CITY OF
MUKILTEO

REQUEST FOR COMMENTS

DATE: October 11, 2018

	Alderwood Water District – (Dan Sheil / Scott Smith)	X	Puget Sound Clean Air Agency (Beth Carper)
	Burlington Northern Santa Fe Railway (Marvinique Hill)	X	Puget Sound Energy (Dom Amor)
	City of Edmonds (Rob Chave)	X	Puget Sound Regional Council
	City of Everett (Allan Giffen)		Seattle Dist. Corps of Engineers (Dept. Army-Reg. Branch)
	City of Everett (Steve Ingalsbe)		Snohomish Co. Airport/Paine Field (A. Rardin/R. Zulauf)
	City of Lynnwood (Paul Krauss)		Snohomish Co. Assessor's Office ***(Ordinances Only)***
	City of Mill Creek (Tom Rogers)		Snohomish Co. Conservation District
X	City of Mukilteo (Building Official)		Snohomish Co. Environmental (Cheryl Sullivan)
X	City of Mukilteo (Fire Chief)		Snohomish Co. Fire District #1 (Kevin Zweber)
X	City of Mukilteo (Fire Marshal)		Snohomish Co. Marine Res. Comm. (Kathleen Herrmann)
X	City of Mukilteo (Engineering "In-Box")		Snohomish Co. Planning & Dev. Srvc. (Darryl Easton)
X	City of Mukilteo (Com. Dev. Dir.)**(Postcard/Notice only)**		Snohomish Co. Public Works (Shannon Flemming)
X	City of Mukilteo (Police, Cheol Kang, Myron Travis)	X	Snohomish Co. PUD: Dist. Eng. Services (Mary Wicklund)
X	Comcast of Washington (Casey Brown, John Warrick)	X	Snohomish Health District (Bruce A. Straughn)
X	Community Transit (Kate Tourtellot)	X	Sound Transit Authority (Perry Weinberg)
X	Dept. of Commerce (Growth Mgmt. Svcs Rev. Team)	X	Tulalip Tribes – (Zachary Lamebull)
	Dept. of Natural Resources (James Taylor)	X	Tulalip Tribes – (Richard Young)
	FAA/Air Traffic Division, ANM-0520 (Daniel Shoemaker)		United States Postal Service (Soon H. Kim)
	FEMA (John Graves)	X	Verizon Company of the NW, Inc. (Tim Rennick.)
	Island County MRC (Rex Porter) (*Shoreline Only)*	X	Washington Dept. of Ecology (Peg Plummer)
	Master Builders King/Sno. Counties (Mike Pattison)	X	Washington Dept of Fish & Wildlife (Jamie Bails)
X	Mukilteo Beacon (Editor) **(Postcard/Notice only)**	X	WSDOT (Scott Rodman)
X	Mukilteo School District (Cindy Steigerwald)	X	WSDOT (Ramin Pazooki)
X	Mukilteo School District (Josette Fisher)	X	WSDOT Ferries(Kojo Fordjour) (*Shoreline Only)*
X	Mukilteo Tribune (Editor) **(Postcard/Notice only)*)***	X	WRIA 7 Water Resources
X	Mukilteo Water & Wastewater District (Jim Voetberg, Manager; Rick Matthews; Kendra Chapman)	X	Planning Commission ***(Postcard Only)***
X	National Marine Fishery Service		Adjacent Property Owners
	Office of Archaeology & Historic Pres. (Allyson Brooks)	X	Applicant/Contact Person ***(Notice Only)***
	Ogden, Murphy, Wallace (Angela Summerfield) ***(Ordinances Only)***	X	Parties of Interest
X	Pilchuck Audubon Society (President)	X	Parties of Record
	Port of Everett (Graham Anderson)	X	Property Owners within 300' ***(Postcard/Notice Only)***
			Other:

FILE NO.: EFP-2018-001 / SH-SDP-2018-001 / SH-CUP-2018-001
PROPONENT: Mukilteo Water and Wastewater District

PROJECT NAME: Mukilteo Water and Wastewater District Administrative/Lab Building

PROJECT DESCRIPTION: Construction of a new administrative/lab building with a building footprint of 1,960 square feet over existing pavement.

FILE NO.: EFP-2018-001 / SH-SDP-2018-001 / SH-CUP-2018-001
PROPONENT: Mukilteo Water and Wastewater District

PROJECT NAME: Mukilteo Water and Wastewater District Administrative/Lab Building

ATTACHED IS:

X	Notice of Application	X	Preliminary Geotechnical Report dated July 11, 2018
X	DNS (issued July 23, 2018)	X	Critical Area Study dated July 17, 2018
X	Environmental Checklist dated May, 2018	X	Site Plan (Reduced)
X	Application	X	Location Map
X	Narrative Statement(s)		Other:

NOTE: _____

_____

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Please review this project as it relates to your area of concern and return your comments with this cover sheet by, Tuesday, November 13, 2018 to Linda Ritter, Senior Planner, City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275.

Linda Ritter
Senior Planner

10/8/18
Date

****

RESPONSE SECTION:

_____ Comments Attached _____ No Comments

COMMENTS: _____

_____

_____ _____
Signature Date

_____
Company

DO YOU WANT A COPY OF OUR NOTICE OF DECISION YES __ NO __

CITY OF MUKILTEO

11930 Cyrus Way
Mukilteo, WA 98275
(425) 263-8000

Notice of Application
for Mukilteo Water and Wastewater District Administrative/Lab Building at 9417 62nd Place SW by the Mukilteo Water and Wastewater District

The Mukilteo Water and Wastewater District applied for an Essential Public Facility (EPF) Permit, Shoreline Substantial Development Conditional Use Permit (CUP), and a Shoreline CUP with the City of Mukilteo on August 29, 2018. The application became complete on October 1, 2018. This application and all supporting documents are available at City Hall for public viewing. (File No. EFP-2018-001 / SH-SDP-2018-001 / SH-CUP-2018-001)

Description of Proposal: Demolition of the current administrative/lab building which is one story and has a building footprint of approximately 1,960 square feet. The new administrative/lab building will be a two-story building with the same footprint of 1,960 square feet. The new building will be constructed over an area of existing pavement approximately 25 feet from the existing administrative/lab building. Administrative offices and the lab will be on the top floor with a maintenance shop and storage on the lower floor.

Location of Proposal: See Attachment

Environmental Documents Prepared for the Proposal

- Determination of non-significance (DNS) issued July 23, 2018
- Environmental Checklist dated May, 2018
- Preliminary Geotechnical Report prepared by PanGeo dated July 11, 2018
- Critical Area Study for Big Gulch Wastewater Treatment Facility prepared by Wetland Resources, Inc. dated July 17, 2018

Mukilteo Water and Wastewater District, as the designated lead agency for State Environmental Policy Act (SEPA), has issued a DNS for the proposed project on July 23, 2018. No appeals of the DNS were filed and the SEPA determination stands as issued. No additional review under SEPA is required.

List of Required Permits:

- EPF Permit
- Shoreline Substantial Development CUP
- Shoreline CUP
- Building Permit
- Engineering Permit
- Any State and Federal Permits if applicable

Applicable Policies and Requirements

The project will be reviewed for consistency with the following policies, standards and regulations:

- ☐ Possession Shores Master Plan
- ☒ Comprehensive Plan, Shoreline Master Plan
- ☒ International Building Code (2015 Edition)
- ☒ International Fire Code (2015 Edition)
- ☐ Sector Plan & Amendments
- ☒ Mukilteo Municipal Code
- ☒ City of Mukilteo Development Standards

Comment Period

The application and supporting documents are available for review at the City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275. Contact: Linda Ritter at (425) 263-8043. The public is invited to comment on the project by submitting written comments to the Planning Department at the above address by 4:30 p.m. on the date noted below.

