FORESTRY COMPATIBILITY STUDY

Compatibility of Proposed Portland Water Bureau Filtration Facility and Pipeline with Forest Practices

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Introduction

The Portland Water Bureau (Water Bureau) proposes a water filtration facility (Facility Facility) on a 94-acre site (the site) in east Multnomah County roughly five miles north of the city of Sandy. The project includes some 3.5 miles of supporting pipelines. This report evaluates potential impacts to accepted forest practices by the proposed Filtration Facility and related pipelines (collectively referred to herein as the project).

This analysis is conducted to determine compliance with Multnomah County's criteria for approving Conditional Use Permits (CUPs) for the Filtration Facility and pipelines as Community Service uses. Approval criteria related to forest uses for a CUP require demonstrating that the use:

> *1) Is consistent with the character of the area; and*
>
> *2) Will not: (1) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; nor (2) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.*

This study covers accepted forest practices. A separate report addresses accepted farm practices, Globalwise, Inc. (2002). *Compatibility of Proposed Portland Water Bureau Filtration Facility & Pipeline Operations with Surrounding Agriculture* (referred to herein as the Agricultural Compatibility Study). The same "Surrounding Lands" described in the Agricultural Compatibility Study and depicted in Figure 4 of that report were used for this analysis, as discussed further below.

Executive Summary

A thorough analysis of properties in the vicinity of the project that have or could potentially be used for forest activities, and of major commercial forest properties within five miles of the Filtration Facility site, reveals that the Filtration Facility and related pipelines will not force any change in accepted forest practices or increase the cost of accepted forest practices on Surrounding Lands devoted to forest use.

All commercial forest operations within five miles of the site must follow accepted forest practices under ORS 30.930 and OAR 624-600-0100. These accepted forest practices will not be changed or increased in cost by the proposed Filtration Facility or pipelines, nor will the accepted forest practices there impact the proposed Filtration Facility or related pipelines.

Filtration Facility Project Overview

The Water Bureau has built and operated facilities in the area for more than 125 years. The Water Bureau is making important improvements to the Bull Run water supply system to provide consistent, high-quality drinking water for one million people that meets today's water quality standards and helps address future risks and regulations. These improvements include planning, design, and construction of a new water Filtration Facility and large-diameter pipelines in eastern Multnomah County near the Bull Run Watershed.

Filtration Facility Site

Design parameters for the Filtration Facility and pipelines include:

- Design capacity of 135 million gallons per day
- Conventional treatment, including flocculation (assists in settling particles), sedimentation, and filtration
- Large-diameter pipelines to and from the Filtration Facility

The Water Bureau has owned the Filtration Facility site since 1975. The proposed site is located in unincorporated Multnomah County just north of the Clackamas County line, approximately three miles southeast of the City of Gresham's urban growth boundary (**Figure 1**). The site is zoned Multiple Use Agricultural (MUA-20) which allows municipal water treatment as a conditional use.

Figure 1. Bull Run Filtration Facility Site

The site consists of two adjacent parcels: a 56.87-acre lot to the west and a 36.62-acre lot to the east. The site has a hill on the eastern portion of the property with the existing grade gently sloping downward to the northwest, southwest, and southeast. The approximately 94-acre site consists of predominantly undeveloped agricultural land.

As shown on **Figure 2**, the northeastern portion of the site (approximately 10 acres) along SE Dodge Park Boulevard is forested. However, none of the site is dedicated to forest use and there are no commercial timber operations on this site.

SE Carpenter Lane will be the primary site access. A secondary site access will extend from SE Bluff Road to the site and will be used for emergency vehicle access and maintenance when the primary access is not reasonably available. Farm access roads along the site's northern, eastern, western, and southern boundaries, and through the middle of the property, currently support agricultural operations and provide access to the existing Pleasant Home Water District (PHWD) water towers to the south.

Figure 2. Near the Northern Property Line of Filtration Facility Site

Pipelines

The Filtration Facility will be supported by new pipelines to deliver raw water to the Filtration Facility and finished water to existing conduits. The pipelines maximize gravity flow and provide a more resilient, easier to maintain system.

Raw Water Pipelines

Raw water pipelines that will deliver Bull Run water to the Filtration Facility will convey raw water from the Multnomah Connection on Lusted Road.

Finished Water Pipelines

Finished water pipeline infrastructure will include:

- Finished water pipelines with the capacity to deliver 135 million gallons of water per day to Water Bureau customers and wholesale customers. These include two new pipelines from the Filtration Facility to the new Finished Water Intertie near Lusted Road. From the intertie, three

pipelines will continue in Lusted Road. One of the new pipelines will connect to existing Conduit 3 near the intersection of Lusted Road and Altman Road. The other two new pipelines will extend north in Altman Road from the intersection of Lusted Road and Altman Road to connect with existing conduits. At Pipeline Road, the new segment of Conduit 2 will connect to existing Conduit 2. At Oxbow Drive, the new segment of Conduit 4 will connect to the existing Conduit 4.

- A separate 12-inch diameter distribution main connection (the Lusted Road Distribution Main) will connect with the Finished Water Pipelines at the intersection of Cottrell Road and Dodge Park Boulevard, go north in the Cottrell Road right of way, and then through the Lusted Hill Corrosion Control Facility before finally connecting with the existing Lusted Road Distribution Main. This line will allow for continued service to metered residential and wholesale water customers east of the Lusted Hill Treatment Plant.
- Appurtenances including water drain valves, air release valves, and access covers.

Figure 3 shows the site, the alignment of raw water and finished water pipelines, applicable Multnomah County and Clackamas County zoning, and required county land use permits.

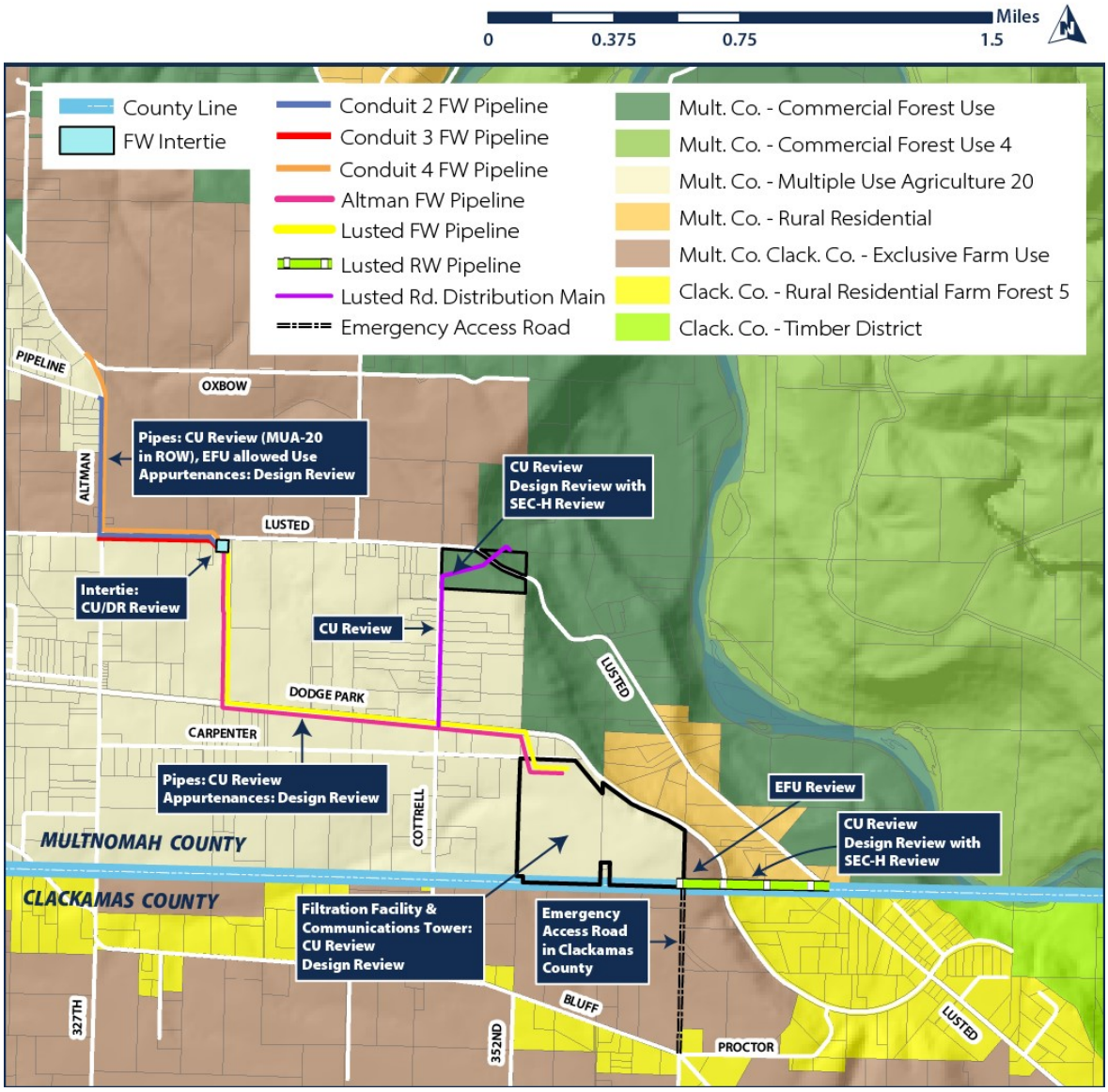

Figure 3. The Proposed Filtration Facility and Pipeline Alignment

Forest Impact Analysis

This section of the forestry report describes accepted forest practices in the Surrounding Lands and describes three forestry impact analysis areas.

