-1232)				
		8895	Aroclor-1242 (PCB-1242)				
		8900	Aroclor-1248 (PCB-1248)				
		8905	Aroclor-1254 (PCB-1254)				
		8910	Aroclor-1260 (PCB-1260)				
		8912	Aroclor-1262 (PCB-1262)				
		8913	Aroclor-1268 (PCB-1268)				
	EPA 8082A				2007	10179358	Polychlorinated Biphenyls (PCBs) by GC/ECD
		8880	Aroclor-1016 (PCB-1016)				
		8885	Aroclor-1221 (PCB-1221)				
		8890	Aroclor-1232 (PCB-1232)				
		8895	Aroclor-1242 (PCB-1242)				
		8900	Aroclor-1248 (PCB-1248)				
		8905	Aroclor-1254 (PCB-1254)				
		8910	Aroclor-1260 (PCB-1260)				
		8912	Aroclor-1262 (PCB-1262)				
		8913	Aroclor-1268 (PCB-1268)				
	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5185	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5182	1,2,3-Trimethylbenzene				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4570	1,2-Dibromo-3-chloropropane (DBCP)				
		4585	1,2-Dibromoethane (EDB, Ethylene dibromide)				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		6800	1,3,5-Trichlorobenzene				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4410	2-Butanone (Methyl ethyl ketone, MEK)				
		4500	2-Chloroethyl vinyl ether				
		4535	2-Chlorotoluene				
		4860	2-Hexanone (MBK)				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				
		4995	4-Methyl-2-pentanone (MIBK)				
		4315	Acetone				
		4325	Acrolein (Propenal)				
		4340	Acrylonitrile				
		4375	Benzene				
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4450	Carbon disulfide				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				