Notice of Application Issued: Friday, October 12, 2018

End of Comment Period: Tuesday, November 13, 2018

The City will not act on this application until the end of the 30-day shoreline permit public comment period. Upon completion of project review the proposed application will be scheduled for a public hearing with the Mukilteo Hearing Examiner where the project will be approved, approved with conditions, or denied. You may request a copy of the final decision on the project by making a written request to the City contact person named below.

Public Hearing

There will be a public hearing conducted on this project. You have the right to request notice of and to participate in the public hearing. If you want to receive notice of the hearing, you may make a written request to the City contact person named below.

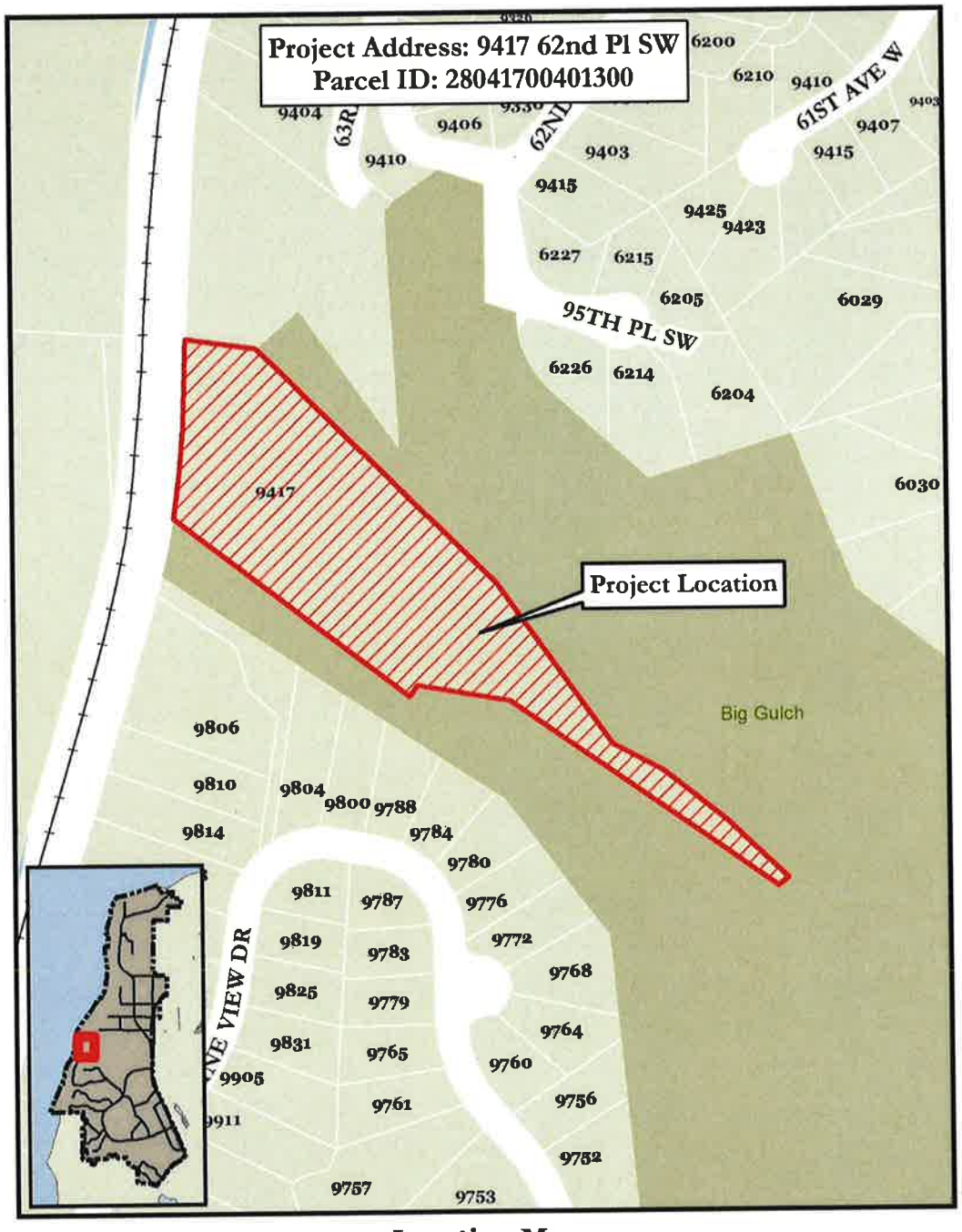
Appeals

Any person aggrieved by the granting, denying, or rescinding of a permit on shorelines of the state pursuant to RCW 90.58.140 may seek review from the shorelines hearings board by filing a petition for review within twenty-one days of the date of filing as defined in Chapter 90.58 RCW. Only persons who file written comments on the project in response to the Notice of Application are considered parties of record who may appeal the decision. If you do not file written comments within the comment period, you may not appeal the final decision.

Contact Person: Linda Ritter, Senior Planner (425) 263-8043

Signature: Linda Ritter Date: 10/8/18

Linda Ritter, Senior Planner



Location Map

Date Issued: Friday, October 12, 2018
Date Advertised: Friday, October 12, 2018
End Comment Period: Tuesday, November 13, 2018

pc: Applicant/Representative
Reviewing Agencies
Interested Parties
CDD Director
Permit Services Supervisor
Permit Services Assistants (2)
Property File
Property Owners (300')

CITY OF MUKILTEO

11930 Cyrus Way, Mukilteo WA

Notice of Application Summary

Mukilteo Water and Wastewater District Administrative/Lab Building
at 9417 62nd Place SW
by the Mukilteo Water and Wastewater District

Project Information: Demolition of the current administrative/lab building which is one story and has a building footprint of approximately 1,960 square feet. The new administrative/lab building will be a two-story building with the same footprint of 1,960 square feet. The new building will be constructed over an area of existing pavement approximately 25 feet from the existing administrative/lab building. Administrative offices and the lab will be on the top floor with a maintenance shop and storage on the lower floor.

Environmental Documents Prepared for the Proposal:

- Determination of non-significance (DNS) issued July 23, 2018
- Environmental Checklist dated May, 2018
- Preliminary Geotechnical Report prepared by PanGeo dated July 11, 2018
- Critical Area Study for Big Gulch Wastewater Treatment Facility prepared by Wetland Resources, Inc. dated July 17, 2018

Mukilteo Water and Wastewater District, as the designated lead agency for State Environmental Policy Act (SEPA), has issued a DNS for the proposed project on July 23, 2018. No appeals of the DNS were filed and the SEPA determination stands as issued. No additional review under SEPA is required.