Accepted Forest Practices

The Oregon Forest Practices Act (FPA) sets standards for all commercial activities involving the establishment, management, or harvesting of trees on Oregon's forestlands. The Oregon Department of Forestry (ODF) works with landowners and operators to help them comply with FPA requirements. Note that the Accepted Forest Practice definitions and guidelines outlined below apply equally to all forest landowners, regardless of ownership size or scope of operations.

Oregon law gives the Board of Forestry and ODF primary responsibility to interpret the FPA and set rules for forest practices. ODF is responsible for enforcing those requirements by:

- Reviewing pre-operations plans
- Overseeing operations
- Ensuring reforestation
- Investigating complaints
- Enforcing compliance and ordering corrective actions when violations occur

"Accepted Forest Practices" for the purpose of this report are based on the FPA and the Oregon Forest Resources Institute (OFRI) definition as described in *Oregon's Forest Protection Laws – an Illustrated Manual:*

> An operation or forest practice is any commercial activity relating to the establishment, management, or harvest of forest tree species. Most forest practices fall into one of the following general categories: road construction and maintenance; site preparation by treating slash; reforestation; harvesting; or use of pesticides or fertilizers.

Accepted Forest Practices are similarly defined legally by the following:

OAR 629-600-0100

> Forest Practice - Any operation conducted on or pertaining to forestland, including but not limited to:
>
> a) Reforestation of forestland;
> b) Road construction and maintenance;
> c) Harvesting of forest tree species;
> d) Application of chemicals;
> e) Disposal of slash; and
> f) Removal of woody biomass.

ORS 30.930

> Forest Practice - A mode of operation on forestland that:
>
> - Is or may be used on forestland of similar nature;
> - Is a generally accepted, reasonable and prudent method of complying with ORS 527.610 to 527.770 [the Oregon Forest Practices Act] and the rules adopted pursuant thereto;

- Is or may become a generally accepted, reasonable and prudent method in conjunction with forestland;
- Complies with applicable laws;
- Is done in a reasonable and prudent manner; and
- May include, but is not limited to, site preparation, timber harvest, slash disposal, road construction and maintenance, tree planting, precommercial thinning, release, fertilization, animal damage control and insect and disease control.

Accepted Forest Practices Definitions

- **Site Preparation:** Any treatment that enhances site conditions for plantation establishment or natural regeneration.
- **Timber Harvest**: Cutting, logging, and transporting timber from a site.
- **Slash Disposal:** Disposal of treetops, branches, bark, and other natural debris, left after a forest operation.
- **Road Construction and Maintenance:** Construction of new forest roads, or maintenance of existing forest roads. This includes the construction of stream crossings.
- **Tree Planting**: Reforestation of a forest area by hand planting.
- **Precommercial Thinning:** Reducing the number of live trees in a forest stand.
- **Commercial Thinning**: Reducing the number of trees in a forest stand for commercial purposes.
- **Release:** Reducing the competition to crop trees from weeds or non-crop trees.
- **Fertilization:** Applying fertilizer to forest stands to increase growth.
- **Animal Damage Control:** Reduction of the number of animals that kill or cause damage to trees.
- **Insect or Disease Control:** Reduction of the number of insects or disease that kill or cause damage to trees.
- **Selective Cutting:** A logging method in which select trees are harvested from a timber stand.
- **Clearcut/Overstory Removal:** A logging or reforestation method for shade intolerant species, in which the entire timber stand, except required leave trees, is harvested.
- **Herbicide Applications**: Described below.

The analysis below confirms that most of these accepted forest practices are being employed for the two large commercial forest operations within the Large Study Area. Only some of the accepted forest practices were found to be employed in the Core Analysis Area or Surrounding Lands, as described more below.

Analysis Areas

As shown on **Figure 4**, this report considers three forest impact analysis areas.

1. **Core Analysis Area**. This analysis began with a detailed evaluation of the properties within the Core Analysis Area which includes all tax lots within a half-mile radius[1] of the Filtration Facility site.

[1] If a tax lot intersects with the half-mile radius, all acres of that tax lot are included in the total acres reported. The one-half mile was chosen as the minimum core analysis area because it exceeds the minimum study area used in other land use contexts, such as the surrounding lands area of ¼ mile used on other Water

2. **Surrounding Lands**. Consistent with other studies being performed as part of the CUP processes, this report analyzed the Surrounding Lands (referred to as the "study area" in the application narratives) to draw final conclusions about the potential for any significant change in or increase in the cost of accepted forest practices caused by the Filtration Facility or pipelines.
3. **Large Study Area**. Finally, a wider, five-mile radius area (herein referred to as the Large Study Area) was examined for the purpose of evaluating accepted forest practices wherever large-scale commercial operations occur.

Figure 4 shows the Filtration Facility site, the pipelines, the Surrounding Lands, and the Forestry Core Analysis Area.

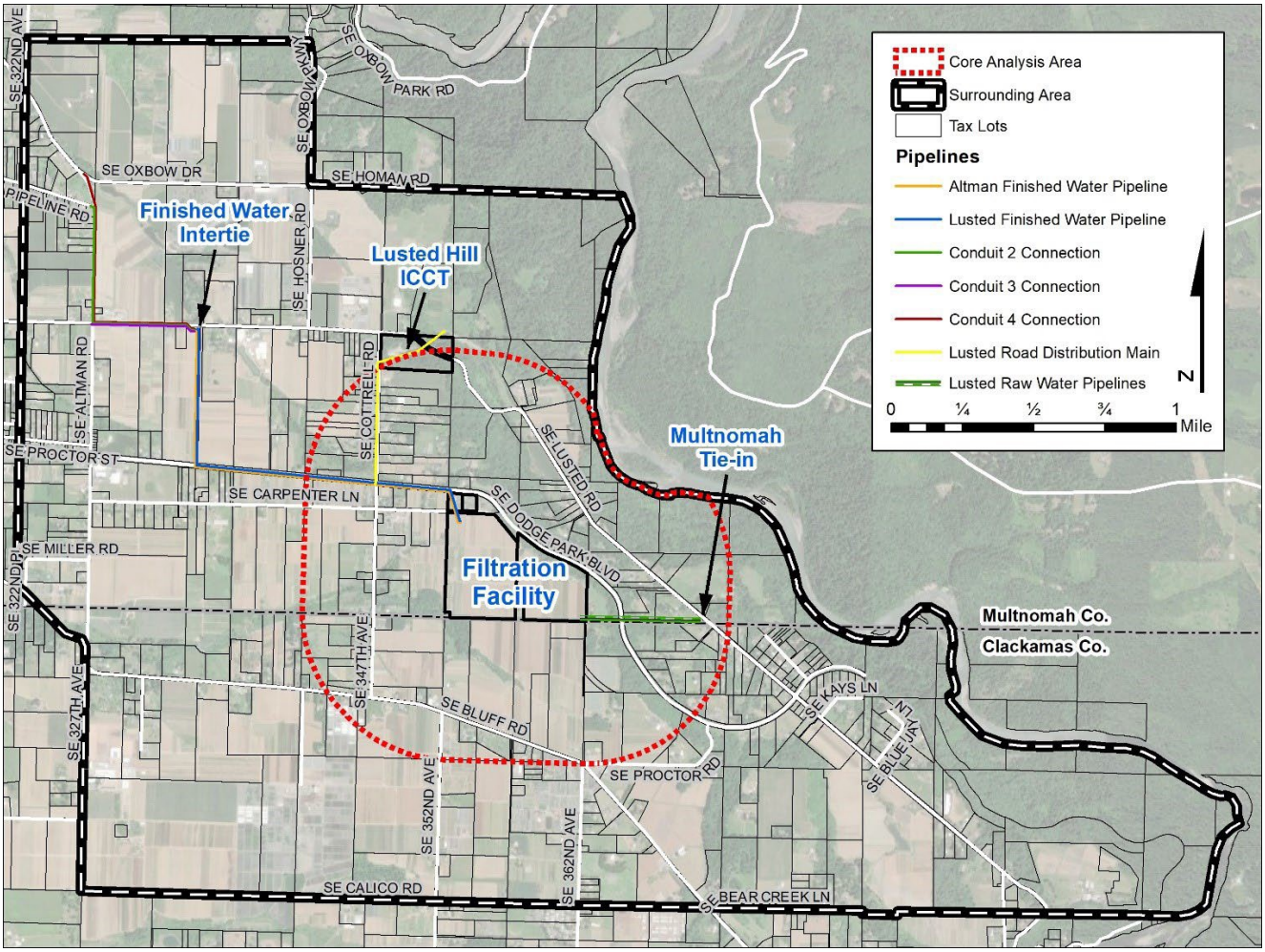

Figure 4. Surrounding Lands and Forestry Core Analysis Area

Bureau reviews by Multnomah County (at the Lusted Hill ICCT Facility) and the 1,500 foot impact area to be evaluated for mining using under OAR 660-023-0180(5)(a)), and therefore will result in an analysis of an area which can be expected to capture any potential impacts on accepted forest practices.

Potential Impacts on Forest Lands within the Core Analysis Area

The initial analysis was done using aerial photography in a Geographic Information System (GIS). GIS data layers were developed for all properties within the Core Analysis Area and used to preliminarily determine whether each tax lot was potentially forest land to be analyzed.