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Non-Potable Water	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4625	Dichlorodifluoromethane (Freon-12)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4870	Iodomethane (Methyl iodide)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		4605	trans-1,4-Dichloro-2-butene				
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5225	Vinyl acetate				
		5235	Vinyl chloride				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5185	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5182	1,2,3-Trimethylbenzene				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4570	1,2-Dibromo-3-chloropropane (DBCP)				
		4585	1,2-Dibromoethane (EDB, Ethylene dibromide)				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		6800	1,3,5-Trichlorobenzene				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4410	2-Butanone (Methyl ethyl ketone, MEK)				
		4500	2-Chloroethyl vinyl ether				
		4535	2-Chlorotoluene				
		4860	2-Hexanone (MBK)				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				
		4995	4-Methyl-2-pentanone (MIBK)				
		4315	Acetone				
		4325	Acrolein (Propenal)				
		4340	Acrylonitrile				
		4375	Benzene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4450	Carbon disulfide				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4870	Iodomethane (Methyl iodide)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		4605	trans-1,4-Dichloro-2-butene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5225	Vinyl acetate				
		5235	Vinyl chloride				
	EPA 8270D				2007	10186002	Semivolatile Organic compounds by GC/MS
		6715	1,2,4,5-Tetrachlorobenzene				
		5155	1,2,4-Trichlorobenzene				
		4610	1,2-Dichlorobenzene				
		4615	1,3-Dichlorobenzene				
		4620	1,4-Dichlorobenzene				
		4659	2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether				
		6735	2,3,4,6-Tetrachlorophenol				
		6835	2,4,5-Trichlorophenol				
		6840	2,4,6-Trichlorophenol				
		6000	2,4-Dichlorophenol				
		6130	2,4-Dimethylphenol				
		6175	2,4-Dinitrophenol				
		6185	2,4-Dinitrotoluene (2,4-DNT)				
		6190	2,6-Dinitrotoluene (2,6-DNT)				
		5795	2-Chloronaphthalene				
		5800	2-Chlorophenol				
		6360	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)				
		6385	2-Methylnaphthalene				
		6400	2-Methylphenol (o-Cresol)				
		6460	2-Nitroaniline				
		6490	2-Nitrophenol				
		6412	3 & 4 Methylphenol				
		5945	3,3'-Dichlorobenzidine				
		6465	3-Nitroaniline				
		5660	4-Bromophenyl phenyl ether (BDE-3)				
		5700	4-Chloro-3-methylphenol				
		5745	4-Chloroaniline				
		5825	4-Chlorophenyl phenylether				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8270D				2007	10186002	Semivolatile Organic compounds by GC/MS
		6470	4-Nitroaniline				
		6500	4-Nitrophenol				
		5500	Acenaphthene				
		5505	Acenaphthylene				
		5555	Anthracene				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				
		5630	Benzyl alcohol				
		5760	bis(2-Chloroethoxy)methane				
		5765	bis(2-Chloroethyl) ether				
		5670	Butyl benzyl phthalate				
		5855	Chrysene				
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		5905	Dibenzofuran				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		6265	Fluoranthene				
		6270	Fluorene				
		6275	Hexachlorobenzene				
		4835	Hexachlorobutadiene				
		6285	Hexachlorocyclopentadiene				
		4840	Hexachloroethane				
		6315	Indeno(1,2,3-cd) pyrene				
		6320	Isophorone				
		6545	n-Nitrosodi-n-propylamine				
		6535	n-Nitrosodiphenylamine				
		5005	Naphthalene				
		5015	Nitrobenzene				
		6590	Pentachlorobenzene				
		6605	Pentachlorophenol				
		6615	Phenanthrene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8270D				2007	10186002	Semivolatile Organic compounds by GC/MS
		6625	Phenol				
		6665	Pyrene				
	EPA 8270D SIM				2014	10242532	Volatile Organic Compounds by GC/MS-SIM
		6380	1-Methylnaphthalene				
		6385	2-Methylnaphthalene				
		5500	Acenaphthene				
		5555	Anthracene				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				
		5670	Butyl benzyl phthalate				
		5855	Chrysene				
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		6265	Fluoranthene				
		6270	Fluorene				
		6315	Indeno(1,2,3-cd) pyrene				
		5005	Naphthalene				
		6605	Pentachlorophenol				
		6615	Phenanthrene				
		6665	Pyrene				
	EPA 8270E				2017	10242543	Semivolatile Organic compounds by GC/MS
		6715	1,2,4,5-Tetrachlorobenzene				
		5155	1,2,4-Trichlorobenzene				
		4610	1,2-Dichlorobenzene				
		4615	1,3-Dichlorobenzene				
		4620	1,4-Dichlorobenzene				
		4659	2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether				
		6735	2,3,4,6-Tetrachlorophenol				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8270E				2017	10242543	Semivolatile Organic compounds by GC/MS
		8590	2,4'-DDT				
		6835	2,4,5-Trichlorophenol				
		6840	2,4,6-Trichlorophenol				
		6000	2,4-Dichlorophenol				
		6130	2,4-Dimethylphenol				
		6175	2,4-Dinitrophenol				
		6185	2,4-Dinitrotoluene (2,4-DNT)				
		6190	2,6-Dinitrotoluene (2,6-DNT)				
		5795	2-Chloronaphthalene				
		5800	2-Chlorophenol				
		6360	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)				
		6385	2-Methylnaphthalene				
		6400	2-Methylphenol (o-Cresol)				