The public is invited to comment on the project by submitting written comments to the Planning Department at the above address by 4:30 p.m. on November 13, 2018. You are receiving this notice because you are within the noticing area for this project. To obtain a complete Notice of Application contact the City at (425) 263-8000 go to our website: http://www.mukilteowa.gov/Land-Use-Action-Notice

RECEIVED
Date stamp
AUG 29 2018
CITY OF MUKILTEO

CITY OF MUKILTEO

11930 Cyrus Way Mukilteo, WA 98275
(425) 263-8000

PPR # _____
Misc # _____

Land Use Permit Application

OWNER
Name: Mukilteo Water and Wastewater District
Address: 7824 Mukilteo Speedway
City: Mukilteo **State:** WA **Zip:** 98275
Phone #: 425-355-3355 **Email Address:** jimv@mukilteowwd.org

APPLICANT
Name: same as owner
Address:
City: **State:** **Zip:**
Phone #: **Email Address:**

Project Address: 9417 62nd Pl W, Mukilteo, WA 98275

Legal Description of Property: SEC 17 TWP 28 RGE 04A PTN GOVT LOTS 2 & 3 DAF-COM MOST SLY COR LOT 35 ASSESSOR'S PLAT OF OLYMPUS TERRACE TH S55*34 35 W

Key Contact Person: Jim Voetberg Phone: 425-355-3355
Email: jimv@mukilteowwd.org Fax:

Project Type:

- ☒ Commercial
- ☐ Multi-Family
- ☐ Industrial
- ☒ Shoreline* (JARPA)
- ☐ Conditional Use*
- ☐ Variance*
- ☐ Preliminary Subdivision*
- ☐ Final Subdivision*
- ☐ Preliminary Short Plat*
- ☐ Final Short Plat*
- ☐ Sector Plan Amendment
- ☐ Waterfront Development
- ☐ Single Family Residence
- ☒ Special Use Permit*
- ☐ Reasonable Use
- ☐ Lot Line Adjustment*
- ☐ Grading*
- ☐ Binding Site Plan
- ☐ Project Rezone
- ☐ Other, Specify_____

* Need to fill out supplemental application form with project.

Project Resume:

Existing Use: STORING EQUIPMENT
Proposed Use: OFFICE ADMIN/LAB BUILDING
Total Site Area: 4.75 ACRES
Water District: MWWD
Building Foot Print Area: 1960 SQ.FT.
Sewer District: MWWD
Lot Coverage: LESS THAN 30%
# of Proposed Units: 1
No. of Parking Stalls Provided: 0
Building Height: 32.7'
Comp Plan Designation: Essential Public Facility
Zoning: HI
Gross Floor Area by Uses: 1

Electric Vehicle Charging Units Provided: Yes ____ No X If Yes, How Many? _____

Solar Panels being installed: Yes ____ No. X If Yes, How Many

Pre-application Meeting Held: (Y/N; date) 8/2/18

The information given is said to be true under the penalty of perjury by the laws of the State of Washington.

_____ _____
Applicant/Authorized Agent Signature **Date**

Jim Voetberg 8/29/18
Owners Signature **Date**

11930 Cyrus Way
Mukilteo, WA 98275
425-263-8000

City of Mukilteo, Washington

Special Use Permit
Supplemental Application
to the Land Use Permit for
Essential Public Facilities

Applicant: Mukilteo Water and Wastewater District
Address: 7824 Mukilteo Speedway
Mukilteo, WA 98275
Phone: 425-5-355-3355
Key Contact Person: Jim Voetberg

Owner: Same
Address: Same
Phone: Same
Phone: 425-355-3355
E-mail: jimv@mukilteowwd.org

Type of Essential Public Facility: Big Gulch Wastewater Treatment Facility

Project Address: 9417 62nd Pl W, Mukilteo, WA 98275

Legal Description of Property:

Legal Parcel Number(s) 28041700401300

Local:

- ☐ City of Mukilteo
- ☑ Special Purpose District:
- ☐ Snohomish County – Non-County Wide Services
- ☐ Other Local Government:
- ☐ Entity on Contract w/ Local Government:

State or Regional:

- ☐ Snohomish County
- ☐ State Agency:
- ☐ Regional Agency:
- ☐ Entity on Contract w/ State or Regional Agency:

Local Essential Public Facilities:
Provide a project summary responding to the following questions. The EPF application will not be processed until each of the questions below has been answered.

1. Why is the project needed? Provide a written analysis of the projected service population, an inventory of existing and planned comparable facilities, and the projected demand for the type of facility proposed.

2. Describe the investigative process used to identify any alternative sites for the EPF. Describe the site selection methodology and why sites were eliminated from consideration.

3. What infrastructure is or will be made available to ensure safe transportation access and transportation concurrency?

4. What type of infrastructure and/or services are needed to ensure that public safety responders have capacity to handle increased calls or expenses that will occur as the result of the facility?

5. Describe the project sponsors ability to pay for all capital costs associated with on-site and off-site improvements.

6. How much and what kinds of noise will the facility generate and what type of mitigation will be provided? Describe both day and night time noise disturbances.

7. What kinds of visual screening will be provided that will mitigate the visual impacts from streets and adjoining properties?

8. If the land on which a local EPF is proposed is located in a residential zoning district, describe any other feasible locations for the facility other than a residential zone and how the exclusion of the facility from the proposed location in a residential zone would preclude the siting of the facility and all similar facilities anywhere within the City.

9. Describe how the EPF meets all provisions of City code for development within the zoning district in which it is proposed to be located, including but not limited to the bulk regulations of MMC Chapter 17.20. If the proposal does not meet City code, describe how compliance with such provisions would preclude the siting of all similar facilities anywhere within the City.

10. Describe any and all probable mitigation measures being applied to the project.

State or Regional Essential Public Facilities:
Provide a project summary responding to the following questions. The EPF application will not be processed until each of the questions below has been answered.

1. What infrastructure is or will be made available to ensure safe transportation access and transportation concurrency?

2. What type of infrastructure and/or services are needed to ensure that public safety responders have capacity to handle increased calls or expenses that will occur as the result of the facility?

3. Describe the project sponsors ability to pay for all capital costs associated with on-site and off-site improvements.

4. How much and what kinds of noise will the facility generate and what type of mitigation will be provided? Describe both day and night time noise disturbances.

5. What kinds of visual screening will be provided that will mitigate the visual impacts from streets and adjoining properties?