Potential Forest Land Defined

There are many forested parcels near the Filtration Facility site and pipeline alignments, in private and public ownership. To ensure that any potential changes to, or increases in the cost of, accepted forest practices in the Surrounding Lands would be captured by this analysis, the following broad set of criteria were used to define the forest land to be analyzed:

- Properties zoned for forest use with a forest land comprehensive plan designation
- Properties with active commercial forestry operations
- Properties that have filed a Notification of Operations (NOAP) with ODF in the last five years. (A NOAP is a document required to be filed with the ODF 15 days prior to starting a forest operation.)
- Properties whose owners are utilizing the tax-deferral for land retained in forest use
- Properties with commercial timber species

Meeting one or more of these criteria was sufficient for a parcel be analyzed as forest land as part of this report. For example, while some tax lots have forest zoning designations, it is not necessary to have this designation to practice forestry, therefore all tax lots with trees that could have a potential for harvest or other forest operations were selected for evaluation.

Potential Forest Land within the Core Analysis Area

Figure 5 shows potential forest lands within the Core Analysis Area based on the criteria above.

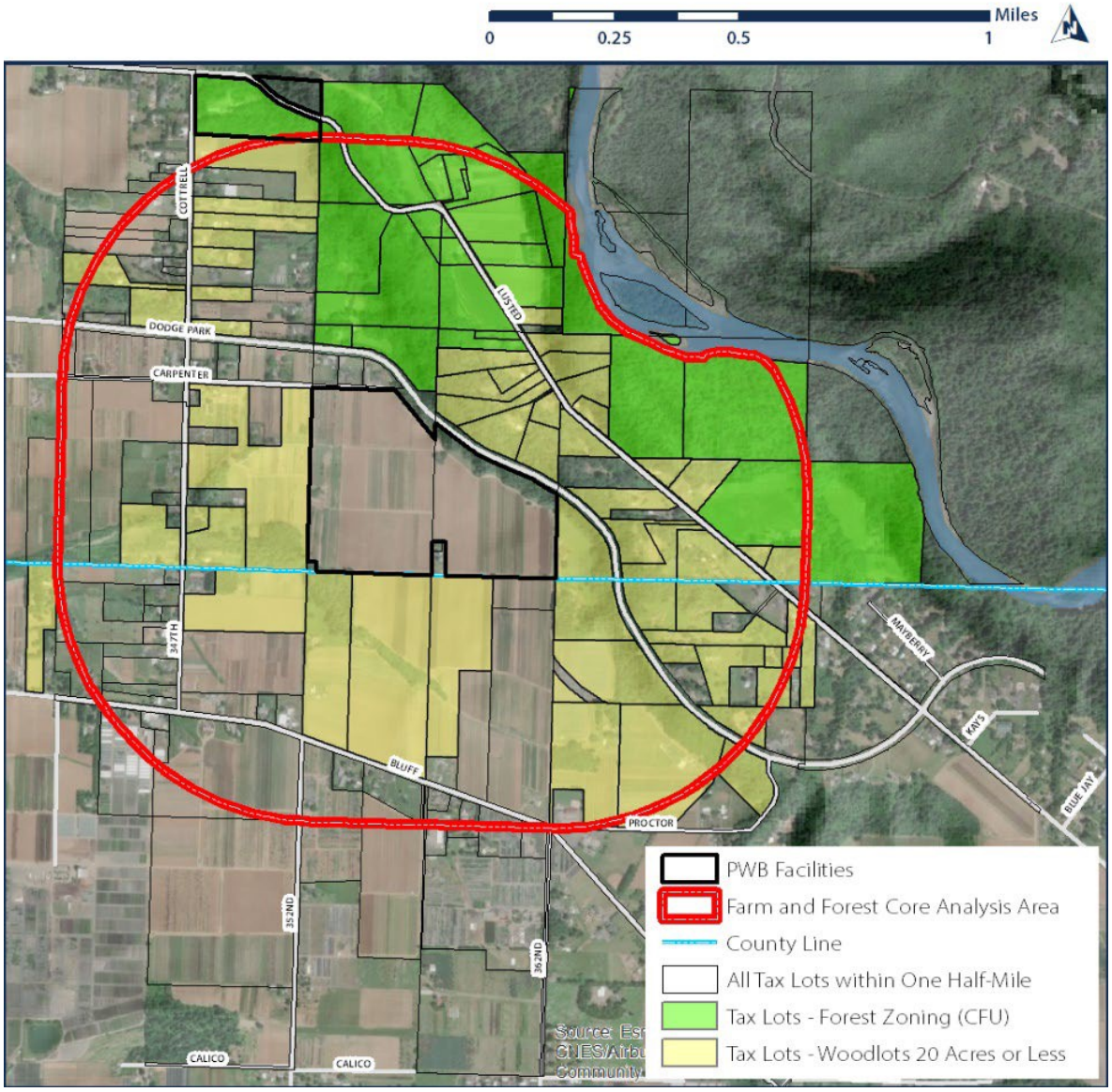

Figure 5. Potential Forest Lands within the Core Analysis Area

Ninety-six tax lots within the Core Analysis Area were identified initially as having characteristics of forest land, as defined above. Most of these landowners can be characterized as "family forest owners" or "small woodlot owners."

As shown on **Figure 3,** the only direct project impact on land planned and zoned for commercial forest use is the Lusted Road Distribution Main across the Water Bureau's Lusted Hill Treatment Facility (LHTF) site.[2] The Water Bureau does not manage or intend to use the LHTF site for commercial

[2] Note that the Filtration Facility site itself and the ROW and easement areas for the pipelines are not part of the Core Analysis Areas or Surrounding Lands because they are not located on "surrounding lands" for purposes of the relevant zoning approval criteria. Nevertheless, the Water Bureau has designed the proposed pipeline system to ensure that the project does not cause any significant impacts on, or significantly increase the

forestry purposes. As documented in Section 2.D of the application narrative, this water main will be constructed below cleared areas of the LHTF site. Moreover, none of the Lusted Hill site is dedicated to commercial forest use and there are no commercial timber operations on this site—instead forested land at Lusted Hill is managed for habitat and non-commercial forest values. Therefore, the project will have no impact on existing or planned commercial forestry operations.

Figure 6 shows parcels within the Core Analysis Area that are **not** managed for commercial forest purposes—either because they have conservation easements or because they are publicly-owned and managed for their habitat or other non-commercial forest values. **Figure 6** also shows remaining parcels (in light green) that were further evaluated in this study.

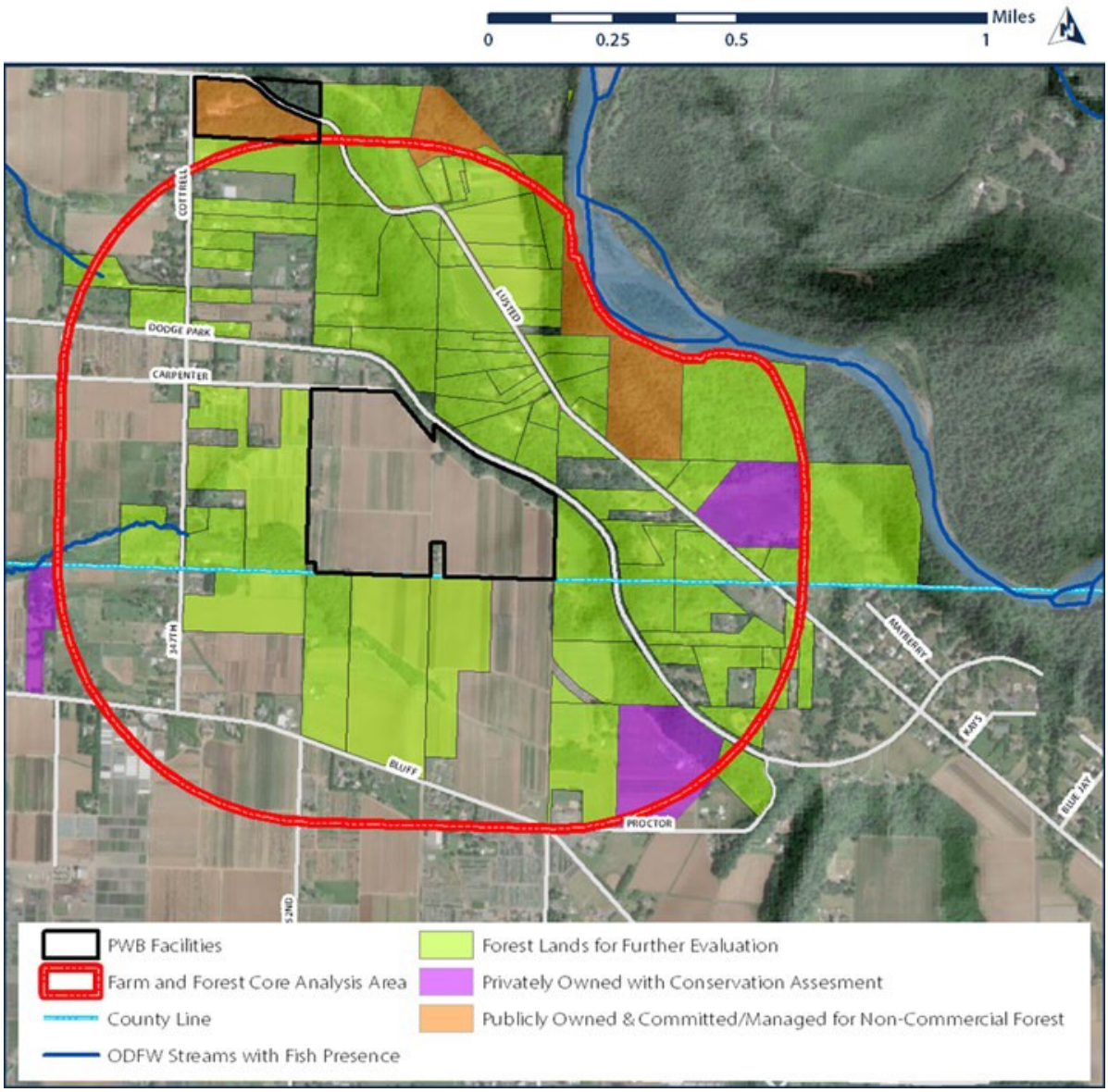

Figure 6. Land Not Managed for Commercial Forest Operations

cost of, accepted forest practices in these areas. In particular, this was accomplished by using existing ROW, farm roads, or non-forested areas wherever possible instead of taking a more direct route through forested areas, by tunneling deep underneath forested areas, and by reducing the easement areas to the smallest area practical to accommodate the Water Bureau use.

