April 2, 2021

Scott Vallance, Facilities Director
Mike Dinsmore, Facilities Maintenance Tech II
Clackamas County Fire District #1
15800 SE 130th Ave
Clackamas, OR

Re: Beneficial Water and Land Use Survey
Clackamas County Fire District #1
2614-01

Dear Mr. Vallance and Mr. Dinsmore:

INTRODUCTION

A beneficial land and water use survey was conducted for the Clackamas County Fire District #1 property at 15800 SE 130th Avenue, Clackamas, Oregon (Site). The survey was conducted in accordance with the Oregon Department of Environmental Quality (DEQ) *Consideration of Land Use in Environmental Remedial Actions* (DEQ, 2017a) and DEQ's *Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites* (DEQ, 2017b). Beneficial land and water use determinations are required if a release of hazardous substances has impacted groundwater or surface water or has the potential to impact groundwater or surface water through contaminant migration.

BACKGROUND

Site Location and Description

The Clackamas County Fire District #1 (CCFD) is located in Clackamas, Oregon, approximately 0.85 miles north and 0.5 miles west of the Clackamas River and 2 miles east of Highway 213. The Site consists of tax parcels 00481534, P0009913, P0010009, P0010648, P2203272, and P2244488. The Site is located within Section 11, Township 2S, Range 2E (see Figures 1 and 2). The Site consists of a facilities and logistics warehouse, a new fleet and logistics building, a training center and offices, a fire station, wellness offices and a training warehouse, and fire training grounds with a fire tower. The Site has been used for fire training since the 1980s, including use of aqueous film-forming foam (AFFF) as an extinguishing agent which is staged within the fire apparatus on-site. Fire training was conducted in two areas near the center of the Site: 1) a concrete-paved area with a fire tower, and 2) a gravel-covered car fire training area just south of the concrete training area. The concrete fire training area contains a stormwater catch basin. During fire training activities, the catch basin was reportedly closed with a valve.

Some AFFF contains per- and polyfluoroalkyl substances (PFAS). Specifically, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) have been the primary PFAS historically used as agents in AFFF. Since AFFF has been used at the Site since the 1980s, it is reasonably likely that the AFFF has contained PFOS and PFOA among other PFAS.

A limited reconnaissance investigation was conducted by Apex at the Site in October 2020 to assess the presence and magnitude of PFAS in soil and groundwater. The investigation included the collection of soil and grab groundwater samples from four locations. PFAS were detected in groundwater at all four locations, with select PFAS detected

above conservative screening criteria at each location. PFAS were further detected in soil samples collected within the fire training areas and the presumed downgradient location, with select PFAS concentrations detected above the conservative screening criteria within the fire training areas. The results were reported in the *Summary Report – Reconnaissance Soil and Groundwater Sampling* on December 29, 2020 (Apex, 2020). Based on the results of this investigation and subsequent meetings with CCFD on October 28 and December 23, 2020, Apex recommended a beneficial water and land use survey as a next step to address the identified PFAS impacts at the Site. A virtual meeting was held with the DEQ on January 8, 2021 and DEQ concurred with this next step.

Physical Setting

A review of local geology and hydrogeology was completed for the Site vicinity and is described below. The geology and hydrogeology of the Site is summarized from the following published reports:

- *Geology and Geologic Hazards of Northwestern Clackamas County, Oregon*. H.G. Schlicker and C.T. Finlayson. Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99. 1979.
- *Lithology, Thickness, and Extent of Hydrogeologic Units Underlying the East Portland Area, Oregon.* Hartford, S.V. and W.D. McFarland. United States Geological Survey (USGS) Water-Resources Investigations Report 88-4110. 1989.
- *Geology Near Blue Lake County Park, Eastern Multnomah County, Oregon*. James N. Bet and Malia L. Rosner. Oregon Geology, Volume 55, Number 3, DOGAMI. Landau Associates, Inc., Edmonds, Washington. May 1993.
- *A Description of Hydrogeologic Units in the Portland Basin, Oregon and Washington*. R.D. Swanson, W.D. McFarland, J.B. Gonthier, and J.M. Wilkinson. USGS Water-Resources Investigations Report 90-4196. 1993.
- *Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington*. W.D. McFarland and D.S. Morgan. USGS Water-Supply Paper 2470-A. 1996.
- *Simulation Analysis of the Ground-Water Flow System in the Portland Basin, Oregon and Washington.* W.D. MacFarland and D.S. Morgan. USGS Water-Supply Paper 2740-B. 1996.
- *Deep Aquifer Yield Groundwater Flow Model, Report on Model Development, Calibration, and Testing*. J. Leighton and J. Porcello. July 2001.

The geologic units in the vicinity of the Site include, from youngest to oldest, deposits of unconsolidated and consolidated Quaternary alluvium, which is underlain by deposits of the Troutdale Formation, Sandy River Mudstone, and Columbia River Basalts. Higher elevations east and northeast of the Site are capped by lava flows from the Boring Lava. A discussion of these units is provided below.

Regional Geology. The Site is located within the Portland Basin, which is a northwest trending structural basin with northwest and northeast trending topographic lineations, faults, and folds. The basin can be described as a 'bowl'-like structure bounded on the west by the Tualatin Mountains, on the north by the Lewis River, the foothills of the Cascade Range on the east and to the south by the Clackamas River. The basin is filled with up to 1,700 feet of sedimentary material. The "bowl" is formed of Eocene to Miocene marine sedimentary and volcanic rocks. During the late Miocene to late Pliocene, both lacustrine and fluvial sediments filled the basin. Overlying these older, more consolidated sediments are unconsolidated late Pleistocene sediments that were deposited by alluvial and catastrophic flood events in the basin. These sediments fill the center of the basin and are thickest adjacent to the Columbia and Willamette Rivers.

Bedrock. Bedrock underlying a majority of the Portland Basin consists of basalt of the Columbia River Basalt Group (CRBG). The CRBG consists of a series of flood-basalt flows that spread over large areas of Oregon and Washington during the middle Miocene. During the peak of CRBG eruptive activity, it was common for eruptive events to produce

individual flows that covered more than 6,000 square miles. In the Portland Basin, individual flows vary from 25 to over 200 feet thick. The CRBG is at least 690 feet thick and possibly up to 1,000 feet thick.

Older sedimentary units within the Portland Basin are the Sandy River Mudstone and the Troutdale Formation, both of which were deposited from the late Miocene to the late Pliocene. The Sandy River Mudstone consists of mudstones, siltstone, claystone, and sand (i.e., fine-grained sediments) deposited in a lacustrine environment. It is more dominant in the west portion of the basin and can be up to 1,400 feet thick in the central portion of the basin. Along the Clackamas River, outcrops of clay and water-laid ash layers are present and are part of the Sandy River Mudstone (east of the Site vicinity). Interfingering with and overlying the Sandy River Mudstone are the coarse-grained, fluvial deposits of the Troutdale Formation. The Troutdale Formation consists of pebble- and cobble-bearing, clast-supported conglomerate with a silty to sandy matrix (generally representing channel deposits). About 60 to 80 percent of the clasts are basalt, with the remaining clasts consisting of quartzite or granite derived from the Columbia River drainage basin. The Troutdale Formation is generally 75 to 400 feet thick.

The Boring Lava consists generally of Pliocene to Pleistocene basalt that was erupted through many separate vents located throughout the Portland area (such as Mount Scott and Mount Tabor). The Boring Lava erupted at the end of and after the deposition of the Troutdale Formation. In some places, the Boring Lava unconformably overlies deposits of Quaternary alluvium and underlying Troutdale Formation, and in other places the Boring Lava can be found interlayered with the Quaternary alluvium and/or the Troutdale Formation.