		6460	2-Nitroaniline				
		6490	2-Nitrophenol				
		6412	3 & 4 Methylphenol				
		5945	3,3'-Dichlorobenzidine				
		6465	3-Nitroaniline				
		7355	4,4'-DDD				
		7360	4,4'-DDE				
		5660	4-Bromophenyl phenyl ether (BDE-3)				
		5700	4-Chloro-3-methylphenol				
		5745	4-Chloroaniline				
		5825	4-Chlorophenyl phenylether				
		6470	4-Nitroaniline				
		6500	4-Nitrophenol				
		5500	Acenaphthene				
		5505	Acenaphthylene				
		7025	Aldrin				
		7110	alpha-BHC (alpha-Hexachlorocyclohexane)				
		5555	Anthracene				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	EPA 8270E				2017	10242543	Semivolatile Organic compounds by GC/MS
		5630	Benzyl alcohol				
		7115	beta-BHC (beta-Hexachlorocyclohexane)				
		5760	bis(2-Chloroethoxy)methane				
		5765	bis(2-Chloroethyl) ether				
		5670	Butyl benzyl phthalate				
		5855	Chrysene				
		7240	cis-chlordane (alpha-Chlordane)				
		7105	delta-BHC				
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		5905	Dibenzofuran				
		7470	Dieldrin				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		7510	Endosulfan I				
		7515	Endosulfan II				
		7540	Endrin				
		7530	Endrin aldehyde				
		7535	Endrin ketone				
		6265	Fluoranthene				
		6270	Fluorene				
		7120	gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)				
		7245	gamma-Chlordane				
		7685	Heptachlor				
		7690	Heptachlor epoxide				
		6275	Hexachlorobenzene				
		4835	Hexachlorobutadiene				
		6285	Hexachlorocyclopentadiene				
		4840	Hexachloroethane				
		6315	Indeno(1,2,3-cd) pyrene				
		6320	Isophorone				
		7810	Methoxychlor				
		6545	n-Nitrosodi-n-propylamine				
		6535	n-Nitrosodiphenylamine				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	NWTPH-Dx				04/03/2003	90018409	Oregon DEQ TPH Diesel Range
		9499	Motor Oil				
	NWTPH-HCID					90013200	Oregon DEQ Total Petroleum Hydrocarbon ID
		9369	Diesel range organics (DRO)				
		9499	Motor Oil				
	PWPCL SOP Organics-15.04			4	2018	90021037	Portland Water Pollution Control Laboratory - Chlorinated Herbicides in Water (EPA 515.4 SIM)
		8655	2,4,5-T				
		8545	2,4-D				
		8560	2,4-DB				
		8600	3,5-Dichlorobenzoic acid				
		8505	Acifluorfen				
		8530	Bentazon				
		8595	Dicamba				
		8605	Dichloroprop (Dichlorprop)				
		8620	Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)				
		6605	Pentachlorophenol				
		8645	Picloram				
		8650	Silvex (2,4,5-TP)				
	SM 10200 H			21st Edition	2001	20300225	Plankton - Chlorophyll
		9345	Chlorophylls				
	SM 10200 H-2011			2011		20300236	Chlorophyll by Spectrophotometer
		9345	Chlorophylls				
Non-Potable Water	SM 2320 B			22nd Ed	2011	20045414	Alkalinity by Titration
		1505	Alkalinity as CaCO ₃				
Non-Potable Water	SM 2320 B-2011				2011	20045618	Alkalinity as CaCO ₃
		1505	Alkalinity as CaCO ₃				
		1506	Alkalinity, Bicarbonate				
		1507	Alkalinity, Carbonate				
Non-Potable Water	SM 2340 B			22nd Ed	2011	20046417	Hardness - Hardness by Calculation
		1760	Hardness (calc.)				
Non-Potable Water	SM 2340 B-2011			online		20046611	Hardness
		1750	Hardness				
		1755	Total hardness as CaCO ₃				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	SM 2510 B			22nd Ed	2011	20048413	Conductivity by Probe
		1610	Conductivity				
	SM 2510 B-2011				2011	20048617	Conductivity by Probe
		1610	Conductivity				
	SM 2540 B-2011			2011		20049416	Total Solids Dried at 103 - 105C
		1950	Residue-total				
	SM 2540 C			22nd Ed	2011	20050424	Total Dissolved Solids Dried at 180 deg C
		1955	Residue-filterable (TDS)				
	SM 2540 C-2011			online	2011	20050413	Residue-filterable (TDS)
		1955	Residue-filterable (TDS)				
	SM 2540 D-2011				2011	20051212	Total Suspended Solids Dried at 103 - 105 C
		1960	Residue-nonfilterable (TSS)				
	SM 2540 E-1997				2011	20051585	Fixed & Volatile Solids Ignited at 550 C
		1947	Residue - Fixed				
		1725	Total, fixed, and volatile residue				
	SM 2540 E-2011			2011		20051596	Fixed & Volatile Solids Ignited at 550 C
		1947	Residue - Fixed				
		1725	Total, fixed, and volatile residue				
	SM 4500-CI D-2011			2011		20080120	Chlorine (Residual) by Amperometric Titration
		1940	Total residual chlorine				
	SM 4500-CN E-1999				2011	20096417	Cyanide by Colorimetric Method
		1635	Cyanide				
		1645	Total cyanide				
	SM 4500-CN E-2011			2011		20096428	Cyanide by Colormetric Method
		1635	Cyanide				
		1645	Total cyanide				
	SM 4500-H+ B			22nd Ed	2011	20105015	pH Value - Electrometric Method
		1900	pH				
	SM 4500-H+ B-2011					20105220	pH - Electrometric Measurement
		1900	pH				
	SM 5210 B-2001			online	2001	20135255	Biochemical Oxygen Demand (BOD), 5-Day
		1530	Biochemical oxygen demand				
		1555	Carbonaceous BOD, CBOD				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	SM 5210 B-2011			online	2011	20135266	Biochemical Oxygen Demand (5 days @ 20 C).
		1530	Biochemical oxygen demand				
		1555	Carbonaceous BOD, CBOD				
	SM 5220 D-2011			2011		20136816	Chemical Oxygen Demand by Closed Reflux and Colorimetric Determination
		1565	Chemical oxygen demand				
	SM 5220 D-97			online		20136805	COD by Closed Reflux, Colorimetric Method
		1565	Chemical oxygen demand				
	SM 5310 B-2000				2000	20137819	Total Organic Carbon (TOC) by Combustion Infra-red Method