The largest forest landowner within the Core Analysis Area is the Bureau of Land Management (BLM), a federal agency that owns 76 forested acres within the Core Analysis Area but does not undertake forest operations on these lands and therefore they are not devoted to forest use. This and other BLM lands within the Core Analysis Area are in Congressional Reserve, and therefore not engaged in any forest operations or accepted forest practices. The Water Bureau's LHTF site is not managed for commercial timber purposes. Three parcels with conservation easements also are managed for their open space and wildlife habitat value and are not devoted to commercial forest use.

Evaluation Criteria

The remaining tax lots shown in light green on **Figure 6** were evaluated to determine whether the project could have an influence that changes accepted forest practices or significantly increases the cost of accepted forest practices there.

This evaluation included four steps:

1) Each tax lot was visited in person where possible (some portions of tax lots were not visible from a public road).
2) Each property owner was contacted and asked to respond to a questionnaire regarding potential impacts from the Filtration Facility on potential forest operations.
3) NOAP[3] in the Core Analysis Area (and the Surrounding Lands) were identified and evaluated.
4) Potential chemical use in forest operations was examined in the Core Analysis Area (and Surrounding Lands).

Property Owner Outreach

Landowners with potential forest land were mailed a letter informing them of the proposed project and requesting they respond with their perspectives on the project and report any concerns with how the project may affect their forest operations. Of the 48 forest landowners[4] within the Core Analysis Area that were sent a letter requesting their perspective on the project, we received five responses. (See **Table 1**)

[3] Oregon Administrative Rule 629-605-0140 (NOTIFICATION TO THE STATE FORESTER - TYPES OF OPERATIONS) provides in relevant part: "Under the provisions of ORS 527.670: (1) Notification to the State Forester shall be given for the following types of operations: (a) Harvesting of forest tree species including, but not limited to, felling, bucking, yarding, decking, loading or hauling. (b) Construction, reconstruction and improvement of roads, including reconstruction or replacement of crossing structures on any streams. (c) Site preparation for reforestation involving clearing or the use of heavy machinery. (d) Application of chemicals. (e) Clearing forestland for conversion to any non-forest use. (f) Disposal or treatment of slash. (g) Pre-commercial thinning. (h) Cutting of firewood, when the firewood will be sold or used for barter. (i) Surface mining. (j) Establishing and removing wildlife food plots."

[4] Fewer letters were mailed than there were eligible tax lots due to lack of mailing address information, some owners owning multiple tax lots, and some owners (e.g., Metro) being readily accessible for information and not requiring a letter.

Table 1 – Responses from Filtration Facility Neighbors Regarding Forest Operations

Tax Lot ID	Proximity to Project	Mason, Bruce & Girard Assessment of Trees	Nature of Trees	Forest Activity	Relevant Landowner Comments (and Author's Responses in italics)
1S4E22 A - 01100, 01200	N of Site Along Lusted Rd	Commercial, Operable, Unaffected by Project	Trees on bank along river	None	Project will have no forestry impact on property. Very familiar with the area – there's little or no forestry activity around the project area. (No potential impacts on accepted forest practices identified.)
14E27 - 00901	SW of Site, Along Cottrell Rd	Commercial, Operable, Unaffected by Project	Merchantable stand of Douglas-fir	Thinned 10yrs ago	No plans to harvest, maintaining trees for health, only concerns are potential impact on agriculture. (No potential impacts on accepted forest practices identified.)
1S4E22 CD - 00300	W of Site, Along Cottrell Rd	Non-Commercial, Operable, Unaffected by Project	Trees around pond	None	Concerned about water table being affected by treatment plant. Trees may die if Facility robs water from local system of creeks, etc. (Proposed Filtration Facility will have no effect on groundwater resources.)
14E27 - 00600	S of Site, Along Bluff Rd	Commercial, Operable, Unaffected by Project	Merchantable timber either side of stream	None	Trees have been maintained for stream protection but want to be able to harvest. (Filtration Facility will have no effect on future forestry at this site)
14E26 - 04304, 04305	SE of Site Along Lusted Rd	Commercial, Operable, Unaffected by Project	Merchantable large timber and other hardwood	None	No intention to harvest, not managing property for timber. (No potential impacts on accepted forest practices identified.)

While some of the forest landowners surveyed expressed personal concerns about the proposed Filtration Facility, none identified any specific conflicts with accepted forest practices. No respondent stated any intention of harvesting timber or practicing significant forestry operations soon, but all said they would like to maintain the option of a future timber harvest. No respondent expressed concern that their potential future forest activities would be affected by the proposed Filtration Facility or pipelines.

Notifications of Operations Permits (NOAP) Properties within the Core Analysis Area

Table 2 identifies two parcels within the Core Analysis Area for which a NOAP was filed with ODF for a forest operation.

- A parcel northwest of the site featured a NOAP for 2.9 acres of commercial thinning in 2020. (NOAP 2020-581-01691)
- The parcel directly adjacent to the southeast corner of the site featured a NOAP for 1.5 acres of commercial thinning in 2021. (NOAP 2021-581-06469)

Neither of these operations were readily evident when directly inspected in the field, and, as discussed in detail below, neither would be affected by the Filtration Facility or pipelines.

Figure 7 shows the site of NOAP 2020-581-01691, which was filed with ODF in 2020 for a 2.9-acre commercial thinning operation about 0.25 miles from the Filtration Facility site. The aerial photo shows a large stand of trees before the stand was commercially thinned in 2021. This forest practice of commercial thinning would not have been affected by the Filtration Facility or pipelines had they been in existence at the time, and nothing about the project would have an impact on this forest practice in the future. The potential impacts of the project as described below do not affect accepted forest practices, and the transportation route for equipment and logs would travel away from the direction of the site and therefore not conflict with the project.

Figure 7. NOAP Site on Cottrell Road 0.25 Miles Northwest of the Filtration Facility Site

Figure 8 shows the site of NOAP 2021-581-06469, which was filed with ODF in 2021 for 1.5-acres of commercial thinning. This parcel is directly adjacent and touches the southeast corner of the Filtration Facility site. (Logs are visible on the aerial photograph in the center of the site behind the residence and outbuildings.) This forest practice would not have been affected by the Filtration Facility or pipelines had they been in existence at the time, and nothing about the project would have an impact on this forest practice in the future. The potential impacts of the project as described below do not affect accepted forest practices, and the transportation route for equipment and logs would travel away from the direction of the site and therefore not conflict with the project .

Figure 8. NOAP Site Adjacent to the Southeast Corner of the Filtration Facility Site

Forest Land in the Surrounding Lands

Figure 9 shows the study area for the Filtration Facility and pipelines CUP applications, which corresponds with the Surrounding Lands area for purposes of this report and analysis. The Surrounding Lands area and the reasons for selection of that area is defined further in the main application narrative and Agricultural Compatibility Report. The Surrounding Lands area includes all the Core Analysis Area as well as additional lands along the pipeline routes, with a base radius of approximately one mile from the Filtration Facility.