Alluvial Sediments. Younger alluvial sediments overlie the bedrock within the Portland Basin. During the Pleistocene, periodic failures of ice dams impounding huge lakes in Idaho and Montana caused a series of as many as 40 colossal floods of the Columbia River. After leaving the Columbia Gorge and entering the Portland area, these catastrophic floods would scour the older sedimentary units and flood the Portland Basin to 350 to 400 feet above mean sea level (MSL). Close to the gorge, flood deposits are coarse-grained, consist of basaltic sand and gravel with cobbles and boulders, and range up to 200 feet thick. The deposits become finer grained away from the gorge and consist of stratified, micaceous arkosic sand, silt, and clay. These fine-grained deposits are typically below an elevation of 250 feet above MSL and range from 20 to 100 feet thick. During the Pleistocene ice ages, sea level was also lower due to water locked up in ice sheets covering continents. With this lower base level, the Columbia River cut a channel into the Troutdale Formation. This channel generally parallels and is south of the present-day Columbia River. As the ice age ended, the base level (i.e., sea level) rose and the channel became filled with sand and, in places, coarser gravel deposits. The alluvial sediment deposits also include recent alluvium deposited by local fluvial action.

Regional Hydrogeology. In Hartford and McFarland (1989), the regional stratigraphy was divided into eight distinct hydrogeologic units (aquifers and confining units) because of their varying water-bearing properties. These units are the major hydrogeologic units that form the Portland Basin aquifer system. In subsequent reports (e.g. Swanson, et al., 1993), units have been added or grouped, and the study area expanded. In this report, many of the unit designations were retained for consistency, and younger alluvial sediments have been classified into separate units. Some of the Portland Basin units are not located within the local Site vicinity and have therefore been excluded from this discussion. The hydrogeologic units are presented below from ground surface with increasing depth:

- Fill Material (Fill)
- Unconsolidated Sedimentary Aquifer (US)
- Troutdale Gravel Aquifer (TGA)
- Confining Unit 1 (CU1)
- Troutdale Sandstone Aquifer (TSA)
- Confining Unit 2 (CU2)
- Columbia River Basalt Group (CRBG)

The unit descriptions below are primarily based on Hartford and McFarland (1989), Swanson et al. (1993), and McFarland and Morgan (1996).

- Fill Material (Fill): Fill material consists of material placed when developing the Site. Shallow materials encountered during the October 2020 sampling event included silty clay and gravel and may be fill materials related to Site development.

- Unconsolidated Sedimentary Aquifer (US): This aquifer consists primarily of flood deposits varying from silt to gravel with cobbles and boulders. Thicknesses of this unit are generally between 50 and 100 feet. Along the Clackamas River, wells constructed in poorly consolidated terrace gravels generally yield from 10 to 40 gallons per minute (gpm). The US was observed in the shallow borings advanced at the Site in October 2020.

- Troutdale Gravel Aquifer (TGA): The TGA is the upper member of the Troutdale Formation and is the most extensive sedimentary unit in the basin. Except where removed by erosion, it is present beneath the alluvial sediments and above CU1. In the Site area, the TGA is up to 200 feet thick. The TGA is described as a poorly to moderately cemented basaltic gravel with quartzite pebbles and micaceous sand matrix and lenses. Minor lithic vitric sandstone lenses and beds may be present. After deposition, a clayey soil horizon developed on the top of this unit. Wells completed in the TGA can have yields of 1,000 gpm.

- Confining Unit 1 (CU1): CU1 is present beneath the TGA (a gradational contact is present between both units) and represents a facies of the finer-grained Sandy River Mudstone. CU1 appears to be of lacustrine origin. The unit is approximately 100 feet thick in the Site vicinity. CU1 is composed of a dark olive-gray to gray brown, clay, silt, and fine- to medium-grained arkosic sand. Black vitric sand or sandstone occurs in beds ranging from 5 to 15 feet in thickness near the bottom of the unit. Driller's logs typically describe CU1 as a blue, green, or gray clay.

- Troutdale Sandstone Aquifer (TSA): The TSA consists of coarse vitric sandstone and conglomerate with lenses and beds of fine to medium sand and silt. This unit underlies CU1 in the Site vicinity and is approximately 100 feet thick. The upper two-thirds of this unit is vitric sandstone (composed of moderate to well-sorted, coarse sand of black to dark brown olivine basalt glass) with dark gray lenses of sandy silt and clay. The lower third is quartzite-bearing basaltic conglomerate with a matrix of vitric sand and micaceous lithic arkose. Driller's logs typically describe this unit as black sand or sandstone.

- Confining Unit 2 (CU2): CU2 represents another facies of the finer-grained Sandy River Mudstone. It consists of grayish olive-green clay and silt with lenses of silt and fine- to medium-grained basaltic sand. CU2 has been interpreted as lacustrine beds deposited in a closed basin. Within the Site vicinity, it is encountered beneath the TSA and can be up to 800 feet thick.

- Columbia River Basalt Group (CRBG): The CRBG underlies most of the Portland Basin. The CRBG is at least 690 feet thick and possibly up to 1,000 feet thick.

Groundwater recharge in the Portland Basin is derived from four sources: streams flowing through the basin, infiltration of precipitation, runoff to drywells, and on-site waste disposal systems. Groundwater typically flows from the upland areas towards major streams and rivers within the basin. Where present, the shallow groundwater table in the younger alluvial sediments typically mirrors the ground surface topography.

The main aquifers within the Site vicinity include the younger alluvial sediments (e.g. the US, TGA, and TSA). Horizontal hydraulic conductivities in these aquifers range from 7 to greater than 200 feet per day (ft/d). The confining units and older rocks have conductivities typically less than 4 ft/d. In the regional upland areas, groundwater movement typically has a downward component. While vertical flow in regional lowlands often includes an upward component, both upward

and downward vertical groundwater flow components have been observed at specific sites within the regional lowlands. This variability is likely influenced by several factors including rainfall, river stage, and regional pumping. Horizontal to vertical anisotropy (conductivity) ratios range from 100:1 in the aquifer units to 1,000:1 in the finer-grained units. In general, hydraulic gradients are relatively steep (up to 300 feet per mile [0.06 foot per foot (ft/ft)] between the Portland Terraces and the river floodplains but are relatively flat (a few feet per mile) beneath the floodplains.

Regional surface streams and rivers are significant discharge areas for the Portland Basin groundwater system (especially the US and TGA groundwater); however, discharge also occurs from springs.

Site Geology and Hydrogeology. The elongated Site topology is relatively flat with a slight downward slope towards the south, with elevations ranging from 135 and 141 feet above MSL. Based on local topography, the likely groundwater flow direction in the Site vicinity is towards the south-southwest. The nearest surface water body is the Clackamas River, located approximately 0.85 miles south and 0.5 miles east of the Site (see Figure 1). The Site is located within the Clackamas River Basin. The Clackamas River is a tributary to the Willamette River to the west.

Subsurface materials encountered during the October 2020 investigation activities included gray and brown gravel, gravelly silt, gravelly sand, silty clay, and clay. The material encountered in the upper portions of the borings is likely Fill overlying US. The depth to groundwater was observed between approximately 11.6 and 19 feet below ground surface (bgs) in the temporary wells installed on-site. Shallow groundwater at the Site is likely within the US, which is generally unconfined. Groundwater from the US in the Site vicinity is typically expected to discharge to the Clackamas River. Average recharge for the land-surface areas within the Site vicinity is approximately 20 inches per year. The US within the Site vicinity is not designated as a public drinking water source for Clackamas County; however, the US, TGA and TSA are used by some local residences and properties for domestic, irrigation, and industrial/commercial use (described in more detail below).

BENEFICIAL LAND AND WATER USE SURVEY

Conceptual Site Hydrogeologic Model

Based on the geology and hydrogeology of the Site (described above), a conceptual Site hydrogeologic model was developed for the project Site to better understand how and where chemical contaminants might migrate with groundwater flow. The conceptual model was then used to delineate the locality of facility (LOF) for the land and water use surveys.

