TRUE NORTH
GEOTECHNICAL

TECHNICAL MEMORANDUM

Date: **June 28, 2023**

From: **David Rankin, CEG, Principal Engineering Geologist**
Tima Carlson, RG, Project Geologist

To: **Katrina Dawson, Cottrell CPO**

RE: **Portland Water Bureau Water Filtration Project**
Initial Cursory Review
True North Project: 23-0108

EXPIRES 6/1/24

True North was contracted by Cottrell CPO to provide Initial/Cursory Geologic and Geotechnical Review for the proposed Portland Water Bureau (PWB) Water Filtration project and associated pipeline located near SE Dodge Park Boulevard and SE Carpenter Lane in Gresham, Oregon known as the Property (see Figure 1A attached). It should be noted that True North is not the geotechnical or environmental consultant of record for the project. True North is providing Cottrell CPO with commentary on available documents relating to the proposed PWB Water Filtration project.

Proposed development of the 95-acre Property will consist of the following:

- Filtration Facility – administrative office building (2-story), equipment and chemical storage buildings (1 to 2-story), utilitarian process structures (1-story), water reservoirs, septic systems and associated driveways and parking lots.
- Communication Tower - 180-foot-tall Communication tower located in northeast corner.

In addition, 2-miles of new pipelines will be constructed to and from the filtration facility (see Figure 1B attached). Pipelines will consist of the following:

- Raw Water (i.e., unfiltered) pipelines along SE Dodge Park Boulevard, SE Lusted Road with trenchless crossings (tunneling) under SE Dodge Park and SE Proctor Road.
- Finished/Treated Water (i.e., filtered/treated) pipelines along SE Dodge Park Boulevard, SE Lusted Road and SE Altman Road.

True North was able to review documents provided by you and documents available through the County, City and State of Oregon Department of Geology and Mineral Industries (DOGAMI) and Oregon State Water Resources Department (OWRD). The majority of documents related to the proposed development were found on the Multnomah County Document Library for the Portland Water Bureau (PWB) Treatment Plant (https://www.multco.us/landuse/document-library-pwb-treatment-plant). Documents to the PWB website were consistently uploaded/removed and therefore not all documents are presumed to have been uploaded or reviewed. Items listed below may have been addressed in documents not available for review at this time.

Of the documents that we were able to review, the following items were noted that may need further analysis:

Water Wells – True North was able to locate at least 2 monitoring wells, used for observing groundwater levels, flow condition, etc., on the Property during our site walk on June 21, 2023. Based on OWRD records, it appears a minimum of 170 water/monitoring wells are located within a mile radius of the Property from SE Lusted Road to SE Proctor Road (see Figure 2 attached). Details on water wells may have been addressed in documents not available for our review at this time. However, we recommend further study, including mapping, of existing irrigation and domestic wells to determine if water/monitoring wells are located within areas of proposed construction of the facility and/or pipelines or could be negatively impacted by future construction/operations on the Property. If there are wells situated within construction areas, they will need to be abandoned/decommissioned or replaced by a licensed well driller per Chapter 690 of State of Oregon Water Resource guidelines. If there are domestic or irrigation wells which could be impacted, we recommend further study to preserve existing water production, quality, and rights. Also see comments in the Tunneling section within this memorandum.