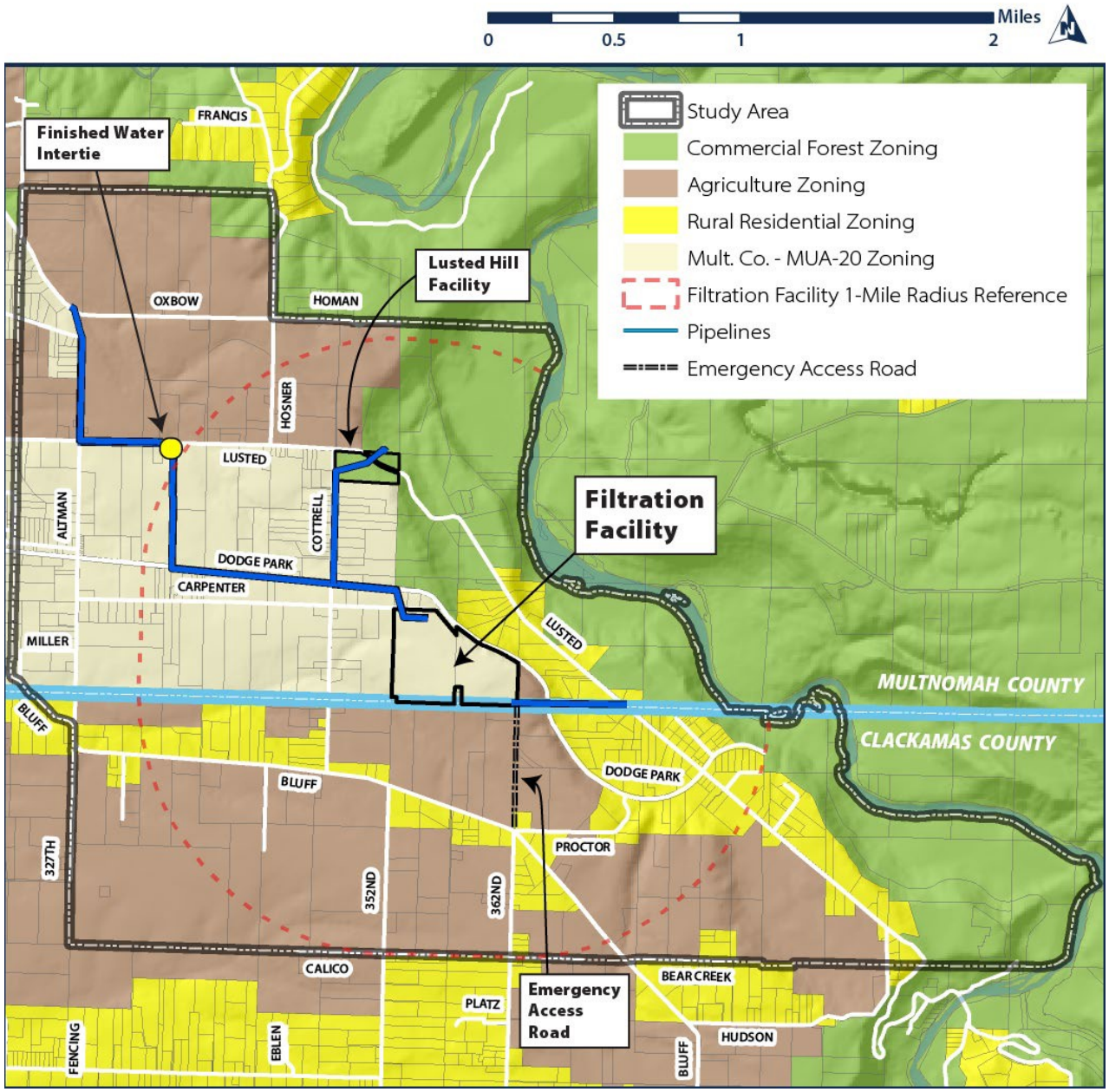

Figure 9. Surrounding Lands (Study Area) Map

The Surrounding Lands area outside of the Core Analysis Area was thoroughly inspected in person to determine the nature of the forested properties and their use. Applying the same criteria for analysis that were used for the Core Analysis Area, the forestry character of the Surrounding Lands was found to be consistent with the lands in the Core Analysis Area. As in the Agricultural Compatibility Report, the Surrounding Lands and the Core Analysis Area are homogenous in topography, climate, and soils, as well as the sizes and scope of forestry activities. Because of these and other shared characteristics and similarities, and because potential impacts (both related to externalities and sensitivities of the proposed use) are more likely to occur for accepted forest practices on lands located closer to the Filtration Facility than forest practices at more distant locations, the detailed analysis and conclusions for the more focused Core Analysis Area also apply to the larger Surrounding Lands further away from the Filtration Facility and pipelines.

Surrounding Lands NOAP

All NOAPs filed since 2017 with the Oregon Department of Forestry (ODF) within all of the Surrounding Lands and portions of the Large Study Area (within roughly two miles of the site) were obtained and evaluated. As shown on **Table 2** and **Figure 10**, 13 NOAPs involving ten parcels were filed during this period: five within the Surrounding Lands, and seven were within the Large Study Area (east of the Sandy River).

Table 2. NOAPs Filed with ODF Since January 2017

Map ID	NOAP	Acres of Activity	Volume (MBF)	Activity	Miles from Facility Site
Core Analysis Area					
1	2021-581-06469	1.5	1	Commercial Thinning	-
2	2020-581-01691	2.9	35	Commercial Thinning	0.25
Surrounding Lands					
3	2022-581-01812	2.3	20	Clearcut	0.7
4	2018-581-10639C	3.0	20	Clearcut	0.8
5	2021-581-00282	13.3	40	Clearcut	0.9
Large Study Area East of Sandy River					
6	2022-581-01204 2022-581-09918	60.4 63.5	N/A	Precommercial Thinning + Herbicide Application	1.0
7	2017-581-01657C	13.9	N/A	Precommercial Thinning	1.3
	2019-581-10901C	12.9	10	Clearcut	
	2019-581-10900	N/A	N/A	Stream Crossing	
8+9	2021-581-06655C	40	20	Commercial Thinning	1.1
	2018-581-04006	40	100		
All Areas Above					
X	2021-581-08939	N/A	N/A	Utility Line Maintenance	0 to 2

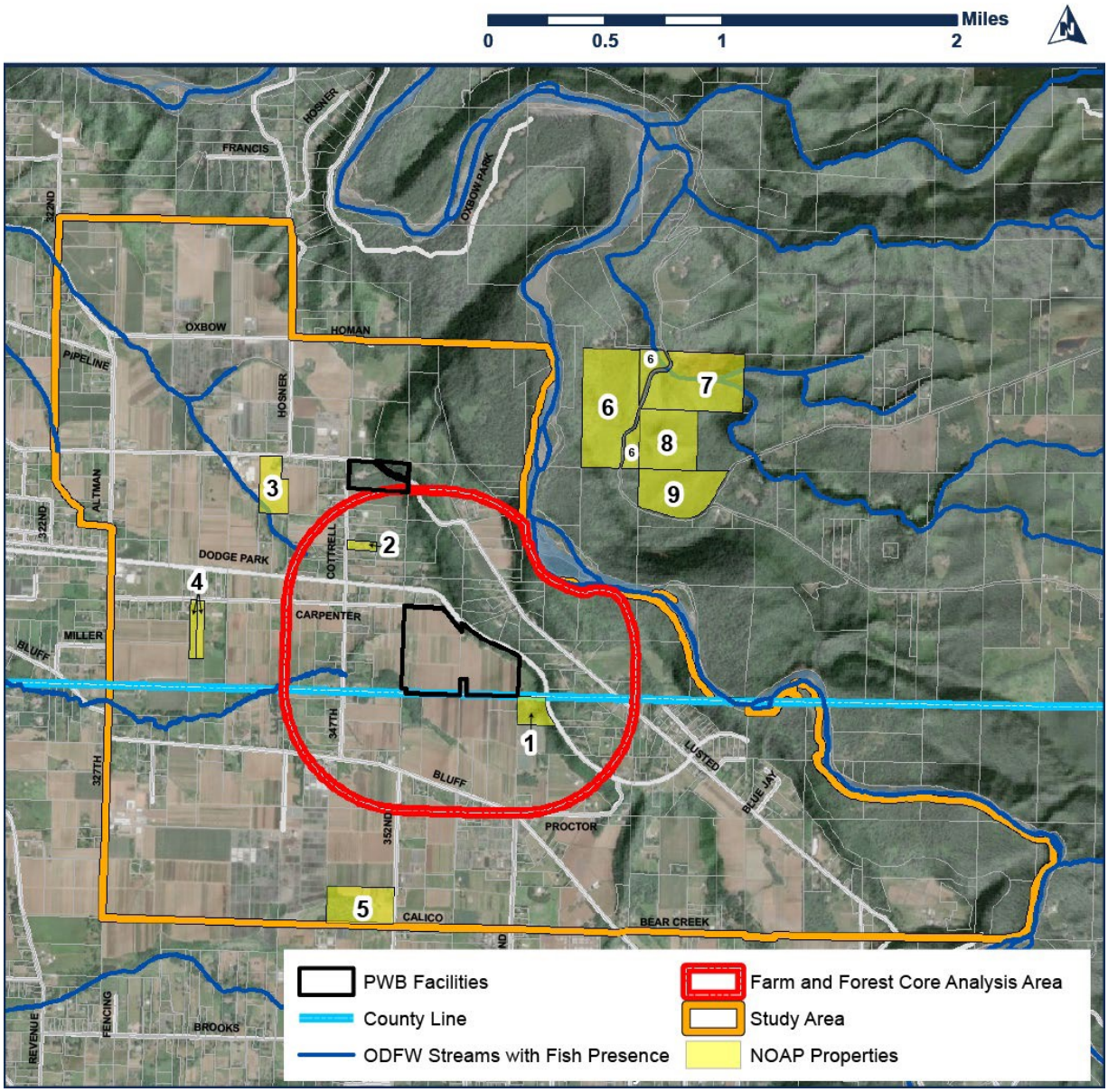

Figure 10. NOAP Properties within and Outside the Core Analysis Area

The notifications were for the following activities, which are accepted forest practices:

- Precommercial Thinning
- Commercial Thinning/Selective Cutting
- Clearcut/Overstory Removal
- Stream Crossing Construction
- Powerline Inspections (not shown on **Figure 10** because this is a linear feature)
- Herbicide Application

The two NOAPs within the Core Analysis Area are discussed in the Core Analysis Area section above. The seven NOAPs in the Large Study Area are discussed in the Large Study Area section below. One NOAP involved trimming to utility line maintenance, indicating that utility uses are consistent with the forest use character of the area.