Climate

The Site is located within the Willamette Valley, which is within Oregon Climate Zone 2. The climate of the Willamette Valley is relatively mild throughout the year, and is characterized by cool, wet winters and warm, dry summers. Typical distribution of precipitation includes approximately 50 percent of the annual total from December through February, lesser amounts of precipitation in the spring and fall, and very little precipitation in the summer. Rainfall generally varies inversely with temperatures (i.e. the cooler months are the wettest and the warmer months are the driest). Average annual precipitation ranges from 35 to 50 inches. Extreme temperatures are rare; days with maximum temperature above 90 degrees Fahrenheit (°F) occur approximately 5 to 15 times per year on average, and days with temperatures below 0 °F occur approximately once per every 25 years. Mean high temperatures range from the low 80s °F in the summer to approximately 40 °F in the winter, and mean low temperatures range from the low 50s °F in the summer to the low 30s °F in the winter. Snow fall amounts are generally low, averaging approximately 5 to 10 inches per year (OSU, 1993).

Groundwater Flow

Because sources of contamination at the Site are at the ground surface (e.g. spraying AFFF during fire training activities), the shallow aquifer units are the most likely to be affected by a potential release. As contaminants move with groundwater away from the source, they spread along and away from the groundwater flow path. This process (advection, diffusion, and dispersion) decreases the concentration of contaminants, thereby reducing the potential for an adverse impact to a deeper aquifer. The hydrogeologic model therefore focuses on shallower aquifer units underlying the Site. The shallow aquifer at the Site is likely the US. Groundwater flow within the Site vicinity is generally gravity-driven towards surface water. Water-bearing characteristics of the aquifer underlying the Site are variable.

Stormwater Flow

Apex reviewed the MS4 National Pollutant Discharge Elimination System (NPDES) Permit Stormwater Management Plan for Clackamas County Service District No. 1 (CCSD) and the City of Happy Valley (Water Environment Services, 2012). The plan documents permit requirements and best management practices for stormwater in the Site vicinity. According to the plan, the fire training area on-site includes a valve that is used to divert training flows into the sanitary system. CCSD conducts routine check-ins with CCFD to ensure that the valve is used appropriately.

Based on review of the online stormwater drainage system map prepared by Multnomah County (which includes the portion of Clackamas County where the Site is located), the stormwater catch basin on-site discharges west towards SE 130th Avenue, into stormwater piping that is part of the Cedar Creek stormwater basin. According to the MS4 NPDES Permit for Clackamas County, all stormwater within the municipal storm sewer system ultimately discharges to the Clackamas River, the Lower Willamette River, the Tualatin River, or connected tributaries and creeks. Based on review of the stormwater drainage map, it is likely the stormwater collected within the on-site catch basin flows to a discharge point within the Clackamas River approximately 0.85 miles southwest of the Site (asset ID swDPT-00297) or a discharge point approximately 1.3 miles southwest of the Site (asset ID swDPT-00174). Figure 3 depicts the stormwater drainage system within the Site vicinity.

Conceptual Site Hydrogeologic Model Summary

In general, regionally derived groundwater from upland areas of the Site is expected to flow through the shallow aquifer and discharge downgradient of the Site to the Clackamas River. Precipitation runoff at the Site generally discharges off-site via sheet flow or into the on-site stormwater catch basin (when the valve is open), which ultimately discharges to the Clackamas River to the south/southwest. Precipitation may also infiltrate the Site within the pervious gravel fire training area and landscaped areas on-site, recharging the shallow aquifer.

LOCALITY OF FACILITY

Current and reasonably likely future beneficial water uses must be identified in the current LOF. The LOF is defined as any point where a human or an ecological receptor contacts or is reasonably likely to come into contact with chemical constituents from the facility of interest. The LOF accounts for the likelihood of the chemical constituents migrating over time. For a specific environmental site, this delineation is based on environmental studies of known contamination. However, given the unknown extent of PFAS contamination at the Site, the LOFs developed here are based on the possible extent of a hypothetical contaminant release anywhere on-site.

The LOFs developed in this report do not indicate that a contaminant release at the Site would spread site-wide or that all environmental media (soil, groundwater, surface water, air) would be impacted. The LOFs are, however, a mechanism to delineate the extent to which land and water uses need to be documented and the type of receptors that might be exposed.

A LOF was developed to delineate the possible extent of a hypothetical contaminant release to soil, shallow groundwater, surface water, and deep groundwater. Figure 4 depicts the LOFs developed for the Site.

Soil

The Site is generally covered with impervious surfaces (i.e. asphalt, concrete). However, a contaminant release to soil could occur in the gravel fire training area near the center of the Site. A release would remain at the surface (solid release), migrate downward under the influence of gravity (liquid release), be leached downward by precipitation infiltration (solid or liquid release), and/or volatilize into the atmosphere where it would dissipate (typically volatile constituents in a liquid release). In addition, a surface release could migrate through concrete or asphalt cracks and reach Site soils. Other secondary contaminant transport mechanisms could include soil erosion or windblown transport. The extent of potential impact to soil is limited to at or near the point of release; therefore, the LOF for soil is the Site boundary.

Shallow Groundwater and Surface Water

Contaminants could reach shallow groundwater via leaching or direct movement of PFAS. Dissolved-phase contaminants then move in the direction of groundwater flow. As indicated by the Site conceptual model, shallow groundwater could migrate toward and emerge as surface water (Clackamas River). PFAS are surfactants that can alter the physical and chemical properties of soil and groundwater in the subsurface. If there is a sufficient source and geologic and chemical conditions are favorable, PFAS plumes have been found to travel long distances and can reach more than one mile in length (Woodward et al, 2015).

The LOF encompassing potential impacts to shallow groundwater and surface water includes the Site and areas downgradient of the Site. On the north (presumed upgradient direction), the LOF was defined by the Site boundary. A general boundary was created for the east, west and south, with the assumption that any impact to groundwater at the Site would migrate potentially to the south, east, and west, depending on localized groundwater flow conditions.

Deep Groundwater

Downward movement of contaminants can occur if constituents are present that are heavier than water or where a downward groundwater gradient is present. Dense non-aqueous phase liquids (DNAPL) are not expected to be present at the Site. In addition, water-bearing characteristics of the aquifer underlying the Site are variable and a significant downward gradient is not expected. Therefore, the LOF for deep groundwater is considered the same as for shallow groundwater as discussed above.

CURRENT AND REASONABLY LIKELY FUTURE BENEFICIAL WATER USES

The following information was used to determine current and reasonably likely future beneficial water use:

- Federal, state, and local regulations governing the appropriation and/or use of water;
- Nature and extent of current groundwater and surface water uses;
- Suitability of groundwater and surface water for beneficial uses;
- The contribution of water to the maintenance of aquatic or terrestrial habitat;
- Any beneficial uses of water which the Water Resources Department or other federal, state, or local programs are managing in the LOF; and
- Reasonably likely uses of groundwater and surface water based on historical land and water uses, anticipated future land and water uses, community and nearby property owners' concerns regarding future water use,

regional and local development patterns, regional and local population projections, and availability of alternate water sources including public water supplies, groundwater sources, and surface water sources.

This information is discussed in greater detail in the following sections.

Land Use

A land use survey was performed in accordance with the DEQ guidance (DEQ, 2017a). To complete the survey, the following activities were conducted:

- Inquiring with Clackamas County and City of Clackamas regarding current zoning, projected use per the City's comprehensive plan, and applicable regulations;
- Reviewing historical aerial photographs to document trends in land use; and
- Performing a drive-by reconnaissance of the project area to document current Site uses.

Previous Land Use. Based on review of Clackamas County tax assessor information, the Site was previously owned by Hnidey Theofil Trustee and sold to Clackamas County Fire District #1 in 2010. Based on discussions with CCFD, the Site was initially developed in the 1980s.