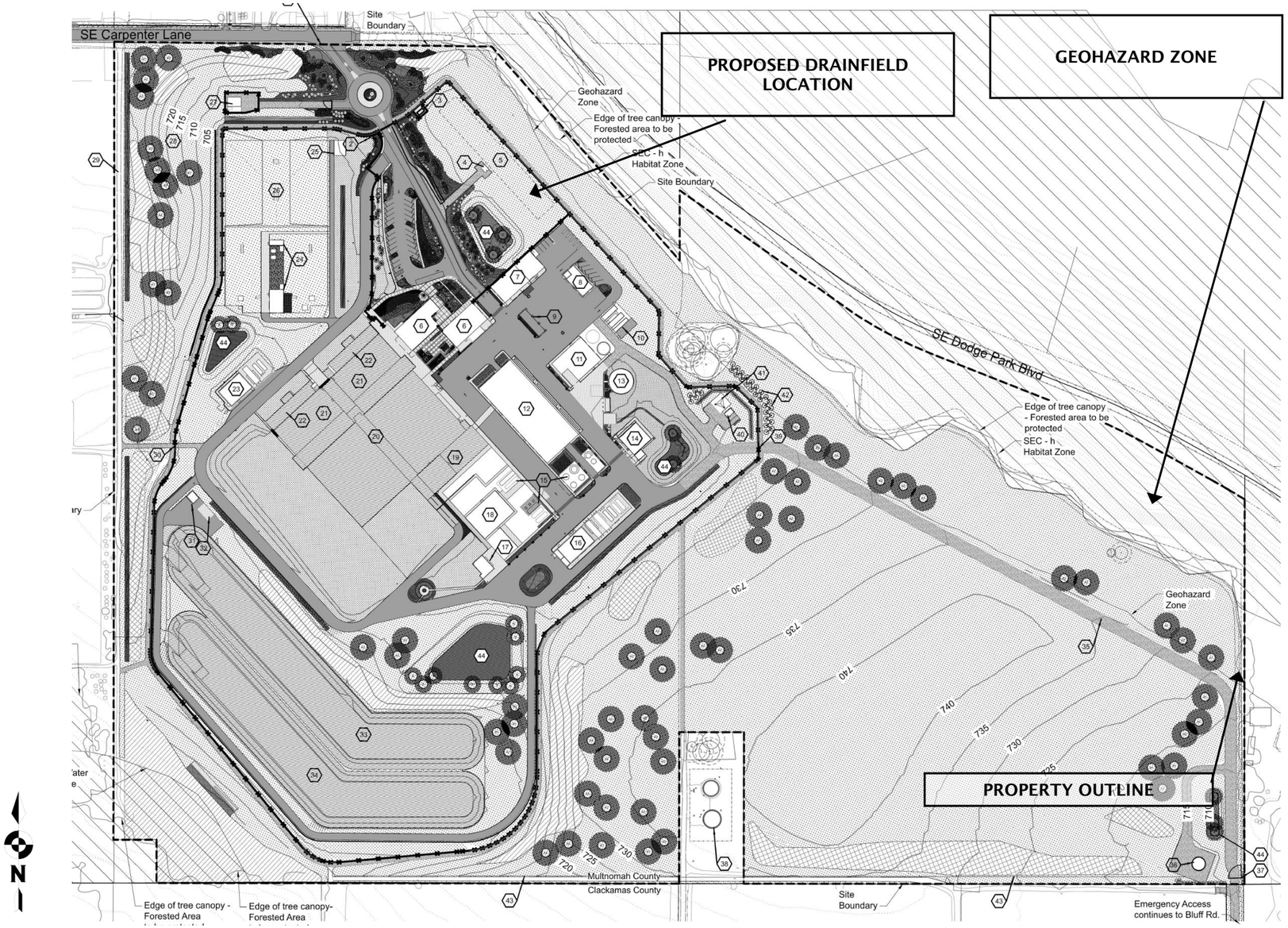
Expansive Soil – Approximately 20-feet of "fat clay", defined as cohesive and compressible in nature with high plasticity and a liquid limit of 50 or greater, was observed by others on the Property. It is undetermined if expansion soil index testing was conducted on the fat clay to determine shrink-swell potential. Details on expansive soils may have been addressed in documents not available for our review at this time. However, we recommend further testing be conducted to determine if expansive soils exist on the Property and/or within areas of pipeline construction. If expansive soils are found, additional design modifications may be needed.

Stormwater – True North engaged Dennis Caudell, PE (with Paradise Environmental, who is a consultant with experience with stormwater permitting, design and compliance). Caudell commented the Finished Water Intertie Stormwater Drainage Report makes a passing reference to Beaver Creek's status of having existing Total Maximum Daily Load (TMDL) and 303(d) listing for impairments that include persistent organic pesticides and chlorinated compounds. At a minimum, the stormwater management report should include an analysis of the potential for mobilization of these constituents (particularly if left exposed at the ground surface during or after construction), and the resulting management required of not only construction activities, but also the protection of Beaver and Johnson Creeks during the facility implementation as well as its ongoing operation. The report should call out specific best management practices to ensure that agricultural runoff, documented within the Phase 1 and Phase 2 Environmental Site Assessments conducted by others, does not become facility run-on and a resulting contaminated discharge to an already quality limited Beaver and Johnson Creeks.