The remaining three NOAPs applied to forested parcels within the Surrounding Lands outside the Core Analysis Area and involved permits for clearcuts ranging from 2.3 to 13.3 acres. These clearcuts would not have been affected by the Filtration Facility or pipelines had they been in existence at the time, and nothing about the project would have an impact on this forest practice in the future. The operational impacts of the Facility as described in the section below do not affect forest practices, and the transportation route for equipment and logs would travel away from the direction of the site and therefore not conflict with Filtration Facility operations.

Herbicide Applications

In general, the Filtration Facility and pipelines are not sensitive to the potential externalities of accepted forest practices—such as dust, noise, or air emissions—for the same reasons analyzed in the Agricultural Compatibility Report, and therefore the location or operation of the Filtration Facility and pipelines will not force any change in, nor increase the cost of, accepted forest practices in the Surrounding Lands in order to protect the project from those potential externalities. One potential externality which could conceivably impact the Filtration Facility would be through the use of pesticides (referring to insecticides, herbicides, and fungicides, as described in the discussion of the Large Study Area below.

While there is no reported or observed use of pesticides in forest lands located within the Core Analysis Area, any parcel in forest use could potentially use herbicides in the course of their forest operation. Dr. Felsot in his report "Use and Safety Characterization of Pesticides Used on Agricultural and Forestry Properties Surrounding the Proposed Site for the Portland Water Bureau's Bull Run Filtration Facility in Multnomah County, OR," states the following:

> *"The overall conclusion of this risk characterization is twofold. First, the proposed Filtration Facility will not force a significant change in, nor significantly increase the cost of, accepted farm or forest practices in the surrounding lands of the Filtration Facility site. Second, with setbacks from property lines as part of the design, the location of the Filtration Facility at a site near pesticide users will not create a risk of pesticide residue concentrations in the finished water that exceed safe drinking water quality standards or guidelines. Fundamentally, these conclusions are based on risk analyses …showing that the distances between any pesticide use in the surrounding lands and the bystander and open water areas of the Filtration Facility are sufficiently wide to exceed the distances needed to ensure compliance with label mandates, to exceed ESDs [Equivalent Safe Distances] modeled by AgDrift [EPA model] for all chemicals, and to exceed distances modeled to ensure any drift deposited on open water basins results in finished water concentrations significantly lower than clean drinking water standards and guidelines."*

Herbicides are routinely applied to large-scale commercial forestry operations such as those that occur outside the Core Analysis Area and Surrounding Lands. As documented in the Large Study Area discussion, applications of herbicides related to these forest operations are too far from the Filtration Facility to have any significant impact.

Only one notification (NOAP 2022-581-01204), for Metro-owned forested natural area, located 0.9 miles from the Filtration Facility site, featured herbicide application activity. The method of application was 'ground-manual spot application'. The herbicide being applied was *Vastlan*, which is listed as an approved chemical in Metro's Integrated Pest Management Plan for natural areas. In total, most of the acreage represented by these operations is east of the Sandy River, and none of the operations would be affected by, or have an effect on, the Filtration Facility or pipelines.

All herbicide applications must adhere to the following ODF buffer width[5] requirements per OAR 629-620-0400 and SB 1602:

- **Ground-based spraying:** Minimum 10 feet in all circumstances (aquatic areas, dwellings, wetlands, etc.).
- **Aerial spraying:** 50 to 75 feet for streams, wetlands, and lakes.
- **Aerial spraying:** 300 feet for water intakes, schools, inhabited dwellings.

Aerial spraying is not feasible and not practiced on areas smaller than 10 acres due to economy of scale and logistical challenges (e.g., proximity of residential neighbors). The closest forested parcels that are greater than 10 acres are 900 feet from the Filtration Facility. Additionally, the required 300-foot buffer from dwellings further limits the potential for aerial application in forestland in the Surrounding Lands, where rural residential uses are common. Therefore, it is not an accepted forest practice in the Surrounding Lands to conduct aerial pesticide applications. For this reason, even if the Filtration Facility created buffer requirements, no lands devoted to forest use are close enough to the site to be impacted, as the design of the Filtration Facility incorporates internal buffers of at least 100 feet between nearby properties and any bystander or open water areas, which exceeds the ground-based spraying buffer.

Therefore, as to pesticides, the proposed Filtration Facility will not force a significant change in, nor significantly increase the cost of, accepted forest practices in the Surrounding Lands of the Filtration Facility site. This conclusion is additionally supported by the following observations:

- The significant forestry spraying practices are too distant (i.e., greater than 2.5 miles) from the Filtration Facility to be of concern for Filtration Facility personnel or visitors, or for exposure of water basins or buffer requirements.
- For those potential herbicide applications in the Surrounding Lands and closer to the Filtration Facility, modeled scenarios of pesticide drift and exposure using EPA's publicly available model AgDrift showed that any drift beyond a spray swath—even if directly adjacent to the site, which is not the case—would not exceed safe levels defined for human health and drinking water quality.

Because there is no risk of health or water quality impacts at the Filtration Facility, accepted forest practices in the Surrounding Lands of the Filtration Facility and pipelines can continue without any significant change or increased cost, and finished water will not contain pesticide residues that exceed safe drinking water quality standards or guidelines.[6]

Potential Impacts of Pipelines on Surrounding Forest Land

Most of the pipeline segments and the pipeline intertie building will be located in public right-of-way (ROW) or in easement areas which have no timber (i.e., are not forest lands or devoted to forest use). In general, these pipeline segments have no potential to affect forest land, forest resources, accepted

[5] Note that no buffer requirements apply to the pipelines and it is not clear that any would apply to the Filtration Facility. Nevertheless, the Water Bureau has studied this potential issue in order to ensure that there will be no impacts on accepted forest practices.

[6] Use and Safety Characterization of Pesticides Used on Agricultural Properties Nearby the Proposed Site for the Portland Water Bureau's Bull Run Filtration Facility in Multnomah County, OR – by Dr Allan Felsot

forest practices, or the cost of those accepted forest practices in the Surrounding Lands[7] because the pipelines will generate minimal or no external effects, such as noise, vibration, odor, traffic, or other externalities, as further explained in the Agricultural Compatibility Study. Additionally, accepted forest practices are generally not sensitive to those potential externalities. Therefore, for the same reasons as in the Agricultural Compatibility Study, the pipelines will not force any change in or significantly increase the cost of accepted forest practices on the lands immediately surrounding the easements and ROW where the pipelines are located.

Two new pipeline segments will cross land where there are trees, although none contains areas where an operator is engaged in any accepted forest practices. These pipeline segments are shown in **Figure 3** and evaluated as follows:

- The *raw water pipeline segment* extending west from Lusted Road to the Filtration Facility site first crosses a farm site that also has trees. This site (two parcels) is in private ownership and is zoned RR (Rural Residential). Between Dodge Park Boulevard and the Filtration Facility site, this pipeline segment crosses another site that is in private ownership and zoned EFU (Exclusive Farm Use). This second site is partially forested, largely with non-commercial deciduous trees (i.e., trees without commercial harvest potential). At this location, the pipeline will be installed using a trenchless method, at depths of 150-200 feet. There will be no effect on the trees. Both sites crossed by this pipeline segment are currently being farmed (for pasture and hay production) and there are no current or planned accepted forest practices being engaged in on either site. Therefore, the pipelines will not cause any change in or increase the cost of accepted forest practices at these sites.
- The *finished water pipeline segment*, known as the Lusted Road Distribution Main, extending from the corrosion control facility southwest to Cottrell Road crosses land that is in public ownership (City of Portland) and zoned CFU (Commercial Forest Use). The Lusted Road Distribution Main continues onto property adjacent to the City property to connect to the existing distribution main. As explained in the application narrative Section 2.D, both through the City property and the neighboring property, the Lusted Road Distribution Main has been routed through existing cleared areas. While the property does have tree species with commercial potential, neither the City nor the adjacent owner is engaged in, and has no plans for, future commercial forestry activity or engaging in any accepted forest practices here. Therefore, the pipelines will not cause any change in or increase the cost of accepted forest practices at this site.

Based on this specific analysis of the potential impact of the pipelines, the pipelines will not cause any change in or increase the cost of accepted forest practices in the Surrounding Lands.

Other Potential Impacts on Surrounding Forest Uses

The planning and design of the Filtration Facility is based on principles discussed since October 2019 in meetings of the Water Bureau with the Site Advisory Group which includes local residents and property owners who may own forest land. The good neighbor practices are an important way to ensure compatibility of the project with residents who own forestland.

The next sections evaluate the Filtration Facility's potential impacts on surrounding forest uses, and how these are addressed. This analysis incorporates by this reference the analysis in the Agricultural

[7] Note that, as a technical matter, the Surrounding Lands for purposes of the CUPs do not include the ROW/easement areas for the pipelines. However, this analysis also evaluated lands within those ROW/easement areas to ensure that the project would not have any impacts on accepted forest practices on those lands, regardless of whether that analysis was required for the CUP.

Compatibility Report and confirms that the analysis and conclusions in that report are also true for accepted forest practices around the Filtration Facility, pipelines, and generally in the Surrounding Lands. As noted above, the pipelines will generate minimal or no external effects, such as noise, vibration, odor, traffic, or other externalities, and therefore are not further analyzed in detail below, although further analysis is provided in the Agricultural Compatibility Report and incorporated here. Note that, similar to accepted farm practices, forestry and accepted forest practices are not sensitive to most of these potential impacts.