Aerial photographs from 1936, 1948, 1952, 1955, 1960, 1970, 1975, 1981, 1994, 2000, 2005, 2006, 2009, 2011, 2012, 2014, 2016, 2018, and 2020 from the Site vicinity were reviewed and are provided in Attachment A. Based on review of the photographs, the Site and adjacent properties were used for agriculture from at least 1936 to 1970. The Site was developed in 1975 with a dirt road; however, the Site and surrounding area appeared to still be largely used for agriculture at this time. In the 1981 aerial photograph, industrial, commercial, and residential development is visible in the surrounding area. In 1994, SE Ford Street and SE 130th Street have been constructed and the Site has been developed. A building has been constructed in the location of the facilities/logistics warehouse in the northern portion of the Site. The fire training area, tower, and training center/offices have been constructed in the central portion of the Site. The fire station and training warehouse are also visible in the southern portion of the Site. In the 2000, 2005, 2006, 2009, 2011, 2012, 2014 and 2016 aerials, the area north of the fire training tower is being used for exterior storage, and additional industrial, commercial, and residential development is visible in the surrounding area. In the 2018 and 2020 aerials, the new fleet/logistics building is visible in the northern portion of the Site.

Current Land Use. Based on review of the Clackamas County zoning map, the Site is zoned as within the metro urban growth boundary. Based on review of Clackamas County tax assessor information, the Site is classified as improved industrial land, has a fire district property exemption, and is owned by Clackamas County Fire District #1. Apex's reconnaissance of the project area confirmed the Site use as a fire services facility with a facilities and logistics warehouse, new fleet and logistics building, training center and offices, fire station, wellness offices and training warehouse, and fire training grounds with a fire tower. Apex's reconnaissance of the surrounding area identified commercial properties to the north (CrossFit Happy Valley, Factory Wheel Outlet store, West Coast Hydrographics), commercial and industrial properties to the west across SE 130th Avenue (Penske Truck Rental, Sunrise Corridor Business Center), commercial properties to the east (Keller Supply Company, P&A Metal Fab, TireHub), and commercial properties to the south (P&A Metal Fab, Jennifer Distribution Center).

Future Land Use. Clackamas County has developed a Comprehensive Plan that includes a Land Use Plan, last updated in October 2020 (Clackamas County, 2020). The plan was reviewed to identify significant amendments that have the potential to affect future land use at and near the Site. The Site is located within the current urban growth boundary. The reasonably likely future use of the Site is expected to remain the same as the current Site use. Additional urbanization is expected within the Site vicinity in the next 20 years, and population is expected to increase up to 2.8 percent. In addition, Apex reviewed the Clackamas River Water (CRW) Water System Master Plan (Carollo, 2019). The plan identified the Site and surrounding area with industrial land use in the 20-year planning period.

Water Use

A water use survey was performed in accordance with DEQ guidance (DEQ, 2017b). The survey included:

- Identification of water wells, their use, and the aquifer used;
- Completion of a water rights search of the Oregon Water Resources Department (WRD) database; and
- Inquiries to the City of Clackamas and Clackamas County regarding city water supplies.

Water Rights. Apex reviewed the CRW Water System Master Plan (Carollo, 2019), which was developed jointly between Clackamas River Water staff and Carollo Engineers and encompasses a 20-year planning horizon from 2019 through 2038. The Site is located within CRW's North System, which encompasses approximately 13 square miles and is located north of the Clackamas River, west of the City of Happy Valley, south of the City of Portland, east of the City of Milwaukie, and northeast of the City of Gladstone. CRW's North System receives its water supply from the Clackamas River and holds three certificated surface water rights authorizing the total use of up to 30.1 million gallons per day (mgd) from the Clackamas River for municipal use. The original water rights were secured in 1962, 1968, and 1969 (Carollo, 2019).

Past and Current Water Use. A search for water well logs was conducted on the WRD database for wells within a one-mile radius of the Site, north and west of the Clackamas River. Wells located south of the Clackamas River were not included due to the likely hydraulic boundary from the river. Well records indicate that groundwater has been used in the surrounding area for domestic, irrigation, industrial, and community purposes. The identified wells that are located within one mile of the Site and north/west of the Clackamas River are shown on Figure 5 and detailed in Table 1.

A domestic well (CLAC ID 4048) was identified adjacent to the Site to the west, installed in 1958 to a depth of 130 feet, and a shallow water level was reported for this well (6.5 feet bgs). This well is reported to be screened between 95 and 130 feet bgs. The next closest downgradient wells to the Site include:

- CLAC ID 4101 – a domestic well installed in 1981 to a depth of 200 feet, with a static water level of 112 feet bgs;
- CLAC ID 4108 – an industrial well installed in 1975 to a depth of 170 feet, with a static water level of 21 feet bgs;
- CLAC ID 4104 – an industrial well installed in 1971 to a depth of 290 feet, with a static water level of 50 feet bgs; and
- CLAC 69090 – a domestic and industrial/commercial well installed in 2012 to a depth of 200 feet, with a static water level of 55 feet bgs.

Many additional wells were identified within one mile of the Site. The identified wells range in depth from 38 to 920 feet bgs, and static water levels were reported to range in depth from 0.5 to 250 feet bgs. A door-to-door survey was not conducted for off-site properties, so it is assumed unless information is available to indicate or suggest that an off-site well was abandoned, that any off-site well is active. Wells with documentation of abandonment were included in the well search and are noted on Table 1 and Figure 5.

Future Water Use. Water demand projections have been published by CRW in their Water System Master Plan (Carollo, 2019). Future water use is expected to increase; however, the source for drinking water is not expected to change. The Master Plan noted that CRW's existing water rights are above projected demand and the existing capacity in the City water treatment facility.

SUMMARY OF LAND AND WATER USE

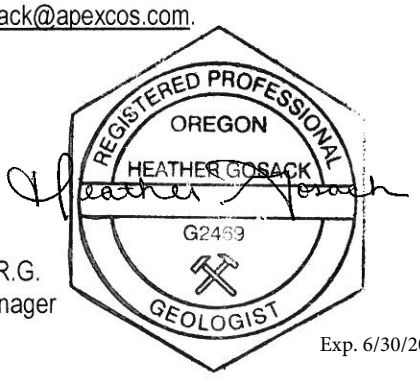
The Site is located within a commercial and industrial area of Clackamas. Reasonably likely future land uses within the Site vicinity are expected to be the same. Historically and currently, groundwater has been used within the Site vicinity for domestic, irrigation, and industrial/commercial purposes. A domestic water well was identified adjacent to the Site to the west, and many additional wells were identified within one mile of the Site. For the majority of users in the Site vicinity, potable water is provided by the public utility, with the Clackamas River used as the drinking water source. Reasonably likely future uses of surface water and groundwater within the Site vicinity are expected to be the same. Stormwater at the Site and within the Site vicinity flows into the municipal system and ultimately discharges into the Clackamas River southwest of the Site.

This beneficial water use survey has the following limitations:

- The conceptual Site hydrogeologic model is based on reviewed available literature due to the lack of Site-specific well data.
- Groundwater usage and water well locations are current as of the date of this report.
- This survey has been prepared to document the current and reasonably likely future uses of land and water within the Site vicinity. This survey is intended to be used as a reference and a guide. As additional information becomes available and/or if development plans change, updates to this survey may be prepared as addenda.

If you have any questions or would like to discuss this further, please do not hesitate to contact me at (503) 961-0775, or at Heather.Gosack@apexcos.com.