		1710	Dissolved organic carbon (DOC)				
		2040	Total organic carbon				
	SM 5310 B-2011			2011		20137820	TOC by High-Temperature Combustion Method
		1710	Dissolved organic carbon (DOC)				
		2040	Total organic carbon				
	SM 9221 E			22nd ED	2006	20227003	Multiple Tube Fermentation Quantitative (EC): Fecal Coliform
Solids		2530	Fecal coliforms				
	SM 9223 B (Colilert Quanti-Tray)-2004			22nd Ed	2004	20211614	Enzyme Substrate Coliform Test (Colilert Quanti-Tray)
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert-18 Quanti-Tray)-2004			22nd ED	2004	20213610	Enzyme Substrate Coliform Test (Colilert-18 Quanti-Tray)
		2525	Escherichia coli				
		2500	Total coliforms				
	EPA 1311				1992	10118806	Toxicity Characteristic Leaching Procedure
		8031	Extraction/Preparation				
		1466	Toxicity Characteristic Leaching Procedure (TCLP)				
	EPA 1312				1994	10119003	Synthetic Precipitation Leaching Procedure
		8031	Extraction/Preparation				
		1460	Synthetic Precipitation Leaching Procedure (SPLP)				
	EPA 200.8			5.4	1994	10014605	Metals by ICP-MS
		1005	Antimony				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 200.8			5.4	1994	10014605	Metals by ICP-MS
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1760	Hardness (calc.)				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1175	Tin				
		1180	Titanium				
		1755	Total hardness as CaCO ₃				
		1185	Vanadium				
		1190	Zinc				
				5.5	1998	10014809	Metals by ICP-MS
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 200.8			5.5	1998	10014809	Metals by ICP-MS
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1760	Hardness (calc.)				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1175	Tin				
		1180	Titanium				
		1755	Total hardness as CaCO ₃				
		1185	Vanadium				
		1190	Zinc				
	EPA 300.0			2.1	1993	10053200	Methods for the Determination of Inorganic Substances in Environmental Samples
		1540	Bromide				
		1575	Chloride				
		1730	Fluoride				
		1810	Nitrate as N				
		2000	Sulfate				
	EPA 3051				1994	10135805	Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, and Oils
		8031	Extraction/Preparation				
		1426	Microwave Digestion of Solids				
	EPA 350.1			2	1993	10063602	Ammonia Nitrogen - Colorimetric, Auto Phenate
		1515	Ammonia as N				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 351.2			2	1993	10065404	Determination of Total Kjeldahl Nitrogen by Semi Automated Colorimetry
		1795	Total Kjeldahl Nitrogen (TKN)				
	EPA 3546				2000	10141205	Microwave Extraction
		8031	Extraction/Preparation				
	EPA 5035A				2002	10284807	Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples
		1417	Bulk Purge-and-Trap (Methanol)				
		1390	Closed-System Purge & Trap (Bisulfate)				
		1391	Closed-System Purge & Trap (Freezing)				
		1392	Closed-System Purge & Trap (Methanol)				
		8031	Extraction/Preparation				
	EPA 6020B			Update V	2014	10156420	Inductively Coupled Plasma-Mass Spectrometry
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1025	Boron				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1050	Cobalt				
		1055	Copper				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1910	Phosphorus, total				
		1125	Potassium				
		1140	Selenium				
		1990	Silica as SiO ₂				
		1145	Silicon				
		1150	Silver				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 6020B			Update V	2014	10156420	Inductively Coupled Plasma-Mass Spectrometry
		1155	Sodium				
		1165	Thallium				
		1170	Thorium				
		1175	Tin				
		1180	Titanium				
		1185	Vanadium				
		1190	Zinc				
	EPA 8082A				2000	10179201	Polychlorinated Biphenyls (PCBs) by GC/ECD
		8880	Aroclor-1016 (PCB-1016)				
		8885	Aroclor-1221 (PCB-1221)				
		8890	Aroclor-1232 (PCB-1232)				
		8895	Aroclor-1242 (PCB-1242)				
		8900	Aroclor-1248 (PCB-1248)				
		8905	Aroclor-1254 (PCB-1254)				
		8910	Aroclor-1260 (PCB-1260)				
		8912	Aroclor-1262 (PCB-1262)				
		8913	Aroclor-1268 (PCB-1268)				
	EPA 8082A				2007	10179358	Polychlorinated Biphenyls (PCBs) by GC/ECD
		8880	Aroclor-1016 (PCB-1016)				
		8885	Aroclor-1221 (PCB-1221)				
		8890	Aroclor-1232 (PCB-1232)				
		8895	Aroclor-1242 (PCB-1242)				
		8900	Aroclor-1248 (PCB-1248)				
		8905	Aroclor-1254 (PCB-1254)				
		8910	Aroclor-1260 (PCB-1260)				
		8912	Aroclor-1262 (PCB-1262)				
		8913	Aroclor-1268 (PCB-1268)				
	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5185	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5182	1,2,3-Trimethylbenzene				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4570	1,2-Dibromo-3-chloropropane (DBCP)				
		4585	1,2-Dibromoethane (EDB, Ethylene dibromide)				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		6800	1,3,5-Trichlorobenzene				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4410	2-Butanone (Methyl ethyl ketone, MEK)				
		4500	2-Chloroethyl vinyl ether				
		4535	2-Chlorotoluene				
		4860	2-Hexanone (MBK)				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				
		4995	4-Methyl-2-pentanone (MIBK)				
		4315	Acetone				
		4325	Acrolein (Propenal)				
		4340	Acrylonitrile				
		4375	Benzene				
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4450	Carbon disulfide				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				