6. Describe any and all probable mitigation measures being applied to the project.

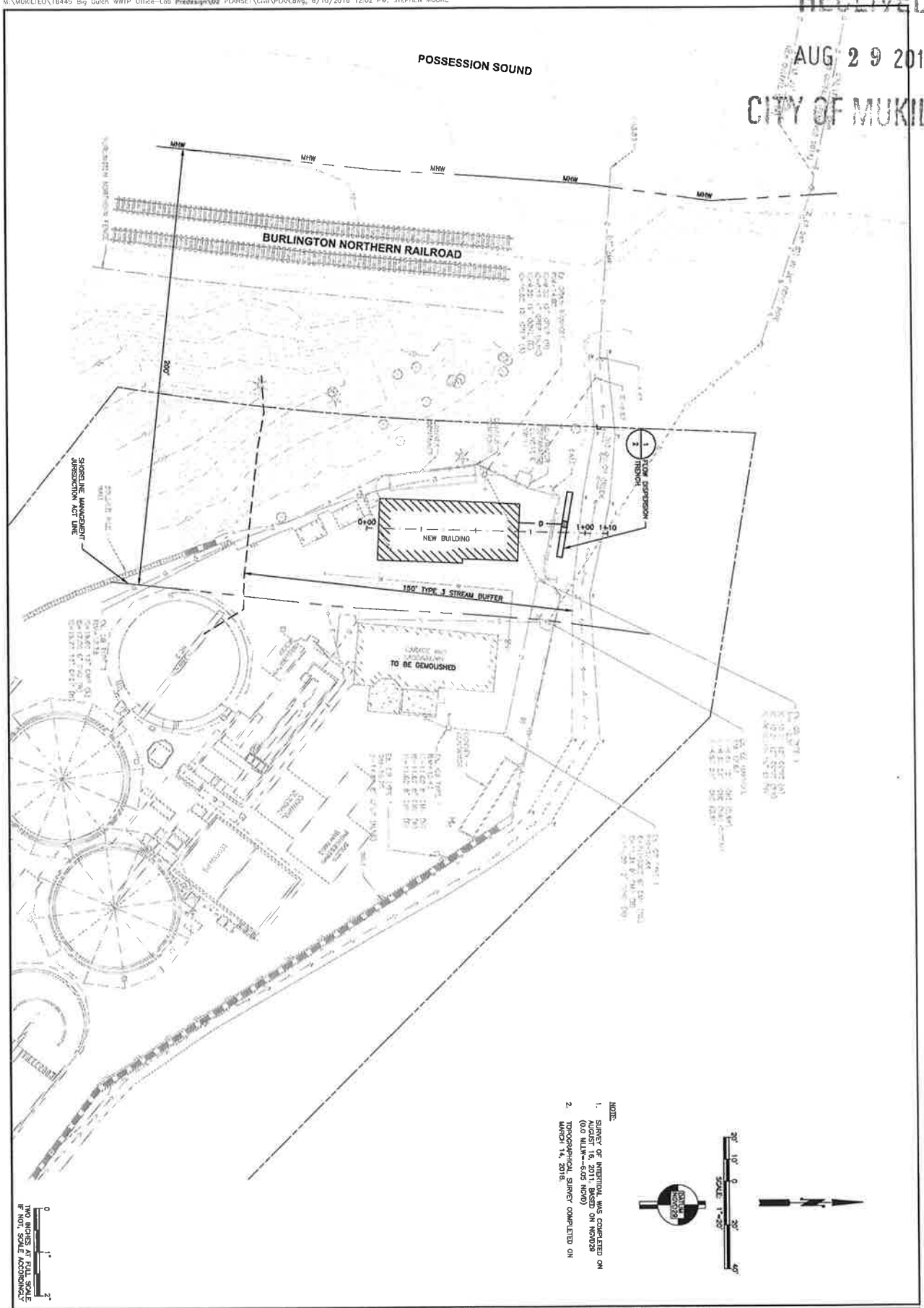
The information given is said to be true under the penalty of perjury by the laws of the State of Washington.

Applicant/Authorized Agent Signature **Date**

Jim Voth 5/8/2018

Owners Signature **Date**

M:\MUKILTEO\18445 Big Gulch WWTP Office-Lab Predesign\02 PLANSET\Civil\PLAN.dwg, 8/10/2018 12:02 PM, STEPHEN MOORE



SHEET: 1 OF: 2	MUKILTEO WATER & WASTEWATER DISTRICT SNOHOMISH COUNTY WASHINGTON BIG GULCH WWTF OFFICE AND LABORATORY PREDESIGN PLAN	BARRY P. BAKER 37338 REGISTERED PROFESSIONAL ENGINEER	PRELIMINARY NOT FOR CONSTRUCTION No. REVISION DATE APPD	DATE: MAR 2018 SCALE: NOTED DRAWN: SEM CHECKED: BPB APPROVED: BPB	Gray & Osborne, Inc. CONSULTING ENGINEERS 3710 198TH STREET NE, BLDG. B, SUITE 210 ARLINGTON, WA 98223 • (360) 454-5490

JOB NO. 18445
DWG/PLAN

Mukilteo Water and Wastewater District
Big Gulch Wastewater Treatment Facility
New Administration/Lab Building

Project Narrative

The collection and treatment of domestic and commercial wastewater is critical for public health, safety and the general welfare of the environment. In 1993, the City of Mukilteo transferred their sewer systems to Olympus Terrace Sewer District which later merged with the Mukilteo Water District and is now known as the Mukilteo Water and Wastewater District (District). The District owns and operates the sewer system, including the Big Gulch Wastewater Treatment Facility (WWTF) in accordance with RCW 57.

Big Gulch WWTF is a public wastewater treatment facility treating sewage generated from residents and businesses within the City of Mukilteo and Snohomish County including Paine Field Airport. The WWTF is regulated by the State Department of Ecology, permit number WA0023396. Pursuant to Mukilteo Municipal Code, 17B. 16.100, the City of Mukilteo has identified the WWTF as an essential public facility.

The WWTF is located at the lower end of Big Gulch. The property abuts the Burlington Northern Santa Fe railroad property to the west, City of Mukilteo property to the south and east and City of Mukilteo and Possession Land Development, Inc. property to the north. Public access is prohibited on WWTF property.

The WWTF site is fully developed within the District's property with no room to expand. Immediately north of the WWTF developed area is Big Gulch Creek and immediately south is a steep sensitive slope hillside with houses built on the upper bluff. The west side abuts Burlington Northern Santa Fe railroad property. Vehicle access is provided from the east side is too narrow for development.

The proposed project will demolish the existing administrative/lab building and construct a new administration/lab building. The current administration/lab building, to be demolished, is one story with a footprint of 1,960 square feet. The new administration/lab building will be a two story building with the same footprint of 1,960 square feet. The new administration/lab building will be constructed over an area of existing pavement approximately 25 feet from the existing administrative/lab building. Administrative offices and the lab will be on the top floor with a maintenance shop and storage on the lower floor.

Mukilteo Water and Wastewater District
7824 Mukilteo Speedway
Mukilteo, WA 98275-0260
Phone 425 355-3355

July 24, 2018

City of Mukilteo
Planning and Community Development
11930 Cyrus Way
Mukilteo, Washington 78275

Re: Mukilteo Water and Wastewater District Shoreline Permit Application

Mukilteo Water and Wastewater District submits the following, with attachments, for a shoreline permit application:

Property Owner/Applicant: Mukilteo Water and Wastewater District, 7824 Mukilteo Speedway, Mukilteo, Washing, 98275.

Project permit location: 9417 62nd Place SW, Mukilteo Washington, tax parcel 2804170040300.

Project Request: Demolish and remove an existing 1,960 square foot one story administrative/lab building footprint located at the Big Gulch Wastewater Treatment Facility and construct a new two story administrative/lab building with a 1,960 square foot footprint within the City of Mukilteo's shoreline setback. The new building will be located on a paved area approximately 25' west of the existing building.

Background: The Big Gulch Wastewater Treatment Facility (Big Gulch WWTF) provides wastewater treatment to a majority of the City of Mukilteo, Paine Field and a small area within Snohomish County. Big Gulch WWTF is owned and operated by the Mukilteo Water and Wastewater District, a Special Purpose District governed under Title 57 RCW. Constructed in the early 1990's Big Gulch WWTF is located at the very end of Big Gulch Creek, immediately adjacent to the Burlington Northern Right-of-Way and Puget Sound.

All feasibly buildable property where Big Gulch WWTF is located is fully paved and developed. Immediately to the north of the existing developed area is Big Gulch Creek, to the south is a steep hillside with houses at the top, to the east is a single lane access road, and to the west is the Burlington Northern Right-of-Way and Puget Sound. The proposed project demolishes an existing administrative/lab building and constructs new administrative/lab building with the same footprint approximately 25' to the west. The new building will be located on existing paved area currently utilized for equipment and parts storage.