Sincerely,



Exp. 6/30/2021

Heather Gosack, R.G.
Senior Project Manager

Steve Misner, R.G.
Senior Associate

Cc: Dan Hafley, Oregon DEQ

Attachments:

Table 1 – Existing Water Wells Within a One-Mile Radius of the Site

Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 – Stormwater Drainage Plan
Figure 4 – Locality of Facility
Figure 5 – One-Mile Well Search Results

Attachment A – Historical Aerials

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Table 1
Existing Water Wells Within a One-Mile Radius of the Site
Beneficial Land and Water Use Survey
Clackamas County Fire District #1

WRD ID (CLAC)	Owner	Owner or Well Address	Date Completed	Depth (feet)	First Water (Feet bgs)	Static Water Level (feet bgs)	Yield (gpm)	Use
85	Neil Berglund	15361 S. Clackamas River Rd, Oregon City, OR	20-Jun-90	110	90	45	36	Domestic
3944	Milwaukie High School	2202 SE Willard, Milwaukie, OR	23-Jun-71	290	225	194.5	--	Irrigation
3946	Robert Collins	14469 SE 142, Clackamas, OR	17-May-74	107	96	58	14	Domestic
3948	Jack Leitz	3306 Lake Road, Milwaukie, OR	6-Mar-63	207	--	76	9	Domestic
4027	William Hoffer	784 S.E. Lincoln, Portland, OR	23-Oct-71	220	103	170	27	Domestic
4028	Les Thompson	16097 S.E. Crig, Clackamas, OR	9-Aug-68	85	--	14	--	Irrigation
4031	F Randahl Brown	Clackamas, OR	21-Feb-58	80	--	69	--	Irrigation
4033	Glen Gordon	14778 SE 142nd, Clackamas, OR	5-Dec-86	297	117	98	--	Domestic
4034	M N Gardner	Rt 1 Box 378, Clackamas, OR	28-Apr-60	125	--	47	7.5	Domestic
4035	Sue McAdams	14700 SE 132nd Ave, Clackamas, OR	27-May-83	220	212	145	--	Domestic
4036	Lamar Allen	13601 S.E. Hwy 212, Clackamas, OR	3-Jun-82	180	68	87	30	Domestic
4037	Dr. Ronald Franzke	26362 SE 142nd Ave, Clackamas, OR	15-Nov-79	251	220	57	18	Domestic
4038	L.M. Springer	13855 Holly Rd, Clackamas, OR	16-Feb-72	234	218	198	15	Domestic
4039	William Hart	6915 SE Lake Rd, Milwaukie, OR 97267	21-May-74	247	230	185	20	Domestic
4040	River Bend Mobile Home Park	13900 S.E. Hwy 212, Clackamas, OR	29-Aug-73	250	--	--	--	Unknown
4041	River Bend Mobile Home Park	13900 S.E. Hwy 212, Clackamas, OR	23-Feb-73	820	38	24	500	Domestic
4042	River Bend Mobile Home Park	1512 S.W. 18th Ave, Portland, OR	9-Sep-79	800	188	110	200	Community
4043	Annett Haberman	Rt 1 Box 376B, Clackamas, OR 97015	2-Aug-71	132	102	60	40	Domestic
145	Paul Shumate	P.O. 1313, Newport, OR 97365	27-Aug-80	230	200	-	-	Domestic
1269	Paul Shumate	P.O. 1313, Newport, OR 97365	29-Aug-80	178	80	-	-	Domestic
1270	Larry Andre	Rt. South Box 472, South Beach, OR 97366	13-Jan-78	305	62	54	-	Domestic
1272	Mary Wallace	Newport, OR	3-Aug-60	100	-	40	-	Domestic
1273	Jewel Jolley	Rt 3 Box 59, Newport, OR 97365	2-Dec-76	58	51	20	-	Domestic
1274	Jewel Jolley	Rt 3 Box 59, Newport, OR 97365	27-Jul-76	240	220	140	-	Domestic
1276	Jewel Jolley	Rt 3 Box 59, Newport, OR 97365	10-Aug-76	60	24	20	-	Domestic
4044	Raymond Kline	720 NE 107th Pl, Portland, OR	16-Feb-71	210	--	154	20	Domestic
4045	Donald Nash	6504 S.E. Jack Rd, Milwaukie, OR	30-Apr-66	300	--	180	12	Domestic
4046	Karl H. Moll	2842 S.E. 87th Ave, Portland, OR	14-May-65	277	--	35	40	Domestic
4047	K.F. Ritzan	Rt 1, Clackamas, OR	1-Oct-60	80	--	9	20	Domestic
4048	Roy E. Wright	Rt 1, Box 90, Clackamas, OR	13-Aug-58	130	--	6.5	40	Domestic
4052	Fred and Ray Schoppert	Rock Creek and SE 122nd, Clackamas, OR	13-Jul-84	176	151	61	30	Domestic
4058	Fred (Alfred) Wenzel	Rt 1, Box 123, Clackamas, OR	5-May-64	102	--	57	12	Domestic
4065	Kenneth A. Sawyer	Clackamas, OR	17-Jun-64	174	--	140	13	Domestic
4066	Alfred Wenzel	14848 SE 142nd Ave, Clackamas, OR	28-Sep-77	180	122	91	8	Domestic

Table 1
Existing Water Wells Within a One-Mile Radius of the Site
Beneficial Land and Water Use Survey
Clackamas County Fire District #1