Noise and Vibration

The design of the Filtration Facility has various noise-limiting design measures to help reduce off-site sound impacts. The Filtration Facility will be designed to comply with applicable Multnomah County and Clackamas County noise standards. Some of the actions to accomplish this are: 1) design pumps, equipment, and facility processes to mitigate potential off-site noise impacts; 2) utilize landforms and landscaping wherever possible to help block sounds; and 3) design the facility to meet the code limit of 60 decibels during daytime and 50 decibels at night, as measured by the applicable county standards.

- Noise will not affect accepted forest practices. The off-site noise will not affect accepted forest practices or costs.
- The Filtration Facility's operation will not result in any off-site vibrations that affect accepted forest practices or costs.

Odor

The Filtration Facility's operation will not result in any off-site odors that affect accepted forest practices or costs.

Light/Glare

Filtration Facility lighting will be designed to follow best practices that shield facility lighting at the source and minimize night-time impacts to neighboring properties and wildlife. The Filtration Facility lighting will be designed to comply with Multnomah County's applicable lighting standards. The lighting will be no brighter than necessary for operational safety and facility security around and within the Filtration Facility. Lighting is designed to not illuminate anything beyond the site boundaries. As a result, the facility's operation will not result in any off-site light/glare that affects accepted forest practices or costs.

Dust and Mud

Most of the Filtration Facility site comprises buildings and impervious surfaces that will not generate dust. Other areas will be landscaped with plants that will retain rainfall and help to hold dust to a minimum. Vehicles coming to the site for facility operations include passenger vehicles and supply delivery vehicles. All vehicle areas will be paved or improved with all-weather surfaces. None of these generate significant mud or dust. The Filtration Facility's operation will not result in any dust or mud that significantly affects accepted forest practices or costs.

Litter

Filtration Facility operations will not generate litter. Litter at the Filtration Facility will be controlled by recycling of materials to the maximum degree possible, and disposal of non-recyclable materials through standard best practices. The Filtration Facility's operation will not result in any litter that significantly affects accepted forest practices or costs.

Vector Control

Filtration Facility design and operations will not attract or harbor any vectors (insects, rodents, etc.) that would transmit a disease or parasite from one animal or plant to another. The Filtration Facility's operation will not result in any vectors or need for off-site vector control that significantly affects accepted forest practices or costs.

Air Emissions

Vehicle operations, which include truck deliveries off-hauling of residual solids and employee vehicle travel have minor impacts on air quality. Also, chemical storage and operation of standby diesel generators are minor air quality impacts. Since forest operations usually include vehicles and equipment powered by diesel fuel, Filtration Facility air emissions will not affect accepted forest practices. Any off-site emissions will not affect accepted forest practices or costs.

Water Quality – Stormwater and Groundwater

The facility design incorporates best practices for handling stormwater generated on-site. Attention will be given to maintain discharge at or below the current pre-construction level, so neighboring farms' irrigation ponds are not impacted. This will be accomplished by retaining stormwater on-site to the extent possible. Stormwater swales and basins throughout the site will manage runoff during normal and large storm events. Trees, understory plants, and groundcover will be dispersed throughout the site to hold and transpire stormwater.

Water quality effects from stormwater or groundwater will not affect accepted forest practices. Any stormwater generated and potentially dispersed by the Filtration Facility will not significantly affect accepted forest practices or costs.

Radio Transmission

Radio communications will be managed with a microwave communications tower constructed at the Filtration Facility. Transmission from other towers to the new tower has been studied and the findings are that human exposure to nonionizing electromatic radiation at the ground level is well within safety standards for all individuals and occupations in the vicinity of the tower.

According to Paul Gamboa, Project Manager for the City of Portland, Bureau of Technology Services, the radio frequencies that will be used at the Filtration Facility are currently in use throughout Multnomah County. Regarding microwave frequency, the technology employed in microwave transmissions makes it highly improbable that microwave will be a source of interference for loggers or foresters in the area. Should any interference issues occur, the City of Portland would work to mitigate the interference as quickly as possible.

Off-site radio signals will not affect accepted forest practices or costs.

Security

Physical security and cybersecurity are important concerns for the Water Bureau because the Filtration Facility is critical infrastructure. The Water Bureau will use perimeter fencing and video surveillance monitoring as the main deterrence to physical intrusion. This has no impact on security issues forestland owners face such as theft or vandalism. Neighbors who own forestland interviewed by Mason, Bruce & Girard did not express any concerns about the security of their forestland in the vicinity of the Filtration Facility.

The Filtration Facility will not result in security impacts that affect accepted forest practices or costs.

Traffic

The filtration facility will be staffed by 26 full-time employees, with a maximum of 10 working any individual shift.[8] For a conservative estimate, all 26 employees were accounted for in the trip generation. A maximum of 16 chemical delivery trucks will enter and exit the Filtration Facility during a five-day work week. A maximum of nine solids haul-off trucks will enter and exit the site during a five-day work week. Combined, this amounts to five trucks entering and exiting the site per day (see Table 3).

Table 3. Anticipated Average Daily (Weekday) Filtration Facility Site-Generated Trips

	7-9 am Peak Hour			4-6 Peak Hour		
	Enter	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Water Bureau Staff	16	4	20	4	16	20
Tours/Pipeline & Intertie Maintenance	1	1	2	1	1	2
Chemical Deliveries & Solids Off-hauling	5	5	10	5	5	10
Total			**32**			**32**

Source: Portland Water Bureau Bull Run Filtration Project Traffic Impact Analysis, Memorandum, by Global Transportation Engineering, dated September 2022.

The traffic engineer's analysis concludes that, even with these small increases in traffic, under 2040 total traffic conditions all study intersections and site accesses will operate at levels of service better than the levels of service standards established by Multnomah County and Clackamas County. Therefore, the negligible amount of Filtration Facility generated traffic will not affect accepted forest practices in the Surrounding Lands.

The slight increase in traffic generated by activity at the Filtration Facility will not cause any change in accepted forest practices and there will not be any significant increase in the cost of accepted forest practices in the Surrounding Lands.

Forest Land in the Large Study Area

The analysis was expanded to a greater distance (the Large Study Area) where large-scale commercial operations exist to ensure the conclusions in the Core Analysis Area and Surrounding Lands were accurate when applied to larger-scale commercial forestry. As shown **Figure 11**, there are five large-scale commercial forest landowners within five miles[9] of the Filtration Facility that own greater than 200 acres.

[8] Technical Memorandum, Portland Water Bureau Bull Run Filtration Project Traffic Impact Analysis, by Global Transportation Engineering, September 2022.

[9] If a tax lot intersects with the 5-mile radius, all acres of that tax lot are included in the total acres reported.

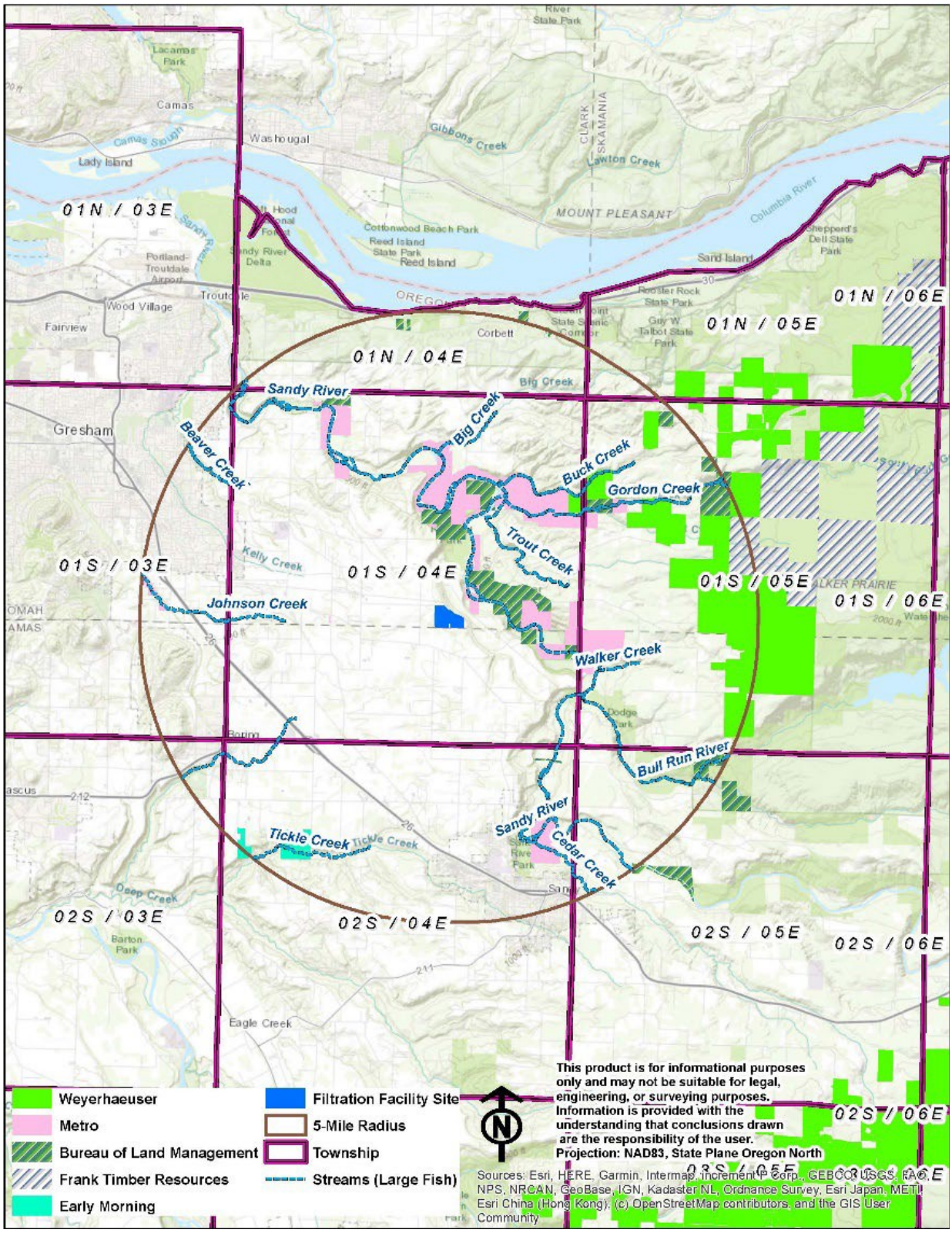

Figure 11. Major Forest Landowners Within 5 Miles (the Large Study Area)