Designated essential public facility: City of Mukilteo Code 17B.16.100 A.10 lists the Mukilteo Water and Wastewater District's Big Gulch Wastewater Treatment Facility and its outfall as an essential pubic facility.

Description of project: The project is to demo remove an existing administration/lab building and build a new administrative/lab building approximately 25' west of the existing building. The current administration/lab building to be demolished is a one story building with a footprint of 1,960 square feet. The new administration/lab building will be a two story building with the same footprint of 1,960 square feet. The new administration/lab building will be constructed within the existing paved area of the Wastewater Treatment Facility. Administrative offices and the lab will be on the top floor with a maintenance shop and storage on the lower floor.

Need for the project: The Mukilteo Water and Wastewater District owns and operates the Big Gulch WWTF located at the end of Big Gulch adjacent to the Burlington Northern Right-of-Way and Puget Sound. The District has five full-time employees who operate the Big Gulch WWTF. The administration and lab work necessary to operate the Facility is currently performed out of a single story 1,960 building.

Demolition of the existing administration/lab building and construction of a new administration/lab building is required for two reasons. First, the existing administration/lab building is in general need of substantial repair and is too small to accommodate adequate administrative and lab functions at the Wastewater Treatment Facility. The existing administration/lab building is in need of HVAC upgrades, electrical upgrades, lacks restroom and shower facilities for both genders, lacks lab space to efficiently operate a State certified lab, lacks ergonomic work stations for the employees, has inadequate area for computerized controls of the Wastewater Treatment Facility, has inadequate area for the storage of spare parts, and lacks sufficient shop area for the maintenance of pumps and other equipment.

Second, the location of the existing administration/lab building inhibits the operations of transporting biosolids away from the Big Gulch WWTF to a State certified Beneficial Use Facility (a facility certified by the State to accept biosolids) located in Mansfield Washington. The ability to utilize larger size tractor-trailer vehicles is restricted due to the inability for a tractor trailer to turn around. Since 2012, three biosolid transport companies have quit servicing the Wastewater Treatment Facility and the current hauler has raised the cost from $54 per wet ton to $88 per wet ton.

Requirements for siting or expansion of local essential public facilities: City of Mukilteo Code 17B.16.100 C.4 lists the requirements for approval of a special use permit for a local essential public facility. Following is Mukilteo Water and Wastewater District's response to meeting these requirements:

City of Mukilteo Code 17B.16.100 C.4.a: The project sponsor has demonstrated a need for the project, as supported by a detailed written analysis of the projected service population, an inventory of existing and planned comparable facilities, and the projected demand for the type of facility proposed.

> Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 1 of the Special Use Permit explains the need for the project, an analysis of the projected service population, an inventory of existing and planned comparable facilities, and the projected demand for the type of facility proposed. The proposed project is to demolish and remove a one story 1,960 square foot administrative/lab building and construct a new two story administrative/lab building with a 1,960 square foot footprint. The new building will be located on a paved area approximately 25' west of the existing building.

City of Mukilteo Code 17B.16.100 C.4.b: The project sponsor has reasonably investigated alternative sites, as evidenced by a detailed explanation of site selection methodology, as verified by the city and reviewed by associated jurisdictions and agencies.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 2 of the Special Use Permit explains the site selection methodology. Keep in mind the proposed project is not an expansion of the Big Gulch WWTF but the demolition and removal of a one story administrative/shop building and construction of the same footprint size administrative/shop building approximately 25' away on existing pavement.

City of Mukilteo Code 17B.16.100 C.4.c: Only water-dependent essential public facilities shall be allowed over water.

Not applicable. The project is the demolition and removal of a one story administrative/shop building and construction of the same footprint size administrative/shop building approximately 25' away on existing pavement.

City of Mukilteo Code 17B.16.100 C.4.d: Necessary infrastructure is or will be made available to ensure safe transportation access and transportation concurrency.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 3 of the Special Use Permit discusses there is not a need to improve public access as public access to the Big Gulch WWTF is not allowed. Access for Big Gulch WWTF employees is via a private single lane access road off of 95th Place SW. The project of demolishing and removing a one story administrative/shop building and constructing an new administrative/shop building with the same footprint approximately 25' away on existing pavement with no increase in the number of employees who work at the Big Gulch WWTF will not require additional infrastructure to ensure safe transportation access and transportation concurrency.

City of Mukilteo Code 17B.16.100 C.4.e: Necessary infrastructure is or will be made available to ensure that public safety responders have capacity to handle increased calls or expenses that will occur as the result of the facility.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 4 of the Special Use Permit states that demolishing an existing building and constructing a new building with the same footprint 25' away with no increase in the number of employees who work at the Big Gulch WWTF will not increase public safety calls. No additional infrastructure and/or services is needed to ensure that public safety responders have capacity to handle increased calls or expenses as a result of the relocated administration/lab building.

City of Mukilteo Code 17B.16.100 C.4.f: The project sponsor has the ability to pay for all capital costs associated with on-site and off-site improvements.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project.

Section 5 of the Special Use Permit states the sponsor, Mukilteo Water and Wastewater District has sufficient funds for this project.

City of Mukilteo Code 17B.16.100 C.4.g: The facility will not unreasonably increase noise levels in residential areas, especially at night;

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 6 of the Special Use Permit states there will be no increase in noise levels from the project. Use of the new administrative/lab building will be the same as the existing administrative/lab building and moving the building 25' will not create additional noise levels.

City of Mukilteo Code 17B.16.100 C.4.h: Visual screening will be provided that will mitigate the visual impacts from streets and adjoining properties.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 7 of the Special Use Permit states that due to terrain and tree cover, the existing administrative/lab building is not visible from streets or adjoining property. The new administrative/lab building, located approximately 25' west of the existing administrative/lab building will not be visible from streets or adjoining properties. With no visual impacts from streets and adjoining properties, no visual screening will be provided.

City of Mukilteo Code 17B.16.100 C.4.i: The local essential public facility is not located in any residential zoning district identified in Table 17B.16.040, except as provided in this subsection. If the land on which a local essential public facility is proposed is located in any such residential zoning district, the applicant must demonstrate to the hearing examiner that there is no other feasible location for the facility and that the exclusion of the facility from the residential districts of the city would preclude the siting of all similar facilities anywhere within the city. If the applicant is able to make such a demonstration, the hearing examiner shall authorize the essential public facility to be located in the residential zoning district.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project. Section 8 of the Special Use Permit states the property where the Big Gulch WWTF is located is zoned Heavy Industrial. The project, relocation of an existing administrative/lab building, will be entirely within the property zoned Heavy Industrial.

City of Mukilteo Code 17B.16.100 C.4.j: The local essential public facility meets all provisions of this code for development within the zoning district in which it is proposed to be located, including but not limited to the bulk regulations of Chapter 17B.20, except as provided in this subsection. If a local essential public facility does not meet all such provisions, the applicant must demonstrate that compliance with such provisions would preclude the siting of all similar facilities anywhere within the city. If the applicant is able to make such a demonstration, the hearing examiner shall authorize the essential public facility to deviate from the provisions of this code to the minimum extent necessary to avoid preclusion.

Included with the Shoreline Permit packet is a completed Special Use Permit/Supplemental Application to the Land Use Permit for Essential Public Facilities for the proposed project.