Septic – On site septic systems are proposed for the Property. Details on septic design may have been addressed in documents not available for our review at this time. However, with steep slopes and associated Geologic Hazard Overlay (GHO) zones situated approximately 60 feet northeast of a proposed drain field on the Property, we recommend further evaluation be conducted to confirm drainage will not discharge into the GHO.

Tunneling – Large diameter pipelines will be located at depth below overlay zones mapped adjacent to the Property. There is the potential existing irrigation/domestic wells, which have an average depth of 200 to 300 feet below ground surface (bgs), may be impacted by tunneling methods. As detailed on Figure 2, a cluster of irrigation/domestic wells are mapped by OWRD as being within the proposed tunneling area located below SE Dodge Park. Groundwater levels are anticipated to be near 150-feet bgs. Tunneling activity in water-bearing ground may result in unwanted groundwater inflow into the excavated area, causing some groundwater drawdown within nearby wells. Details on tunneling may have been addressed in documents not available for our review at this time. However, we recommend mapping and detailed research of existing irrigation and domestic wells to determine if they are located within the proposed tunneling area or could be impacted by future construction and/or operations on the Property. In addition, we recommend groundwater control systems and prevention of groundwater intrusion be factored into the design of proposed tunneling.

Attachments: Figure 1A – Proposed Development (Filtration Facility)
Figure 1B – Proposed Development (Pipelines)
Figure 2 – Well Locations (approximate – without address or ground truthing)