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Issue Date: 10/9/2024 Expiration Date: 9/25/2025

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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8260C				1998	10307003	Volatile Organics: GC/MS (capillary column)
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4625	Dichlorodifluoromethane (Freon-12)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4870	Iodomethane (Methyl iodide)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		4605	trans-1,4-Dichloro-2-butene				
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5225	Vinyl acetate				
		5235	Vinyl chloride				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5185	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5182	1,2,3-Trimethylbenzene				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4570	1,2-Dibromo-3-chloropropane (DBCP)				
		4585	1,2-Dibromoethane (EDB, Ethylene dibromide)				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		6800	1,3,5-Trichlorobenzene				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4410	2-Butanone (Methyl ethyl ketone, MEK)				
		4500	2-Chloroethyl vinyl ether				
		4535	2-Chlorotoluene				
		4860	2-Hexanone (MBK)				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				
		4995	4-Methyl-2-pentanone (MIBK)				
		4315	Acetone				
		4325	Acrolein (Propenal)				
		4340	Acrylonitrile				
		4375	Benzene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4450	Carbon disulfide				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4870	Iodomethane (Methyl iodide)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		4605	trans-1,4-Dichloro-2-butene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8260D				2017	10307127	Volatile Organic Compounds By GC/MS
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5225	Vinyl acetate				
		5235	Vinyl chloride				
	EPA 8270D SIM					10242509	Semivolatile Organic compounds by GC/MS Selective Ion Monitoring
		6385	2-Methylnaphthalene				
	EPA 8270D SIM				2014	10242532	Volatile Organic Compounds by GC/MS-SIM
		6380	1-Methylnaphthalene				
		6385	2-Methylnaphthalene				
		5500	Acenaphthene				
		5505	Acenaphthylene				
		5555	Anthracene				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				
		5670	Butyl benzyl phthalate				
		5855	Chrysene				
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		6265	Fluoranthene				
		6270	Fluorene				
		6315	Indeno(1,2,3-cd) pyrene				
		5005	Naphthalene				
		6615	Phenanthrene				
		6665	Pyrene				
	EPA 8270E				2017	10242543	Semivolatile Organic compounds by GC/MS
		8590	2,4'-DDT				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8270E				2017	10242543	Semivolatile Organic compounds by GC/MS
		7355	4,4'-DDD				
		7360	4,4'-DDE				
		7025	Aldrin				
		7110	alpha-BHC (alpha-Hexachlorocyclohexane)				
		7115	beta-BHC (beta-Hexachlorocyclohexane)				
		7240	cis-chlordane (alpha-Chlordane)				
		7105	delta-BHC				
		7470	Dieldrin				
		7510	Endosulfan I				
		7515	Endosulfan II				
		7520	Endosulfan sulfate				
		7540	Endrin				
		7530	Endrin aldehyde				
		7535	Endrin ketone				
		7120	gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)				
		7245	gamma-Chlordane				
		7685	Heptachlor				
		7690	Heptachlor epoxide				
		7810	Methoxychlor				
		8250	Toxaphene (Chlorinated camphene)				
SIM	EPA 8270E				2018	10242565	Semivolatile Organic compounds by Gas Chromatography/Mass Spectrometry (GC/MS-SIM)
		6380	1-Methylnaphthalene				
		6385	2-Methylnaphthalene				
		5500	Acenaphthene				
		5505	Acenaphthylene				
		5555	Anthracene				
		5575	Benzo(a)anthracene				
		5580	Benzo(a)pyrene				
		5590	Benzo(g,h,i)perylene				
		5600	Benzo(k)fluoranthene				
		5585	Benzo[b]fluoranthene				
		5670	Butyl benzyl phthalate				
		5855	Chrysene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	EPA 8270E SIM				2018	10242565	Semivolatile Organic compounds by Gas Chromatography/Mass Spectrometry (GC/MS-SIM)
		6065	Di(2-ethylhexyl) phthalate (bis (2-Ethylhexyl)phthalate, DEHP)				
		5925	Di-n-butyl phthalate				
		6200	Di-n-octyl phthalate				
		5895	Dibenz(a,h) anthracene				
		6070	Diethyl phthalate				
		6135	Dimethyl phthalate				
		6265	Fluoranthene				
		6270	Fluorene				
		6315	Indeno(1,2,3-cd) pyrene				
		5005	Naphthalene				
		6615	Phenanthrene				
		6665	Pyrene				
	EPA 9045C				1995	10198400	Soil and Waste pH
		1625	Corrosivity (pH)				
		1900	pH				
	NWTPH-Dx				04/03/2003	90018409	Oregon DEQ TPH Diesel Range
		9369	Diesel range organics (DRO)				
		9499	Motor Oil				
	NWTPH-HCID					90013200	Oregon DEQ Total Petroleum Hydrocarbon ID
		9369	Diesel range organics (DRO)				
		9408	Gasoline range organics (GRO)				
		9499	Motor Oil				
	SM 10200 H			21st Edition	2001	20300225	Plankton - Chlorophyll
		9345	Chlorophylls				
	SM 10200 H-2011			2011		20300236	Chlorophyll by Spectrophotometer
		9345	Chlorophylls				
	SM 2540 G-2011			online	2011	20005270	Total, Fixed, and Volatile Solids
		1947	Residue - Fixed				
		1950	Residue-total				
		1970	Residue-volatile				
		1725	Total, fixed, and volatile residue				
	SM 4500-CN E-1999				2011	20096417	Cyanide by Colorimetric Method
		1635	Cyanide				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	SM 4500-CN E-1999	1645	Total cyanide		2011	20096417	Cyanide by Colorimetric Method
	SM 4500-CN E-2011	1635	Cyanide	2011		20096428	Cyanide by Colormetric Method
		1645	Total cyanide				
	SM 9221 E	2530	Fecal coliforms	22nd ED	2006	20227003	Multiple Tube Fermentation Quantitative (EC): Fecal Coliform
	SM 9221 F (EC MUG)	2525	Escherichia coli	21st ED	2005	20197404	Multiple Tube Fermentation Qualitative (LTB/EC MUG): Total Coliform and E. Coli
		2530	Fecal coliforms				
		2500	Total coliforms				
	WPCL SOP Organics-14.01	8031	Extraction/Preparation	01	2013	90019488	City of Portland WPCL - PCB Slurry Extraction of Solids