Section 9 of the Special Use Permit states Big Gulch WWTF currently meets all provisions of City code for development within the zoning district (Heavy Industrial) in which it is located, including but not limited to the bulk regulations of MMC Chapter 17.20. This project consists of relocating an existing administration/lab building within the already developed area of the Big Gulch WWTF. The proposed new administrative/lab building will meet all building and zoning regulations.

City of Mukilteo Code 17B.16.100 C.4.k: Any and all probable significant adverse environmental impacts are mitigated.

The proposed project demolishes an existing administrative/lab building and constructs new administrative/lab building with the same footprint approximately 25' to the west of the existing building. The new building will be located on existing paved area currently utilized for equipment and parts storage. No impacts from the new administration/lab building will occur. No mitigation is contemplated.

Supporting Documentation:

The following documents are included:

Special Use Permit, Supplemental Application to the Land Use Permit for Essential Public Facilities.
Site Plan
Biosolids Tractor-Trailer Turning Radius Drawing
Building Height Worksheet
SEPA Checklist
Storm water plan
Wetlands Delineation
Geotech Report

The District looks forward to a positive review of this application.

Sincerely,

Jim Voetberg, General Manager
Mukilteo Water and Wastewater District

Special Use Permit
Supplemental Application to the land Use Permit
For
Local Essential Public Facilities

1. Why is the project needed? Provide a written analysis of the projected service population, an inventory of existing and planned comparable facilities, and the projected demand for the type of facility proposed.

Why is the project needed:

The collection and treatment of domestic and commercial wastewater is critical for public health, safety and general welfare of the environment. In 1993, the City of Mukilteo transferred their sewer collection and treatment system to Olympus Terrace Sewer District which has since merged with Mukilteo Water District and is now known as Mukilteo Water and Wastewater District (MWWD). MWWD owns and operates the sewer system serving Mukilteo in accordance with RCW 57.

Treatment of sewage collected by MWWD occurs at the Big Gulch Wastewater Treatment Facility (WWTF). Big Gulch WWTF is a public wastewater treatment facility treating sewage generated from residents and businesses within the City of Mukilteo and Paine Field. The WWTF is regulated by the State Department of Ecology, permit number WA0023396.

The WWTF is located at the lower end of Big Gulch immediately adjacent to Burlington Northern Santa Fe railroad property adjoining Puget Sound (see Attachment A). City of Mukilteo property surrounds the WWTF property.

The WWTF site is fully developed within the District's property with no room to expand (see Attachment B). Immediately north of the WWTF developed area is Big Gulch Creek and immediately south is a steep sensitive hillside with houses built on the bluff. The west side abuts Burlington Northern Santa Fe railroad property and the east side is too narrow for any development.

The project is to demo and build a new administration/lab building (see Attachment C). The current administration/lab building to be demolished is a one story building with a footprint of 1,960 square feet. The new administration/lab building will be a two story building with the same footprint of 1,960 square feet. The new administration/lab building will be constructed within the existing paved area of the WWTF. Administrative offices and the lab will be on the top floor with a maintenance shop and storage on the lower floor.

Demolition of the existing administration/lab building and construction of a new administration/lab building is required for two reasons. First, the existing administration/lab building is in general need of substantial repair and is too small to accommodate adequate

administrative and lab functions at the WWTF. The existing administration/lab building is in need of HVAC upgrades, electrical upgrades, lacks restroom and shower facilities for both genders, lacks lab space to efficiently operate a State certified lab, lacks ergonomic work stations for the employees, has inadequate area for computerized controls of the WWTF facility, has inadequate area for the storage of spare parts, and lacks sufficient shop area for the maintenance of pumps and other equipment (see pictures of existing administration/lab building in Attachment D).

Second, the location of the existing administration/lab building inhibits the operations of transporting biosolids away from the WWTF to a State certified Beneficial Use Facility (a facility certified by the State to accept biosolids) located in Mansfield Washington. The ability to utilize larger size tractor-trailer vehicles is restricted due to the inability for a tractor trailer to turn around. Since 2012, three biosolid transport companies have quit servicing the WWTF and the current hauler has raised the cost from $54 per wet ton to $88 per wet ton. Attachment E illustrates the conflict between the existing administration/lab building and the turning radius required for a tractor-trailer exiting the biosolids building.

Provide a written analysis of the projected service population:

Pursuant to the District's Wastewater Comprehensive Plan Amendment 1, Chapter 2, following is the projected service population for the Big Gulch Wastewater Treatment Facility:

The population of the District is estimated using data from Puget Sound Regional Council (PSRC) 2015 macroeconomic forecast. The forecast data is presented for regions known as Forecast Analysis Zones (FAZs). The FAZ data provided by PSRC includes forecasts of populations for residents and employees inside each FAZ. Population forecasts within the FAZs are provided for 2017, 2023, 2030, and 2037. Residential and employee populations for the District are based on GIS analysis of the four FAZs that contain the District's service area. Residential populations are estimated using the percentage of residential zoned land within the District's service area to total residential zoned land within the FAZ. The boundaries for FAZs 8000 and 7526 extend beyond the shoreline to include some of Puget Sound. These FAZ boundaries were trimmed to match the shoreline so that the percentage of land within the study area could be compared to the total FAZ area over land. This assumes that no residential or employment growth will occur beyond the shoreline in the waters of Puget Sound. The percentages for land use zoning inside the service area were also used to estimate employment. The residential population of the current westside service area is estimated to have been 15,054 in 2010. The employee population within the current service area is estimated to have been 8,713 in 2010 which does not include Paine Field. The PSRC provides population and employment projections for 2025, 2030, 2035, and 2040. These numbers are used as a baseline for the projections. Between these projected years, the population growth rates were interpolated to project individual years in the District's 20-year planning period.

Table 1 lists the FAZ identification number and the service area's residential population within each FAZ. Table 2 lists the service area's employee population within each FAZ.

TABLE 1
Residential Population Forecasts within the District Westside Service Area(1)

FAZ(2)	2010	2017	2023	2030	2037
7526	8,259	8,507	8,719	8,724	8,734
7537	1,637	1,696	1,747	1,873	2,050
8000	5,158	5,545	5,877	6,095	6,395
Total	**15,054**	**15,748**	**16,343**	**16,691**	**17,179**

(1) The Westside Service Area only includes areas within the District boundary that contribute wastewater to the WWTF.
(2) Data based on PSRC 2015 Macroeconomic Forecast.

TABLE 2
Employee Population Forecasts within the District Westside Service Area(1)

FAZ(2)	2010	2017	2023	2030	2037
7526	3,583	3,918	4,205	4,181	4,977
8000	5,130	5,838	6,445	6,562	6,700
Total	**8,713**	**9,756**	**10,649**	**10,743**	**11,677**

(1) The Westside Service Area only includes areas within the District boundary that contribute wastewater to the WWTF. Paine Field is based on contracted amounts.
(2) Data based on PSRC 2015 Macroeconomic Forecast.

Inventory of existing and planned comparable facilities: The Big Gulch Wastewater Treatment Facility is the only public wastewater treatment facility serving the District's Mukilteo service area. There are no existing or planned wastewater treatment facilities that will service the collection area of the Mukilteo Wastewater Service District.