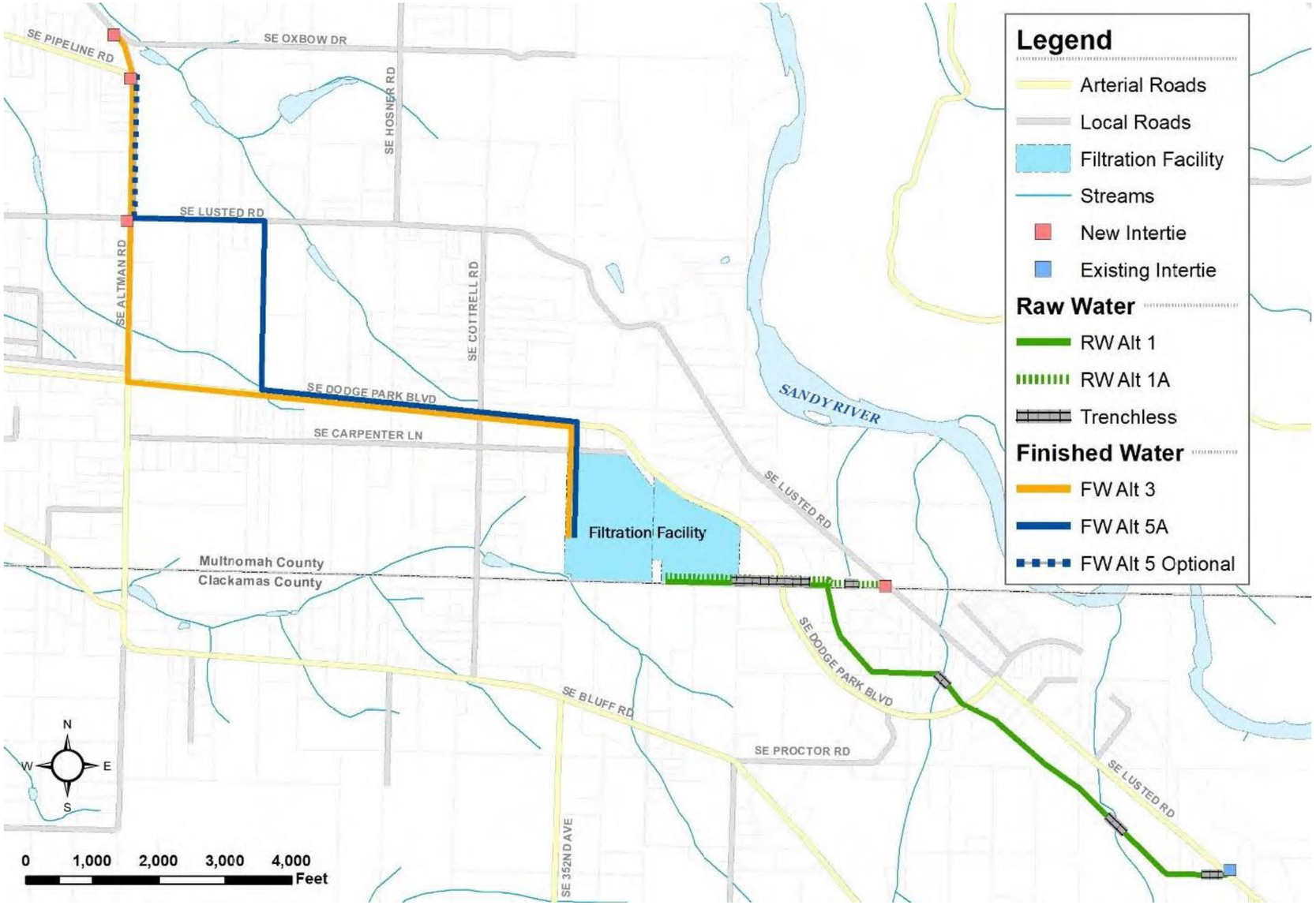
Legend

- Asphalt Paving
- Concrete Paving
- Gravel Paving
- Basins
- Fenceline
- Native Grass / Forb Mixes
- Swale Planting
- Stormwater Planting
- Screen Mix: Forested Planting
- Screen Mix: Shrubby Planting
- Tree / Shrub Planting Clusters
- Proposed Trees - Deciduous and Evergreen
- Landscape Bed - Shrubs, Groundcover, Mulch
- Existing tree to remain

1. Carpenter Lane Entry
2. Main Facility Entry Gates
3. North PGE Electrical Cutout
4. Septic Structure (At Grade)
5. Septic Drainage Field
6. Administration Building
7. Maintenance Building
8. General Storage Building
9. Refuse / Recycling Storage Shed
10. Pilot (CONEX)
11. Mechanical Dewatering / Solids
12. Chemical Building
13. Gravity Thickeners
14. Washwater Clarification
15. Chemical Storage Tanks
16. Main Electric Complex
17. Raw Water Inlet Structure
18. Ozone Building (Not In Use)
19. Ozone Injection / Flash Mix
20. Floccuation / Sedimentation Basin
21. Filtration Basin
22. Waste Washwater Equalization Basins
23. North Electric Complex
24. Pumpstation
25. Fire Pumpstation Enclosure
26. Finish Water Clearwell (Below Grade)
27. Pleasant Home Pumpstation (Non-PWB)
28. West Screening Berm
29. Easement on PWB Property (To Remain)
30. West Gate
31. Electrical Building
32. Overflow Pumpstation (At-Grade)
33. North Overflow Basin
34. South Overflow Basin
35. Emergency Access Route
36. Raw Water Pipeline Cover (At-Grade)
37. Manual Bar Gate with Knox Box
30. Pleasant Home Water Towers (Off-Site)
39. East Gate
40. Communication Tower Accessory Building
41. Communication Tower
42. Tower Screen Planting (Native Evergreen Hedge and 25' Min. Tree Buffer)
43. Agricultural Style Fence
44. Detention Ponds