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Clackamas Water Environment Services-Water Quality Laboratory

15941 S. Agnes Ave., Bldg. B
Oregon City, OR 97045

ORELAP ID: OR100053
EPA CODE: OR00964
Certificate: OR100053 - 016

Issue Date: 7/18/2024 Expiration Date: 7/17/2025

As of 7/18/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	SM 9223 B (Colilert)			22nd Ed	2004	20212413	Enzyme Substrate Coliform Test (Colilert) P/A
		2525	Escherichia coli				
		2500	Total coliforms				
Non-Potable Water	SM 2320 B			22nd Ed	2011	20045414	Alkalinity by Titration
		1505	Alkalinity as CaCO ₃				
	SM 2340 C-2011			22nd Ed	2011	20047614	Hardness by EDTA Titration
		1755	Total hardness as CaCO ₃				
	SM 2510 B			23rd Ed	2011	20048435	Conductivity by Probe
		1610	Conductivity				
	SM 2540 B-2011			2011		20049416	Total Solids Dried at 103 - 105C
		1950	Residue-total				
	SM 2540 C			22nd Ed	2011	20050424	Total Dissolved Solids Dried at 180 deg C
		1955	Residue-filterable (TDS)				
	SM 2540 D			22nd Ed	2011	20051018	Solids - Total Suspended Solids Dried at 103 - 105 deg C
		1960	Residue-nonfilterable (TSS)				
	SM 2540 F-2011				2011	20052215	Settleable Solids
		1965	Residue-settleable				
	SM 4500-Cl G			22nd Ed	2011	20081418	Chlorine (Residual) - DPD Colorimetric Method
		1940	Total residual chlorine				
	SM 4500-H+ B			22nd Ed	2011	20105015	pH Value - Electrometric Method
		1900	pH				
	SM 4500-NH ₃ G			20th ED	1998	20111006	Ammonia by Automated Phenate
		1515	Ammonia as N				
	SM 4500-NO ₃ ⁻ F			20th ED	1998	20116205	Nitrate Nitrogen by Automated Cadmium Reduction Method
		1820	Nitrate plus Nitrite as N				
	SM 4500-NO ₃ ⁻ F-2000				2000	20117617	Nitrogen (Nitrate) - Automated Cadmium Reduction Method
		1840	Nitrite as N				



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Clackamas Water Environment Services-Water Quality Laboratory

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ORELAP ID: OR100053
EPA CODE: OR00964
Certificate: OR100053 - 016

Issue Date: 7/18/2024 Expiration Date: 7/17/2025

As of 7/18/2024 this list supersedes all previous lists for this certificate number.

MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Non-Potable Water	SM 4500-Norg D-2011				2011	20120289	Organic Nitrogen by Block Digestion and Flow Injection Analysis
		1795	Total Kjeldahl Nitrogen (TKN)				
	SM 4500-O C			20th ED	1998	20120405	Dissolved Oxygen by Azide Modification
		1880	Oxygen, dissolved				
	SM 4500-P F			20th ED	1998	20124601	Phosphorus by Automated Ascorbic Acid Reduction
		1870	Orthophosphate as P				
		1910	Phosphorus, total				
	SM 5210 B			21st ED	2005	20135006	Biochemical Oxygen Demand, 5-Day (BOD5)
		1530	Biochemical oxygen demand				
		1555	Carbonaceous BOD, CBOD				
	SM 9215 E SimPlate®				2004	20185302	Fluorogenic Quantitative (SimPlate®): Heterotrophic Bacteria
		2555	Heterotrophic plate count				
	SM 9223 B (Colilert Quanti-Tray)-2004			22nd Ed	2004	20211614	Enzyme Substrate Coliform Test (Colilert Quanti-Tray)
		2525	Escherichia coli				
		2500	Total coliforms				



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Environmental Laboratory Accreditation Program