The nearest wastewater treatment facility is owned and operated by the Alderwood Water and Wastewater District (AWWD) and is located in the Picnic Point area. Due to topography, MWWD's sewage volume and AWWD's wastewater plant's capacity, flow from MWWD to AWWD is not possible. AWWD was specifically designed and the facility laid out to allow large tractor trailer vehicles to enter and exit their biosolids building.

Projected demand for the type of facility proposed:

Pursuant to the District's Wastewater Comprehensive Plan Amendment 1, Chapter 4, following is the demand criteria for the Big Gulch Wastewater Treatment Facility:

The wastewater flow design criteria is summarized for the Big Gulch WWTP service area in Table 3. Flows from Paine Field are included in accordance with an agreed maximum flow of 250,000 gpd.

TABLE 3
Summary of Big Gulch WWTP Wastewater Demand Criteria

Demand Criteria	2020	2030	2037
Residential Population	16,392	16,691	17,179
Residential Per Capita Flow (gpcd)	60	60	60
Average Residential Flow (gpc)	983,508	1,001,460	1,030,728
Employee Population	11,151	10,743	11,677
Employee Per Capita Flow (gpcd)	22	22	22
Average Employee Flow (gpd)	245,316	236,352	256,891
Paine Field Average Flow	250,000	250,000	250,000
Average Annual Domestic Flow (gpd)	1,478,824	1,487,812	1,537,618
Average Annual I/I (gpd):	530,000	530,000	530,000
Average Annual Wastewater Flow (gpd)	2,008,824	2,017,812	2,067,619
Maximum Month Average Flow (gpd)	2,611,471	2,623,156	2,687,905
Maximum Day Flow (gpd)	5,423,825	5,448,093	5,582,572
Peak Hour Flow (gpd)	7,030,884	7,062,343	7,236,668
Peak Hour Flow (gpm)	4,883	4,904	5,025

The inadequate size of the existing administrative/lab building will not accommodate additional employees or additional lab space necessary to meet future flows. Also, the District's current Wastewater Pre-Treatment position, who logically should operate out of the wastewater treatment plant, operates out of the main District offices at 7824 Mukilteo Speedway simply due to a lack of space at the WWTF.

Future increase in wastewater flows will required modifications to the biosolids system to accommodate increased biosolids volume. With inadequate space to maneuver biosolids hauling vehicles now, the problem will only exacerbate in the future.

2. Describe the investigative process used to identify any alternative sites for the EPF. Describe the site selection methodology and why sites were eliminated from consideration.

The project is to demolish and rebuild an administration/lab building from its current location to a new location within the developed area of the Big Gulch Wastewater Treatment Facility. The Big Gulch Wastewater Treatment Facility is the Essential Public Facility (EPF). Consideration of relocating the entire Gulch Wastewater Treatment Facility EPF due to a need to demolish and rebuild the administration/lab building is not practicable for reasons including, the entire sewer collection system including pipes and lift stations are installed to flow to the Big Gulch Wastewater Treatment Facility and there are no properties within Mukilteo of sufficient size and location to construct a new wastewater treatment facility EPF.

Specific to investigating sites within the existing Big Gulch Wastewater Treatment Facility to locate the new administration/lab building, the following was considered. First the existing Big Gulch Wastewater Treatment Facility developable property is essentially fully built out due to Big Gulch Creek bordering one side of the Facility and a steep hillside bordering the other side (see Appendix B). Any new building will be located on existing developed area. Second, the new

building's footprint would be the same footprint as the existing building. Third, the new building needs to located such that it does not conflict with turning movements necessary for trucks hauling biosolids from the biosolids building.

3. What infrastructure is or will be made available to ensure safe transportation access and transportation concurrency?

The Big Gulch Wastewater Treatment Facility is not accessible via a public road and the facility is closed to the public. The District has an existing access road to the Facility for use by its employees, suppliers and contractors. No new infrastructure is or will be necessary to ensure safe transportation access and transportation concurrency. The demolition of a 2,000 square foot administration/lab building and construction of a new 2,000 square feet administration/lab building does not require traffic concurrency.

4. What type of infrastructure and/or services are needed to ensure that public safety responders have capacity to handle increased calls or expenses that will occur as the result of the facility?

The project is the demolition of an existing administration/lab building and construction of a new administration/lab building within the developed area of the Big Gulch Wastewater Treatment Facility. The new administration/lab building will not create additional need for public safety and will not change or modify how public safety is currently being provided to the Big Gulch Wastewater Treatment Facility. No additional infrastructure and/or services is needed to ensure that public safety responders have capacity to handle increased calls or expenses as a result of the relocated administration/lab building.

5. Describe the project sponsors ability to pay for all capital costs associated with on-site and off-site improvements.

The project sponsor is the Mukilteo Water and Wastewater District. The District has identified this project in its comprehensive plan and the project is identified in the District's capital budget for permitting/design in 2018 and construction in 2019. Funding for the project will come from the District's Capital Fund reserves.

6. How much and what kinds of noise will the facility generate and what type of mitigation will be provided? Describe both day and night time noise disturbances.

The project is the demolition of an existing administration/lab building and construction of a new administration/lab building within the developed area of the Big Gulch Wastewater Treatment Facility. Use of the existing administration/lab building does not create noise. The new administration/lab building will not create noise. By relocating the building into the shoreline, noise will not increase at the site regardless of the building being in the shoreline or not in the shoreline.

7. What kinds of visual screening will be provided that will mitigate the visual impacts from streets and adjoining properties?

The project is the demolition of an existing administration/lab building and construction of a new administration/lab building within the developed area of the Big Gulch Wastewater Treatment Facility. The area where the new administration/lab building will be located is paved and currently occupied by small storage buildings, pumps, equipment and miscellaneous parts. The new location of the administration/lab building is not visible from streets and adjoining properties. With no visual impacts from streets and adjoining properties, no visual screening will be provided.

8. If the land on which a local EPF is proposed is located in a residential zoning district, describe any other feasible locations for the facility other than a residential zone and how the exclusion of the facility from the proposed location in a residential zone would preclude the siting of the facility and all similar facilities anywhere within the City.

The Big Gulch Wastewater Treatment Facility is the EPF and currently exists. This project consists of relocating an existing administration/lab building within the current developed area of the Big Gulch Wastewater Treatment Facility. Relocation of the Big Gulch Wastewater Treatment Facility (the EPF) to another location within the City is not practical.

9. Describe how the EPF meets all provisions of City code for development within the zoning district in which it is proposed to be located, including but not limited to the bulk regulations of MMC Chapter 17.20. If the proposal does not meet City code, describe how compliance with such provisions would preclude the siting of all similar facilities anywhere within the City.