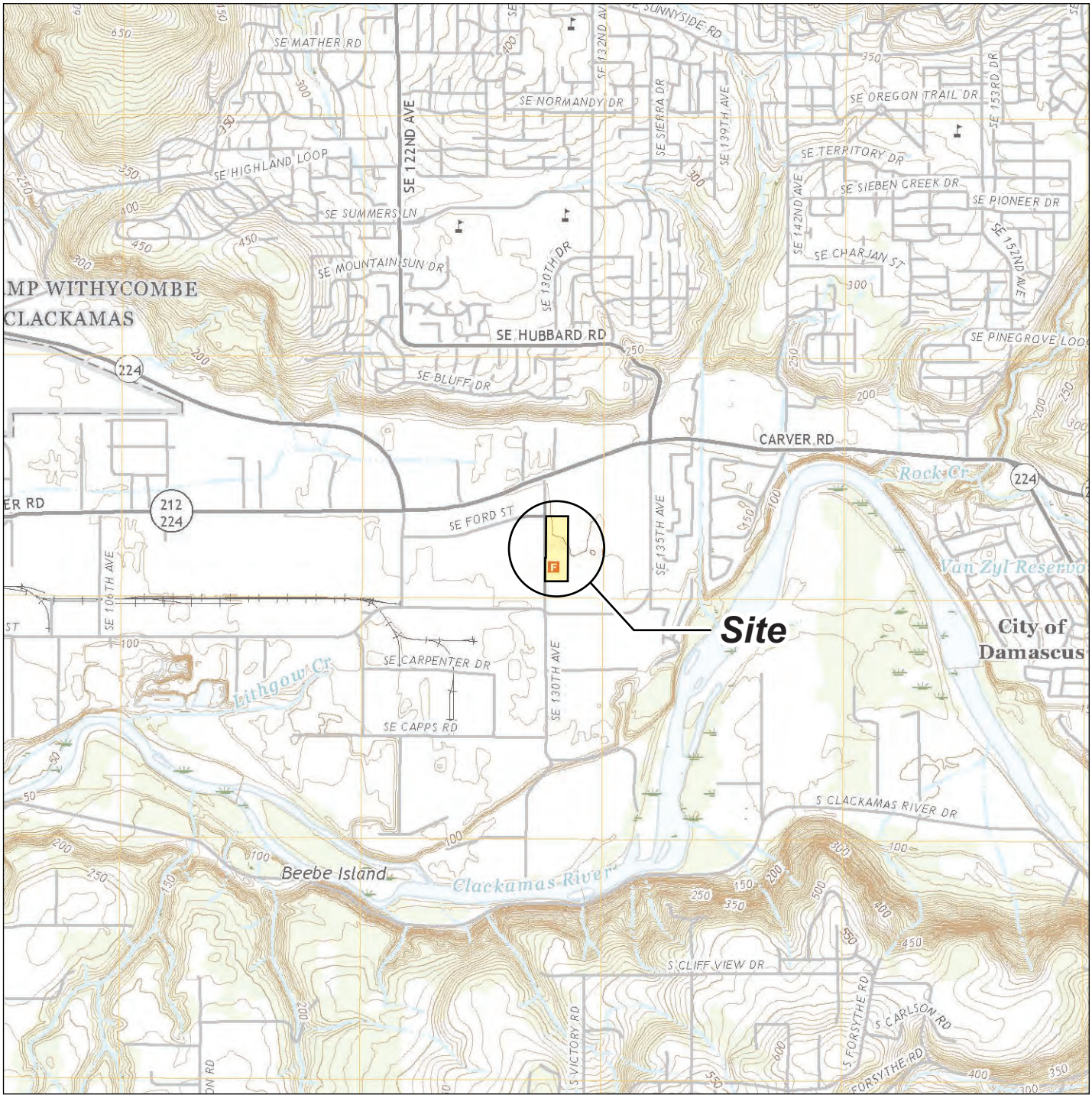
WRD ID (CLAC)	Owner	Owner or Well Address	Date Completed	Depth (feet)	First Water (Feet bgs)	Static Water Level (feet bgs)	Yield (gpm)	Use
4094	Glen Pointer	16061 S. Clackamas River Dr., Oregon City, OR	4-Oct-89	65	--	13	31	Domestic
4095	Chuck Nelson	17640 SE 130th, Clackamas, OR	28-Jun-89	60	59	12	30	Domestic
4096	Jeff Metzker	16171 S. Clackamas River Dr., Oregon City, OR	13-Oct-86	95	--	10	16	Domestic
4097	Denny L. Pearson	Clackamas, OR	30-Aug-85	60	36	15	50	Domestic
4098	Pacific Rock Products, Inc.	7800 NE Killingsworth, Portland, OR	1-Jun-84	95	74	2	100	Industrial
4100	Glen Pointer	16061 S. Clackamas River Dr., Oregon City, OR	9-Dec-88	64	23	13	70	Domestic
4101	Richard Olson	16540 S. Cliffview Dr, Oregon City, OR	13-Jan-81	200	118	112	24	Domestic
4102	John Penniman	P.O. Box 947, Oregon City, OR	20-Jun-83	280	232	232	15	Domestic
4103	Dave Coltz	2636 N.E. 12th, Portland, OR	13-Feb-74	95	88	2	50	Domestic
4104	Empire Building Materials Co.	9255 N.E. Halsey, Portland, OR	3-Dec-71	290	280	50	35	Industrial
4105	John J. Skoko	75 N.E. Baldwyn, Portland, OR	7-Dec-62	70	--	12	40	Domestic
4106	E.H. Webb	Portland, OR	23-Feb-60	103	--	48	20	Domestic
4107	W.M. Novak	6403 S.E. 32nd Ave, Portland, OR	17-Feb-56	79	30	12	20	Domestic
4108	Central Pre-Mix Concrete Co.	16795 S.E. 130th, Clackamas, OR	18-Feb-75	170	160	21	35	Industrial
4114	Donald Criteser	101 McCarver St., Oregon City, OR	17-Sep-65	162	--	27	11	Domestic
4122	Mike Hoevet	17581 SE Wilderd, Clackamas, OR	31-Jul-84	160	80	55	50	Domestic
4143	Joe Heeter	Route 1, Clackamas, OR	1-Oct-57	108	--	54	30	Domestic
4148	Wayne Garrison	Route 1, Clackamas, OR	14-Apr-58	108	--	42	40	Domestic
4149	Charles H. Clark	11436 S.E. Capps Rd, Clackamas, OR	22-May-78	120	95	8	18	Domestic
7509	Cedar Ridge Development	12299 SE 122nd, Clackamas, OR	2-May-91	--	--	65	--	Domestic - Abandoned
16054	John Lisac	16801 S Clackamas River Rd, Oregon City, OR	14-Nov-91	44	105	1	16	Domestic
17856	George Raimer	15651 SE 125th Ct, Clackamas, OR	3-Apr-92	70	10	8	100	Industrial
20328	Bill Call	14917 SE 142nd, Clackamas, OR	20-May-95	220	180	125	35	Domestic
20414	Marathon Development	East Side of 122nd between HWY 212 & Sunnyside Rd, Clackamas, OR	30-May-95	--	--	40	--	Domestic - Abandoned
50792	Brad Gilbert / Gilbert Farms	Rock Cr Junction of HWY 212 and 224	25-Jun-96	144	138	35	45	Domestic
53821	Jay Tuffli	16101 S Clackamas River Dr., Oregon City, OR	24-Sep-98	62	15	14	25	Domestic

Table 1
Existing Water Wells Within a One-Mile Radius of the Site
Beneficial Land and Water Use Survey
Clackamas County Fire District #1

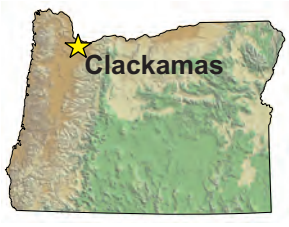
WRD ID (CLAC)	Owner	Owner or Well Address	Date Completed	Depth (feet)	First Water (Feet bgs)	Static Water Level (feet bgs)	Yield (gpm)	Use
53978	Witford Scott	13773 SE 132nd, Clackamas, OR	5-Nov-98	--	--	--	--	Domestic - Abandoned
54856	Emerald Tower	15434 SE 142nd, Clackamas, OR	28-Jul-99	--	--	50	--	Domestic - Abandoned
55211	Milwaukie High School	14486 SE 122nd Ave, Milwaukie, OR	3-Jan-99	531	260	250	720	Irrigation
55246	Brundidge Const. Inc.	14486 SE 122nd, Clackamas, OR	1-Oct-99	121	--	60	--	Domestic - Abandoned
55247	Brundidge Const. Inc.	14486 SE 122nd, Clackamas, OR	2-Oct-99	--	--	175	--	Domestic - Abandoned
56335	Surgichrome, Inc.	16569 SE 115th St, Clackamas, OR	8-Nov-00	79	47	45	8.5	Industrial
56478	Brundidge Const. Inc.	14456 SE 122nd, Clackamas, OR	29-Sep-00	273	--	240	--	Unknown - Abandoned
60271	Jason Swager	14700 SE 182nd Ave, Clackamas, OR	6-Jul-04	--	--	--	--	Domestic - Abandoned
61667	Brian Clopton Excavating, Inc. / Wenzel Park Estates	14848 SE 142nd Ave, Clackamas, OR	10-Oct-05	160	--	100	--	Domestic - Abandoned
62210	Brian Clopton Excavating, Inc. / Wenzel Park Estates	14848 SE 142nd Ave, Clackamas, OR	29-Mar-06	103	--	57	--	Domestic - Abandoned
62460	Canby Excavating, Inc. / Bella Ponte Cino Project	13995 SE Mountain View Lane, Clackamas, OR	26-Jun-06	--	--	35	--	Domestic - Abandoned
69090	Portland General Electric	13008 SE Jennifer St., Clackamas, OR	6-Sep-12	200	23	55	60	Domestic, Industrial/Commercial
69409	Dan Obrist	17560 SE Wilde Rd., Clackamas, OR	7-Jan-13	105	--	--	--	Domestic - Abandoned

Notes:

1. Water wells are from Oregon Water Resources Department (WRD) well records.
2. If other sources of information were available, WRD water well data were supplemented or corrected as necessary.
3. Only wells with a provided address or location are shown in this table. Additional residential wells with no location were shown in the WRD well records database.
4. -- = Not available.
5. bgs = below the ground surface.
6. gpm = gallons per minute.
7. Excludes wells used for environmetal monitoring.



Note: Base map prepared from USGS 7.5-minute quadrangle of Gladstone, OR, dated 2020 as provided by USGS.gov.



0 2,000 4,000

Approximate Scale in Feet

Site Location Map

Beneficial Use Survey
Clackamas Fire District Facility - 15800 SE 130th
Clackamas, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number: 320002614-01	Drawn: JP	Approved: HG	Figure 1
	April 2021			

NOTE: Base map prepared from Google Earth Pro Imagery. Aerial dated July 20, 2018. Tax lot information from Oregon Metro© www.oregonmetro.gov/rlis (2020).