ORELAP Fields of Accreditation



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Certificate: OR100014 - 020

Issue Date: 11/7/2024 Expiration Date: 11/6/2025

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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	EPA 1623				2005	10236609	Filtration/IMS/FA: Cryptosporidium and Giardia
		2510	Cryptosporidia				
		2545	Giardia				
	EPA 1623.1				2012	10236621	Cryptosporidium and Giardia in Water by Filtration/IMS/FA
		2510	Cryptosporidia				
		2545	Giardia				
	EPA 200.8			5.4	1994	10014605	Metals by ICP-MS
		1000	Aluminum				
		1005	Antimony				
		1010	Arsenic				
		1015	Barium				
		1020	Beryllium				
		1030	Cadmium				
		1035	Calcium				
		1040	Chromium				
		1055	Copper				
		1070	Iron				
		1075	Lead				
		1085	Magnesium				
		1090	Manganese				
		1095	Mercury				
		1100	Molybdenum				
		1105	Nickel				
		1125	Potassium				
		1140	Selenium				
		1150	Silver				
		1155	Sodium				
		1165	Thallium				
		1755	Total hardness as CaCO ₃				
		1184	Uranium (mass)				
		1185	Vanadium				
		1190	Zinc				
	EPA 300.0			2.1	1993	10053200	Methods for the Determination of Inorganic Substances in Environmental Samples
		1575	Chloride				
		1730	Fluoride				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	EPA 300.0			2.1	1993	10053200	Methods for the Determination of Inorganic Substances in Environmental Samples
		2000	Sulfate				
	EPA 524.2			4.1	1995	10088809	Volatile Organic Compounds GC/MS Capillary Column
		5105	1,1,1,2-Tetrachloroethane				
		5160	1,1,1-Trichloroethane				
		5110	1,1,2,2-Tetrachloroethane				
		5165	1,1,2-Trichloroethane				
		4630	1,1-Dichloroethane				
		4640	1,1-Dichloroethylene				
		4670	1,1-Dichloropropene				
		5150	1,2,3-Trichlorobenzene				
		5180	1,2,3-Trichloropropane				
		5155	1,2,4-Trichlorobenzene				
		5210	1,2,4-Trimethylbenzene				
		4610	1,2-Dichlorobenzene				
		4635	1,2-Dichloroethane (Ethylene dichloride)				
		4655	1,2-Dichloropropane				
		6800	1,3,5-Trichlorobenzene				
		5215	1,3,5-Trimethylbenzene				
		4615	1,3-Dichlorobenzene				
		4660	1,3-Dichloropropane				
		4620	1,4-Dichlorobenzene				
		4665	2,2-Dichloropropane				
		4535	2-Chlorotoluene				
		4540	4-Chlorotoluene				
		4910	4-Isopropyltoluene (p-Cymene)				
		4375	Benzene				
		4385	Bromobenzene				
		4390	Bromochloromethane				
		4395	Bromodichloromethane				
		4400	Bromoform				
		4455	Carbon tetrachloride				
		4475	Chlorobenzene				
		4575	Chlorodibromomethane				
		4485	Chloroethane (Ethyl chloride)				
		4505	Chloroform				
		4645	cis-1,2-Dichloroethylene				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	EPA 524.2			4.1	1995	10088809	Volatile Organic Compounds GC/MS Capillary Column
		4680	cis-1,3-Dichloropropene				
		4595	Dibromomethane (Methylene bromide)				
		4625	Dichlorodifluoromethane (Freon-12)				
		4765	Ethylbenzene				
		4835	Hexachlorobutadiene				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		4950	Methyl bromide (Bromomethane)				
		4960	Methyl chloride (Chloromethane)				
		5000	Methyl tert-butyl ether (MTBE)				
		4975	Methylene chloride (Dichloromethane)				
		4435	n-Butylbenzene				
		5090	n-Propylbenzene				
		5005	Naphthalene				
		5250	o-Xylene				
		4440	sec-Butylbenzene				
		5100	Styrene				
		4445	tert-Butylbenzene				
		5115	Tetrachloroethylene (Perchloroethylene)				
		5140	Toluene				
		4700	trans-1,2-Dichloroethylene				
		4685	trans-1,3-Dichloropropylene				
		5170	Trichloroethene (Trichloroethylene)				
		5175	Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)				
		5235	Vinyl chloride				
		5260	Xylene (total)				
	EPA 552.3			1	2003	10239608	Haloacetic Acid/Dalapon, Microextraction, Derivatization and GC/ECD
		9312	Bromoacetic acid				
		9336	Chloroacetic acid				
		9357	Dibromoacetic acid				
		9360	Dichloroacetic acid				
		9414	Total haloacetic acids				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	EPA 552.3			1	2003	10239608	Haloacetic Acid/Dalapon, Microextraction, Derivatization and GC/ECD
		9642	Trichloroacetic acid				
	Legiolert - Legionella pneumophila in Water				2016	60008335	Determination of Legionella pneumophila in Potable and Non-Potable Water
		2556	Legionella pneumophila				
	PWBL-SOP-61 (EPA 1623 modified)			3	2018	90021004	Portland Water Bureau - Cryptosporidium and Giardia in Water - Filtration/IMS/Slide Preparation (EPA 1623-modified)
		2510	Cryptosporidia				
		2545	Giardia				
	SM 2130 B			21st ED	2005	20042608	Turbidity by Nephelometric Method
		2055	Turbidity				
	SM 2320 B			21st ED	2005	20045403	Alkalinity by Titration Method
		1505	Alkalinity as CaCO ₃				
	SM 2340 B			21st ED	2005	20046406	Hardness by calculation
		1750	Hardness				
	SM 2550 B			21st ED	2005	20053003	Temperature by Laboratory and Field Methods
		2030	Temperature, deg. C				
	SM 4500-Cl D			21st ED	2005	20079805	Chloride by Amperometric Titration Method
		1945	Residual free chlorine				
	SM 4500-H+ B			21st ED	2005	20105004	pH Value by Electrometric Method .
		1900	pH				
	SM 4500-NO ₃ ⁻ F			21st ED	2005	20116409	Nitrate by Automated Cadmium Reduction Method
		1810	Nitrate as N				
		1820	Nitrate plus Nitrite as N				
		1840	Nitrite as N				
	SM 5310 C			21st ED	2005	20138607	TOC by Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method
		2040	Total organic carbon				
	SM 9215 B (PCA)			20th ED	1998	20181208	Heterotrophic Plate Count Pour Plate (plate count agar); Heterotrophic Bacteria
		2555	Heterotrophic plate count				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Drinking Water	SM 9222 D (m-FC)			20th ED	1998	20209603	Membrane Filtration Quantitative (m-FC): Fecal Coliform
		2530	Fecal coliforms				
	SM 9223 B (Colilert® Quanti-Tray®)			20th ED	1997	20211205	Chromogenic/Fluorogenic Quantitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®)			20th ED	1997	20212208	Chromogenic/Fluorogenic Qualitative (Colilert®): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
	SM 9223 B (Colilert®-18 Quanti-Tray®)			20th ED	1997	20213201	Chromogenic/Fluorogenic Quantitative (Colilert®-18): Total Coliform and E. coli
		2525	Escherichia coli				
		2500	Total coliforms				
Non-Potable Water	EPA 1623				2005	10236609	Filtration/IMS/FA: Cryptosporidium and Giardia
		2510	Cryptosporidia				
		2545	Giardia				
	EPA 1623.1				2012	10236621	Cryptosporidium and Giardia in Water by Filtration/IMS/FA
		2510	Cryptosporidia				
		2545	Giardia				
	Legiolert - Legionella pneumophila in Water				2016	60008335	Determination of Legionella pneumophila in Potable and Non-Potable Water
		2556	Legionella pneumophila				
	PWBL-SOP-61 (EPA 1623 modified)			3	2018	90021004	Portland Water Bureau - Cryptosporidium and Giardia in Water - Filtration/IMS/Slide Preparation (EPA 1623-modified)
		2510	Cryptosporidia				
		2545	Giardia				