There is substantial forest land and some large-scale commercial forestry activity within the Large Study Area. The five largest forest landowners within five miles vary in their mode of using the forested areas on their land. (See **Table 4**)

Table 4. Management Mode of Major Forest Landowners Within 5 Miles

Landowner	Acres Within 5 Miles of Facility	Forest Management
Weyerhaeuser	3,498	Timber Production
Metro	2,349	Recreation and Natural Areas
Bureau of Land Management	1,563	Congressional Reserve
Frank Timber Resources	320	Timber Production
Early Morning	203	Recreation

Five large-scale forest owners (over 200 acres) were identified within the Large Study Area. Two of these landowners, Weyerhaeuser, and Frank Timber Resources, have commercial forestry operations. The other landowners in the Large Study Area do not actively practice commercial forestry. Three of the landowners—Metro, the Bureau of Land Management, and Early Morning nursery—are not conducting commercial forest uses or devoting their land to forest use, and instead are focused on recreation and preservation.

The seven NOAPs filed since 2017 in the Large Study Area across the Sandy River were for pre-commercial thinning, herbicide application, stream crossing construction, clearcut, and commercial thinning. The size of these activities ranged from 12.9 to 63.5 acres.

There are two active forest use operations, both approximately 2.5 miles from the Filtration Facility, across the Sandy River. Weyerhaeuser owns 3,498 acres within five miles of the site, which is part of a larger ownership that extends further to the east. Frank Timber Resources owns 320 acres within five miles of the site, which is also part of a larger ownership that extends further to the east. Both Weyerhaeuser and Frank Timber have ongoing forest operations with accepted forest practices of reforestation, road building/maintenance, timber harvest, chemical application, slash disposal, and woody biomass removal. The two accepted forest practices that could conceivably be affected by the project are timber harvest/transport and chemical applications for practices such as site preparation, release, or insect and disease control.

Both Weyerhaeuser and Frank Timber harvest timber and ship logs to market by truck. The transportation route of log trucks from the Weyerhaeuser and Frank Timber timberlands depends on the destination. Log trucks headed to I-84 reach the highway at Corbett without crossing the Sandy River. Trucks headed to US-26 reach the highway via Ten Eyck Road, crossing the Sandy River at Revenue Bridge just northeast of the City of Sandy. Neither route crosses the Filtration Facility project Surrounding Lands. (See **Figure 12**.) Therefore, the Filtration Facility and pipelines will not have any impact on or increase the cost of accepted forest practices related to timber harvest and transport. Therefore, the conclusions in the Core Analysis Area and Surrounding Lands are also accurate when applied to larger-scale commercial forestry.

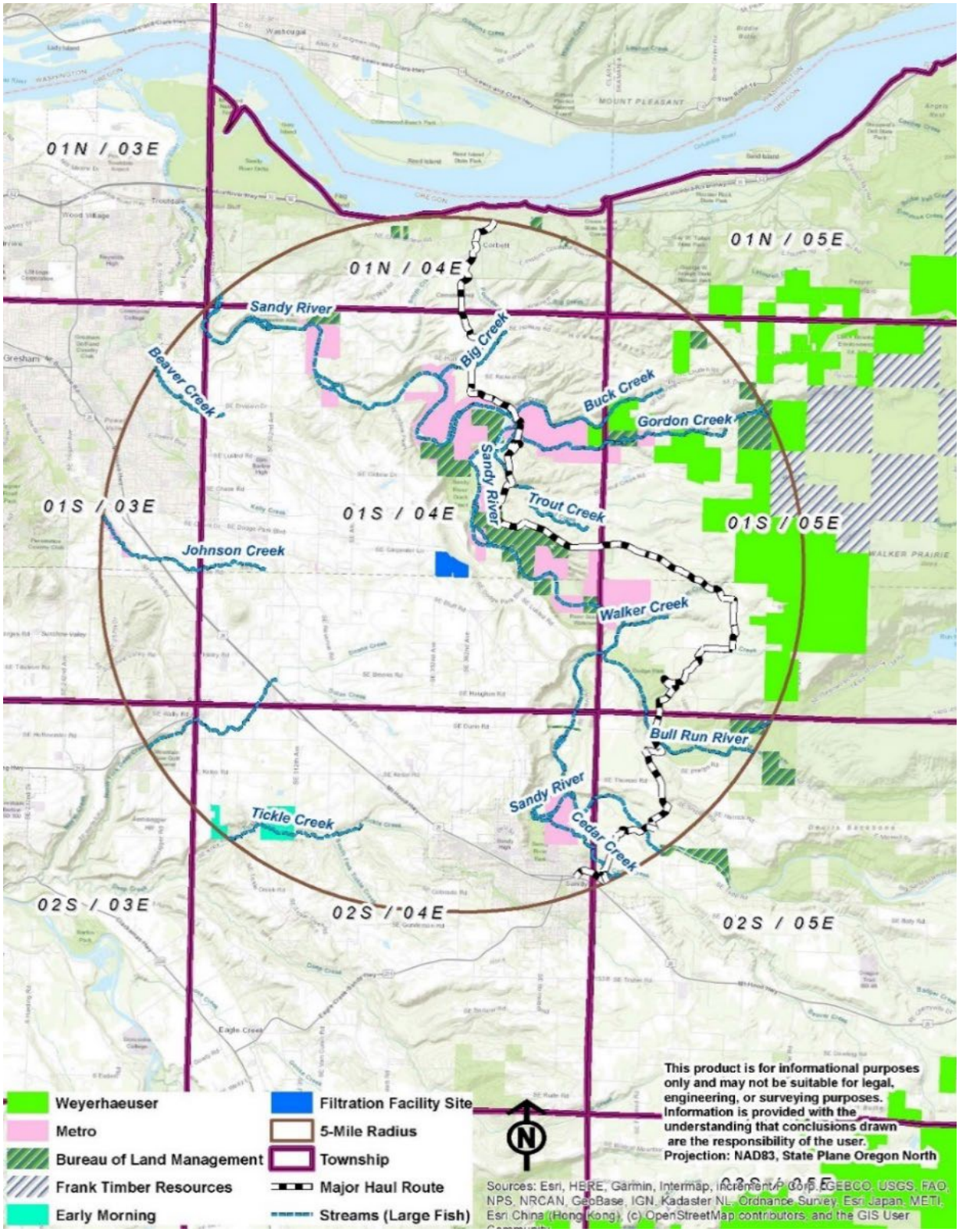

Figure 12. Weyerhaeuser/Frank Timber Haul Routes

The two large-scale forestry operations in the area, Weyerhaeuser and Frank Timber, both utilize herbicides to promote growth of crop trees in plantations, and to keep weeds and brush from encroaching in roadways. Plantations are only cut every 40 to 50 years, and during that time the accepted practice is to spray the harvest unit two to three times. The initial "site-prep" treatment is usually done aerially (by helicopter) for 10+ acre plantings during the summer months, prior to planting, and mainly features the chemicals Glyphosate and Triclopyr. Follow-up "release" treatments, which occur when seedlings are dormant, feature the chemicals Clopyralid, Hexazinone, and selective use of Glyphosate and Triclopyr. Release treatments are applied by hand, with backpack sprayers.

Roadside spraying (by truck) occurs every two years and features all the herbicides used for site-prep and release. The precise type of chemical used depends on the target species of weeds or brush.

The use of these chemicals is analyzed above as was informed by the information gathered from the large-scale forestry operations in the Large Study Area. Because these operations are even further from the project, the conclusions in the Core Analysis Area and Surrounding Lands are also accurate when applied to larger-scale commercial forestry.

Conclusion

A thorough analysis of landowners in the vicinity of the project that could potentially engage in forest activities, and of major forestland owners within five miles of the site, reveals that the Filtration Facility and the pipelines will not affect accepted forest practices nor increase the cost of accepted forest practices on Surrounding Lands devoted to forest use.

In the Surrounding Lands, all tax lots which could be classified as forest land based on operations, zoning, tax deferral, or merchantable timber were surveyed and visited in person. Since January 2017, 13 Notifications of Operations have been filed with the Oregon Department of Forestry for 10 parcels within roughly two miles of the Filtration Facility site, indicating the presence of some forestry activity. It was determined that these operations will not affect Filtration Facility operations, and the Filtration Facility will not affect accepted forest practices or increase the cost of accepted forest practices on Surrounding Lands devoted to forest use.