0 200 400

Approximate Scale in Feet

Legend:

SB-1 ⊙ Soil Boring Location

Site Plan

Beneficial Use Survey
Clackamas Fire District Facility - 15800 SE 130th
Clackamas, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number: 320002614-01	Drawn: JP	Approved: HG	Figure **2**
	April 2021			

NOTE: Base map prepared from Google Earth Pro Imagery.
Aerial dated July 20, 2018. Tax lot information from
Oregon Metro© www.oregonmetro.gov/rlis (2020).
Stormwater information from https://www.arcgis.com/apps/webappviewer.

Legend:

City of Milwaukie Storm Points

City of Milwaukie Storm Pipes

- Laterals
- Mains
- Open Drain

Clackamas County Storm Points

- Clean out
- Control Point
- Discharge Point
- Fitting
- Inlet
- Manhole
- Network Facility
- Pump

Clackamas County Storm Pipes

- Control Pipe
- Culvert
- Lateral
- Pipe
- Virtual Drain

City of Gresham - Inlet

- Gresham
- Other Jurisdiction

N

0 700 1,400

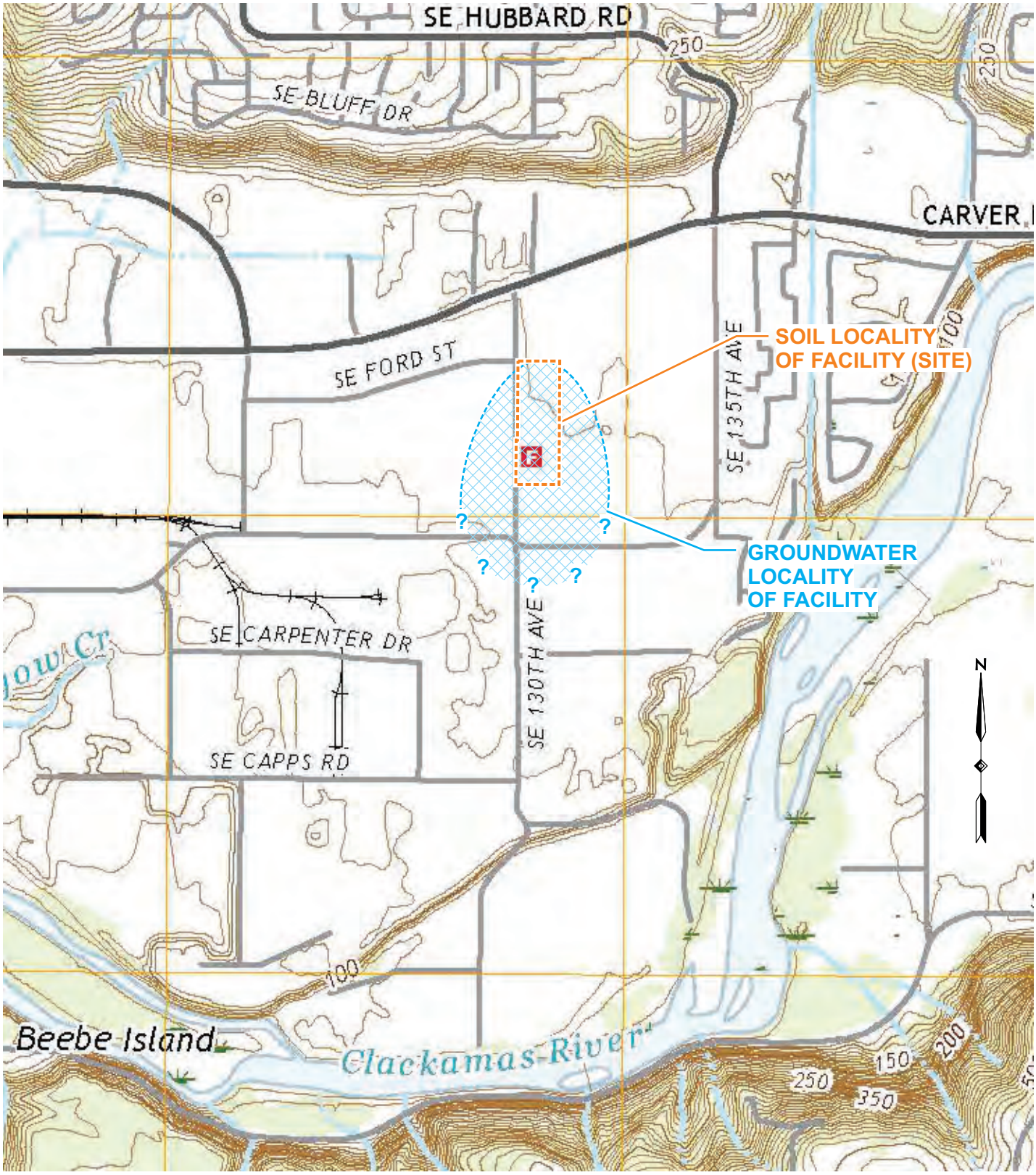
Approximate Scale in Feet

Stormwater Drainage Plan

Beneficial Use Survey
Clackamas Fire District Facility - 15800 SE 130th
Clackamas, Oregon

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number:	Drawn:	Approved:	Figure
320002614-01	JP	HG	3
April 2021			



Note: Base map prepared from USGS 7.5-minute quadrangle of Gladstone, OR, dated 2020 as provided by USGS.gov.