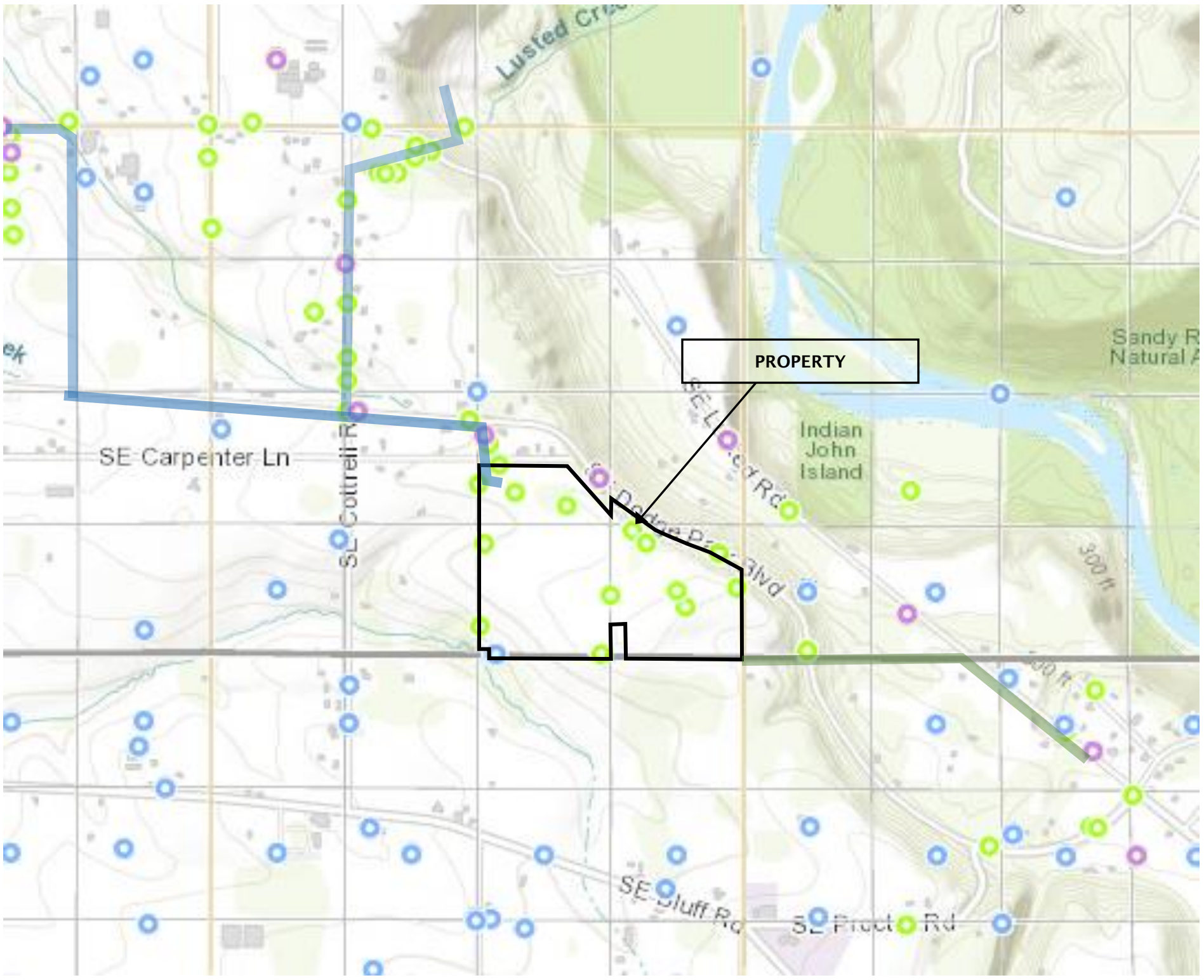
SOURCE: LAND USE PLANS DRAWING PREPARED BY STANTEC, DATE CREATED 9/2/2022.

TRUE NORTH GEOTECHNICAL	Cottrell CPO Portland Water Bureau Water Filtration Facility Gresham, OR	Project # 23-0108-1
219 West 4th St Vancouver, WA 98660 360-984-6584	June 2023	Figure 1 – Proposed Development



SOURCE: FIGURE ES-7 DRAWING PREPARED BY BROWN AND CALDWELL & ASSOCIATED FIRMS, DATE CREATED 10/2020.