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Certificate: 4133 - 011

Issue Date: 12/20/2024 Expiration Date: 7/5/2025

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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2007.01 & EN 15662: LC-MS/MS	7366	Abamectin			805	Pesticides by LC-MS-MS
		7000	Acephate				
		7002	Acequinocyl				
		7003	Acetamiprid				
		5445	Aflatoxin B1				
		5450	Aflatoxin B2				
		5455	Aflatoxin G1				
		5460	Aflatoxin G2				
		7010	Aldicarb (Temik)				
		7076	Azoxystrobin				
		7116	Bifenazate				
		7117	Bifenthrin				
		7128	Boscalid				
		7195	Carbaryl (Sevin)				
		7205	Carbofuran (Furaden)				
		7247	Chlorantraniliprole				
		7329	Chlorfenapyr				
		7300	Chlorpyrifos				
		7965	cis-Permethrin				
		7966	Clofentezine				
		7345	Cyfluthrin				
		7346	Cypermethrin				
		7348	Daminozide				
		7410	Diazinon				
		8610	Dichlorvos (DDVP, Dichlorvos)				
		7475	Dimethoate				
		7570	Ethoprop				
		7573	Etofenprox				
		7574	Etoxazole				
		7597	Fenoxycarb				
		7598	Fenpyroximate				
		7623	Fipronil				
		7628	Flonicamid				
		7629	Fludioxonil				
		7707	Hexythiazox				
		7718	Imazalil				
		7702	Imidacloprid				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2007.01 & EN 15662: LC-MS/MS	7747	Kresoxim-methyl			805	Pesticides by LC-MS-MS
		7770	Malathion				
		7790	Metalaxyl				
		7800	Methiocarb (Mesurol)				
		7805	Methomyl (Lannate)				
		7825	Methyl parathion (Parathion, methyl)				
		7860	MGK-264				
		7893	Myclobutanil				
		7905	Naled				
		5473	Ochratoxin A				
		7940	Oxamyl				
		7947	Paclobutrazol				
		7975	Permethrin (total)				
		8000	Phosmet (Imidan)				
		9550	Piperonyl butoxide				
		8022	Prallethrin				
		8077	Propiconazole				
		8080	Propoxur (Baygon)				
		8090	Pyrethrin I				
		8247	Pyrethrins (total)				
		8097	Pyridaben				
		8136	Spinosad				
		8137	Spiromesifen				
		8139	Spirotetramat				
		8141	Spiroxamine				
		8174	Tebuconazole				
		8214	Thiacloprid				
		8216	Thiamethoxam				
		5412	Total Aflatoxins				
		7970	trans Permethrin				
		8287	Trifloxystrobin				
	AOAC 2013.06				2013	50003355	Determination of Arsenic, Cadmium, Mercury, and Lead in Foods by Pressure Digestion and Inductively Coupled Plasma/ Mass Spectrometry
		1010	Arsenic				
		1030	Cadmium				
		1075	Lead				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Biological Tissue	AOAC 2013.06				2013	50003355	Determination of Arsenic, Cadmium, Mercury, and Lead in Foods by Pressure Digestion and Inductively Coupled Plasma/ Mass Spectrometry
		1095	Mercury				
	AOAC 966.02 - Gravimetric					810	Moisture in tobacco
		3850	Moisture content				
	AOAC 978.18					809	Water Activity
		8068	Water Activity				
	Medicinal Genomics 420148			2	2021	60031121	PathoSEEK 5-Color Aspergillus Multiplex Assay with SenSATIVax Extraction
		5465	Aspergillus				
		5466	Aspergillus flavus				
		5467	Aspergillus fumigatus				
		5468	Aspergillus niger				
		5469	Aspergillus terreus				
	Medicinal Genomics Salmonella/ST EC by PCR			1	2022	60031314	Medicinal Genomics PathoSEEK® Salmonella & STEC Multiplex Assay with SenSATIVax® DNA Purification
		2570	Salmonella				
		2572	Shiga Toxin-producing E. Coli (STEC)				
	ORELAP-SOP-001			4.1	2022	90019811	Protocol for Collecting Samples of Usable Marijuana
		1405	Incremental Sampling				
	UNODC 5.4.8					814	HPLC for Analysis of Cannabinoids
		5415	Cannabidiol (CBD)				
		5420	Cannabidiolic acid (CBDA)				
Solids		7386	delta-8 Tetrahydrocannabinol (d8 THC)				
		5405	delta-9 Tetrahydrocannabinol (d9 THC)				
		5410	delta-9 Tetrahydrocannabinolic acid (d9 THCA)				
	AOAC 2007.01 & EN 15662: LC-MS/MS					805	Pesticides by LC-MS-MS
		7366	Abamectin				
		7000	Acephate				
		7002	Acequinocyl				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	AOAC 2007.01 & EN 15662: LC- MS/MS	7003	Acetamiprid			805	Pesticides by LC-MS-MS
		5445	Aflatoxin B1				
		5450	Aflatoxin B2				
		5455	Aflatoxin G1				
		5460	Aflatoxin G2				
		7010	Aldicarb (Temik)				
		7076	Azoxystrobin				
		7116	Bifenazate				
		7117	Bifenthrin				
		7128	Boscalid				
		7195	Carbaryl (Sevin)				
		7205	Carbofuran (Furaden)				
		7247	Chlorantraniliprole				
		7329	Chlorfenapyr				
		7300	Chlorpyrifos				
		7965	cis-Permethrin				
		7966	Clofentezine				
		7345	Cyfluthrin				
		7346	Cypermethrin				
		7348	Daminozide				
		7410	Diazinon				
		8610	Dichlorvos (DDVP, Dichlorvos)				
		7475	Dimethoate				
		7570	Ethoprop				
		7573	Etofenprox				
		7574	Etoxazole				
		7597	Fenoxycarb				
		7598	Fenpyroximate				
		7623	Fipronil				
		7628	Flonicamid				
		7629	Fludioxonil				
		7707	Hexythiazox				
		7718	Imazalil				
		7702	Imidacloprid				
		7747	Kresoxim-methyl				
		7770	Malathion				
		7790	Metalaxyl				
		7800	Methiocarb (Mesurol)				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	AOAC 2007.01 & EN 15662: LC-MS/MS	7805	Methomyl (Lannate)			805	Pesticides by LC-MS-MS
		7825	Methyl parathion (Parathion, methyl)				
		7860	MGK-264				
		7893	Myclobutanil				
		7905	Naled				
		5473	Ochratoxin A				
		7940	Oxamyl				
		7947	Paclobutrazol				
		7975	Permethrin (total)				
		8000	Phosmet (Imidan)				
		9550	Piperonyl butoxide				
		8022	Prallethrin				
		8077	Propiconazole				
		8080	Propoxur (Baygon)				
		8090	Pyrethrin I				
		8247	Pyrethrins (total)				
		8097	Pyridaben				
		8136	Spinosad				
		8137	Spiromesifen				
		8139	Spirotetramat				
		8141	Spiroxamine				
		8174	Tebuconazole				
		8214	Thiacloprid				
		8216	Thiamethoxam				
		5412	Total Aflatoxins				
		7970	trans Permethrin				
		8287	Trifloxystrobin				
	AOAC 2013.06				2013	50003355	Determination of Arsenic, Cadmium, Mercury, and Lead in Foods by Pressure Digestion and Inductively Coupled Plasma/ Mass Spectrometry
		1010	Arsenic				
		1030	Cadmium				
		1075	Lead				
		1095	Mercury				
	Medicinal Genomics 420148			2	2021	60031121	PathoSEEK 5-Color Aspergillus Multiplex Assay with SenSATIVax Extraction
		5465	Aspergillus				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	Medicinal Genomics 420148			2	2021	60031121	PathoSEEK 5-Color Aspergillus Multiplex Assay with SenSATIVax Extraction
		5466	Aspergillus flavus				
		5467	Aspergillus fumigatus				
		5468	Aspergillus niger				
		5469	Aspergillus terreus				
	Medicinal Genomics Salmonella/ST EC by PCR			1	2022	60031314	Medicinal Genomics PathoSEEK® Salmonella & STEC Multiplex Assay with SenSATIVax® DNA Purification
		2570	Salmonella				
		2572	Shiga Toxin-producing E. Coli (STEC)				
	ORELAP-SOP-002			4.3	2022	90019866	Protocol for Collecting Samples of Cannabinoid Concentrates, Extracts, Products, and Industrial Hemp-derived Vapor Items
		1405	Incremental Sampling				
	UNODC 5.4.8					814	HPLC for Analysis of Cannabinoids
		5415	Cannabidiol (CBD)				
		5420	Cannabidolic acid (CBDA)				
		7386	delta-8 Tetrahydrocannabinol (d8 THC)				
		5405	delta-9 Tetrahydrocannabinol (d9 THC)				
		5410	delta-9 Tetrahydrocannabinolic acid (d9 THCA)				
	USP 467 GC-MS			V8	3/23/2007	984	Residual Solvents
		4735	1,4-Dioxane (1,4-Diethyleneoxide)				
		4666	2,2-Dimethylbutane				
		4669	2,3-Dimethylbutane				
		5866	2-Ethoxyethanol (cellosolve)				
		4938	2-Methylbutane (Isopentane)				
		4941	2-Methylpentane (Isohexane)				
		4942	2-methylpropane (Isobutane)				
		4534	3-Methylpentane				
		4315	Acetone				
		4320	Acetonitrile				
		4375	Benzene				
		4555	Cyclohexane				
		4725	Diethyl ether				



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MATRIX	Reference	Analyte Code	Analyte	Revision	Rev. Date	Method Code	Description
Solids	USP 467 GC-MS			V8	3/23/2007	984	Residual Solvents
		4755	Ethyl acetate				
		4765	Ethylbenzene				
		4785	Ethylene glycol				
		4795	Ethylene oxide				
		4890	Isopropyl acetate				
		4895	Isopropyl alcohol (2-Propanol, Isopropanol)				
		4900	Isopropylbenzene (Cumene)				
		5240	m+p-xylene				
		5245	m-Xylene				
		4930	Methanol				
		4975	Methylene chloride (Dichloromethane)				
		5007	n-Butane				
		4825	n-Heptane				
		4855	n-Hexane				
		5028	n-Pentane				
		5029	n-Propane				
		9511	Neopentane				
		5250	o-Xylene				
		5255	p-Xylene				
		9607	sec-Butyl Alcohol (2-Butanol)				
		5120	Tetrahydrofuran (THF)				
		5140	Toluene				
		5143	Total Butanes				
		9469	Total Hexanes				
		5148	Total Pentanes				
		5260	Xylene (total)				