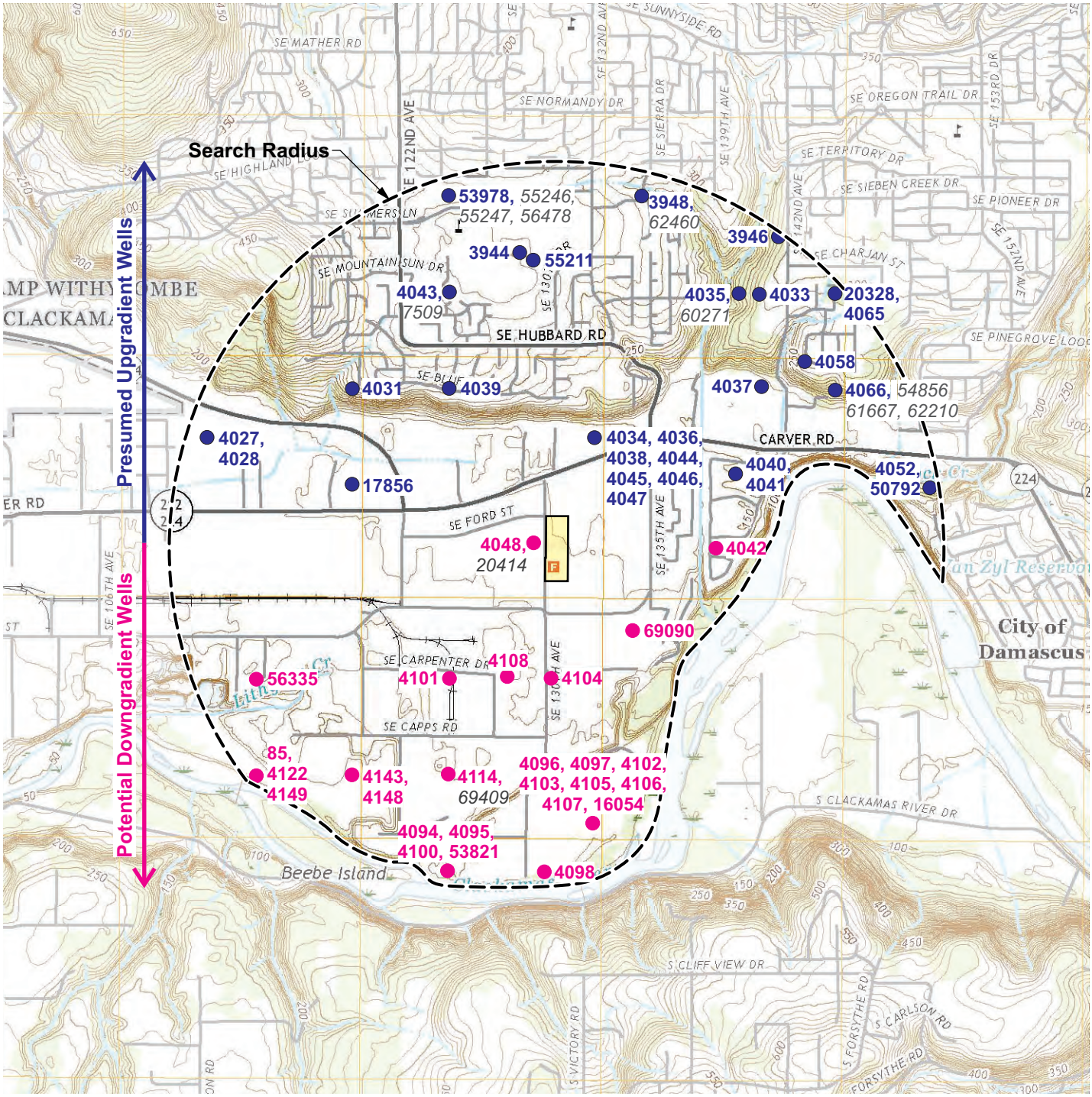
0 1,000 2,000

Approximate Scale in Feet

Locality of Facility

Beneficial Use Survey
Clackamas Fire District Facility - 15800 SE 130th
Clackamas, Oregon

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number: 320002614-01	Drawn: JP	Approved: HG	Figure 4
	April 2021			



Note: Base map prepared from USGS 7.5-minute quadrangle of Gladstone, OR, dated 2020 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet

Legend:

4126 ● Clackamas County Well Location and Well Report Identification

7509 Abandoned Well Location

One-Mile Well Search Results

Beneficial Use Survey
Clackamas Fire District Facility - 15800 SE 130th
Clackamas, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number: 320002614-01	Drawn: JP	Approved: HG	Figure 5
	April 2021			

Attachment A

Historical Aerials

ENVIRONMENTAL RISK INFORMATION SERVICES

HISTORICAL AERIALS

Project Property: Clackamas County Fire District
15800 SE 130th Ave
Clackamas OR 97015

Requested By: Apex Companies, LLC

Order No: 21021800286

Data Completed: February 22,2021

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Date	Source	Source Scale	Comments
2020	National Agriculture Information Program	1" to 500'	
2018	National Agriculture Information Program	1" to 500'	
2016	National Agriculture Information Program	1" to 500'	
2014	National Agriculture Information Program	1" to 500'	
2012	National Agriculture Information Program	1" to 500'	
2011	National Agriculture Information Program	1" to 500'	
2009	National Agriculture Information Program	1" to 500'	
2006	National Agriculture Information Program	1" to 500'	
2005	National Agriculture Information Program	1" to 500'	
2000	US Geological Survey	1" to 500'	
1994	US Geological Survey	1" to 500'	
1981	National High Altitude Photography	1" to 500'	
1975	US Geological Survey	1" to 500'	
1970	US Geological Survey	1" to 500'	
1960	US Geological Survey	1" to 500'	
1955	Army Mapping Service	1" to 500'	
1952	US Geological Survey	1" to 500'	
1948	Agriculture and Soil Conservation Service	1" to 500'	
1936	Army Corps of Engineers	1" to 500'	

Year:2020
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2018
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2016
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2014
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2012
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2011
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2009
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2006
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2005
Source:NAIP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2000
Source:USGS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1994
Source:USGS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1981
Source:NHAP
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1975
Source:USGS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1970
Source:USGS
Scale:1" to 500'
Comment:

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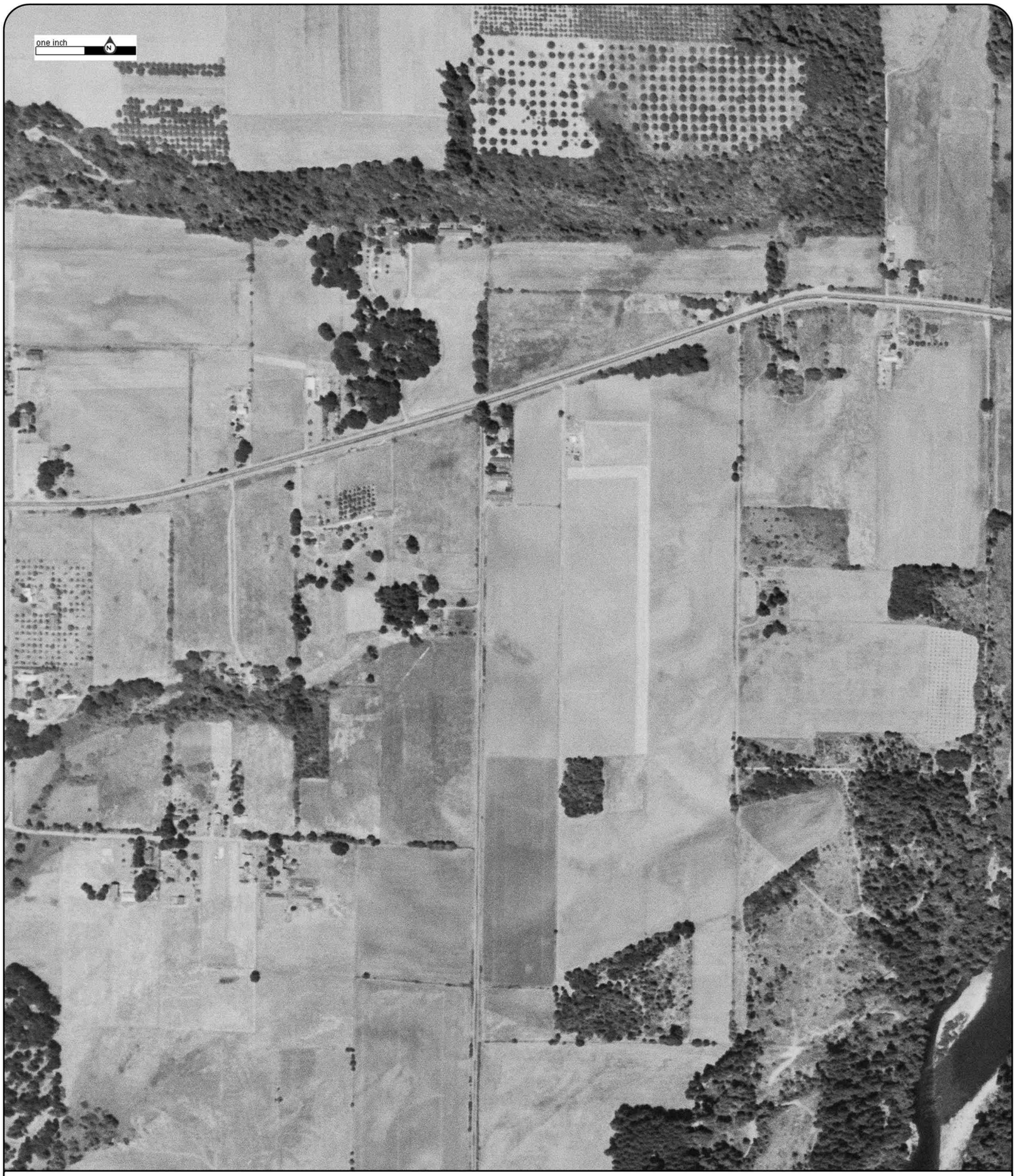
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES



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Source:USGS
Scale:1" to 500'
Comment:

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Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1955
Source:AMS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1952
Source:USGS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1948
Source:ASCS
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1936
Source:ACE
Scale:1" to 500'
Comment:

Address:15800 SE 130th Ave, Clackamas, OR
Approx Center:45.40636602/-122.52957974

Order No:21021800286

ENVIRONMENTAL RISK INFORMATION SERVICES