TRUE NORTH ◆ GEOTECHNICAL ◆	Cottrell CPO Portland Water Bureau Water Filtration Facility Gresham, OR	Project # 23-0108-1
219 West 4th St Vancouver, WA 98660 360-984-6584	June 2023	Figure 1B – Proposed Development (Pipeline)



LEGEND

Water Well | Geotechnical (not included) | Monitoring Well | Finished Water Pipeline | Raw Water Pipeline

Wells within 1-mile radius of Property:

CLAC 938	CLAC 911	MULT 134521	CLAC 75330	CLAC 922	MULT 138792	MULT 137690	CLAC 20552
MULT 57354	MULT 137834	MULT 2600	CLAC 914	CLAC 20547	MULT 130682	CLAC 59522	MULT 130680
CLAC 921	MULT 131614	MULT 137835	CLAC 902	CLAC 75505	MULT 137689	MULT 102411	CLAC 941
MULT 134517	CLAC 937	CLAC 901	CLAC 931	CLAC 54551	MULT 104020	CLAC 19898	MULT 2593
CLAC 20244	CLAC 916	CLAC 19433	CLAC 64497	MULT 131425	MULT 119026	CLAC 913	CLAC 943
MULT 130681	CLAC 52510	MULT 138791	CLAC 908	MULT 106474	MULT 131492	MULT 104021	CLAC 74947
CLAC 65950	MULT 123249	CLAC 900	MULT 102412	MULT 2592	CLAC 62091	CLAC 896	CLAC 18417
CLAC 895	CLAC 915	CLAC 60384	MULT 131424	MULT 131495	MULT 136942	MULT 2590	MULT 94299
CLAC 904	MULT 129630	CLAC 20550	CLAC 57578	MULT 134778	CLAC 929	MULT 129629	MULT 139200
CLAC 898	CLAC 75739	CLAC 75740	CLAC 894	CLAC 62309	MULT 106471	CLAC 1479	MULT 44
MULT 131422	CLAC 934	MULT 133088	MULT 2586	MULT 133086	MULT 2595	CLAC 53033	MULT 106469
MULT 2594	MULT 133087	MULT 60890	CLAC 58931	MULT 129631	MULT 134510	MULT 106472	CLAC 946
MULT 134511	MULT 106475	MULT 137832	CLAC 919	MULT 133539	MULT 131616	CLAC 58255	CLAC 75661
MULT 102716	CLAC 70770	MULT 131615	CLAC 50160	CLAC 942	CLAC 928	MULT 2596	MULT 102719
CLAC 932	MULT 131494	MULT 102715	MULT 106473	CLAC 907	MULT 131962	MULT 131493	CLAC 77409
MULT 131963	CLAC 74945	MULT 106476	CLAC 50962	CLAC 56617	CLAC 939	MULT 102718	CLAC 930
CLAC 55367	CLAC 8999	CLAC 74946	MULT 131964	MULT 137746	MULT 102717	CLAC 906	
MULT 65190	CLAC 54463	MULT 106470	MULT 131423	CLAC 52790	CLAC 935	MULT 134520	
MULT 138851	CLAC 918	CLAC 917	CLAC 959	MULT 2601	MULT 134519	MULT 137836	
CLAC 50350	MULT 138043	MULT 56024	MULT 2598	CLAC 910	CLAC 924	MULT 2599	
CLAC 76773	CLAC 940	MULT 134518	MULT 137833	CLAC 905	CLAC 909	CLAC 961	
CLAC 923	MULT 137745	CLAC 920	CLAC 51409	MULT 102410	CLAC 912	CLAC 12302	

SOURCE: OREGON WATER RESOURCES DEPARTMENT, DATE ACCESSED/CREATED 6/2/2023.

SCALE: 1INCH = 1,000 FT

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LUP Comments <lup-comments@multco.us>

PWB Treatment Plant - T3-2022-16220 Comments

1 message

tima@tnorthgeo.com <tima@tnorthgeo.com> Thu, Jun 29, 2023 at 9:29 AM
To: LUP-Comments@multco.us
Cc: Paul Willis <willisteam@msn.com>, david@tnorthgeo.com, lauren.courter@gmail.com

Please see attached memo/comments for the proposed PWB Water Facility at SE Dodge Park Blvd and SE Carpenter Lane in Gresham. If you have any questions, please let us know.

Thank you,

Tima Carlson, R.G.

Project Geologist

True North Geotechnical Services

http://www.tnorthgeo.com/

*****Please note that we have moved offices*****

New Address:

219 W. 4th Street

Vancouver, WA 98660

office: 360-984-6584

cell: 503-705-8014

23-0108 Cottrell CPO - PWB Water Faciilty Review Memo.pdf
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