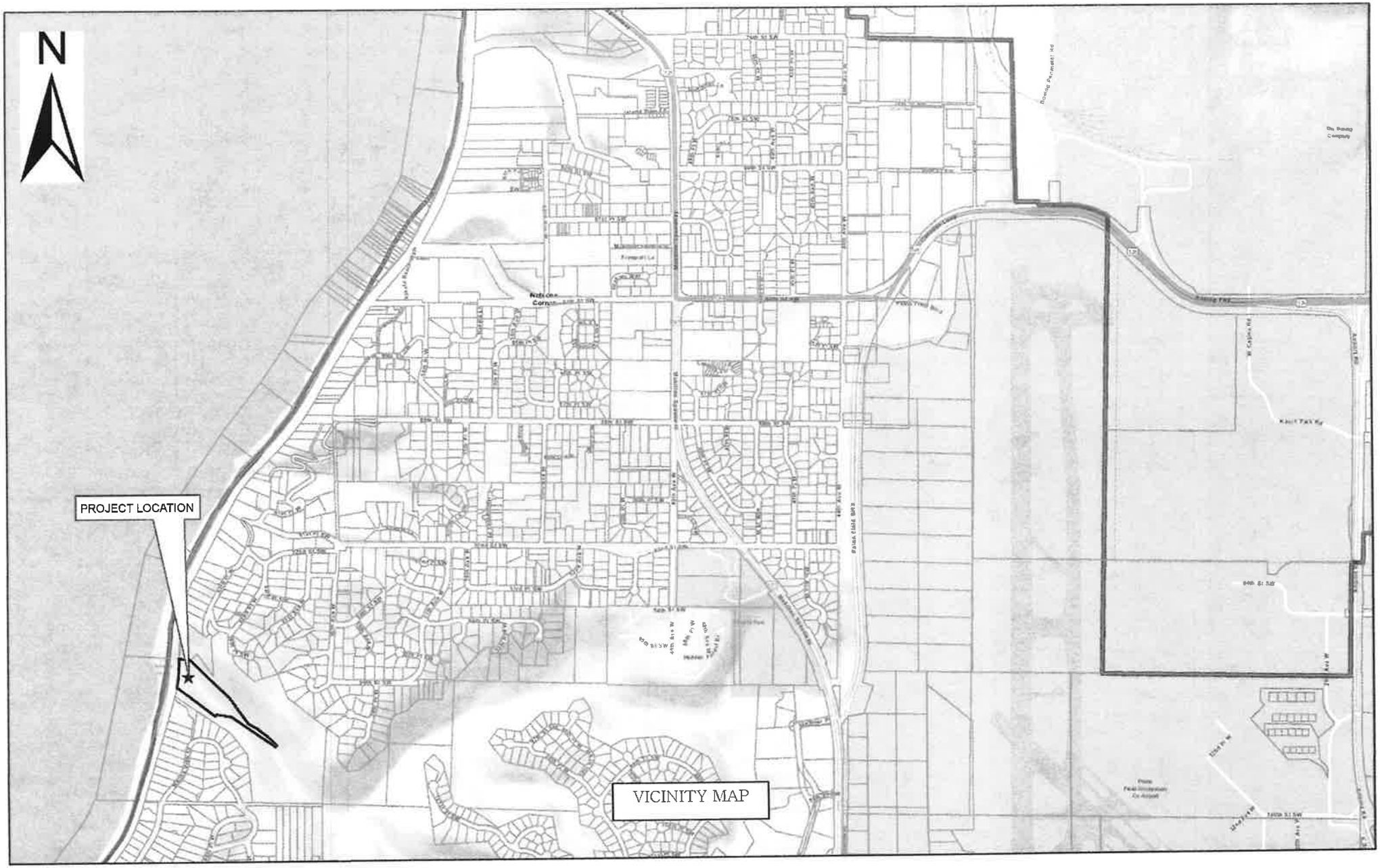
The Big Gulch Wastewater Treatment Facility is the EPF and currently exists. This project consists of relocating an existing administration/lab building within the already developed area of the Big Gulch Wastewater Treatment Facility. Relocation of the Big Gulch Wastewater Treatment Facility (the EPF) to another location within the City is not practical.

10. Describe any and all probable mitigation measures being applied to the project.

No mitigations measures are being applied to this project.

Attachment A

Site Map
Property Map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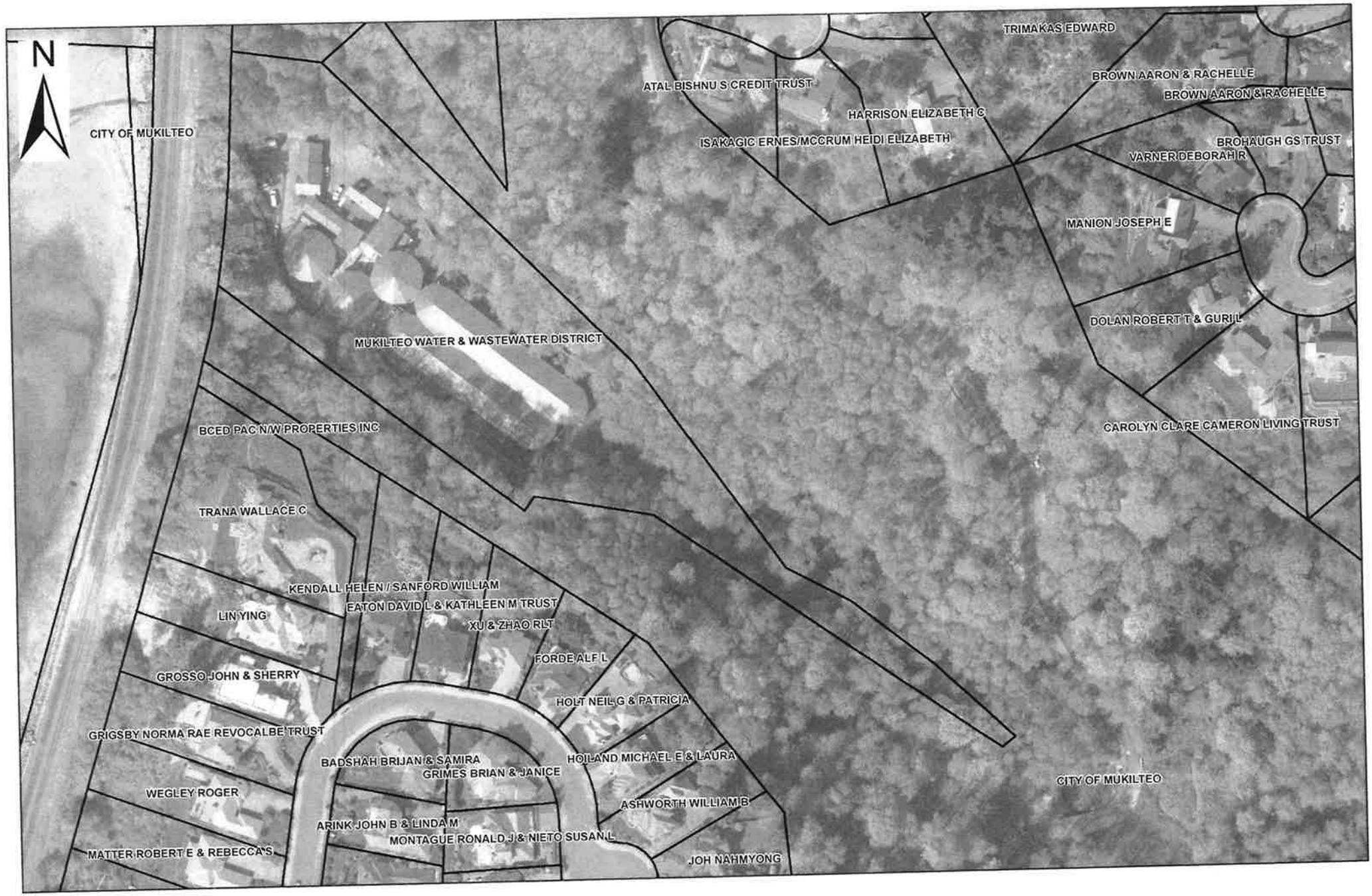
PROJECT LOCATION
VICINITY MAP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CITY OF MUKILTEO
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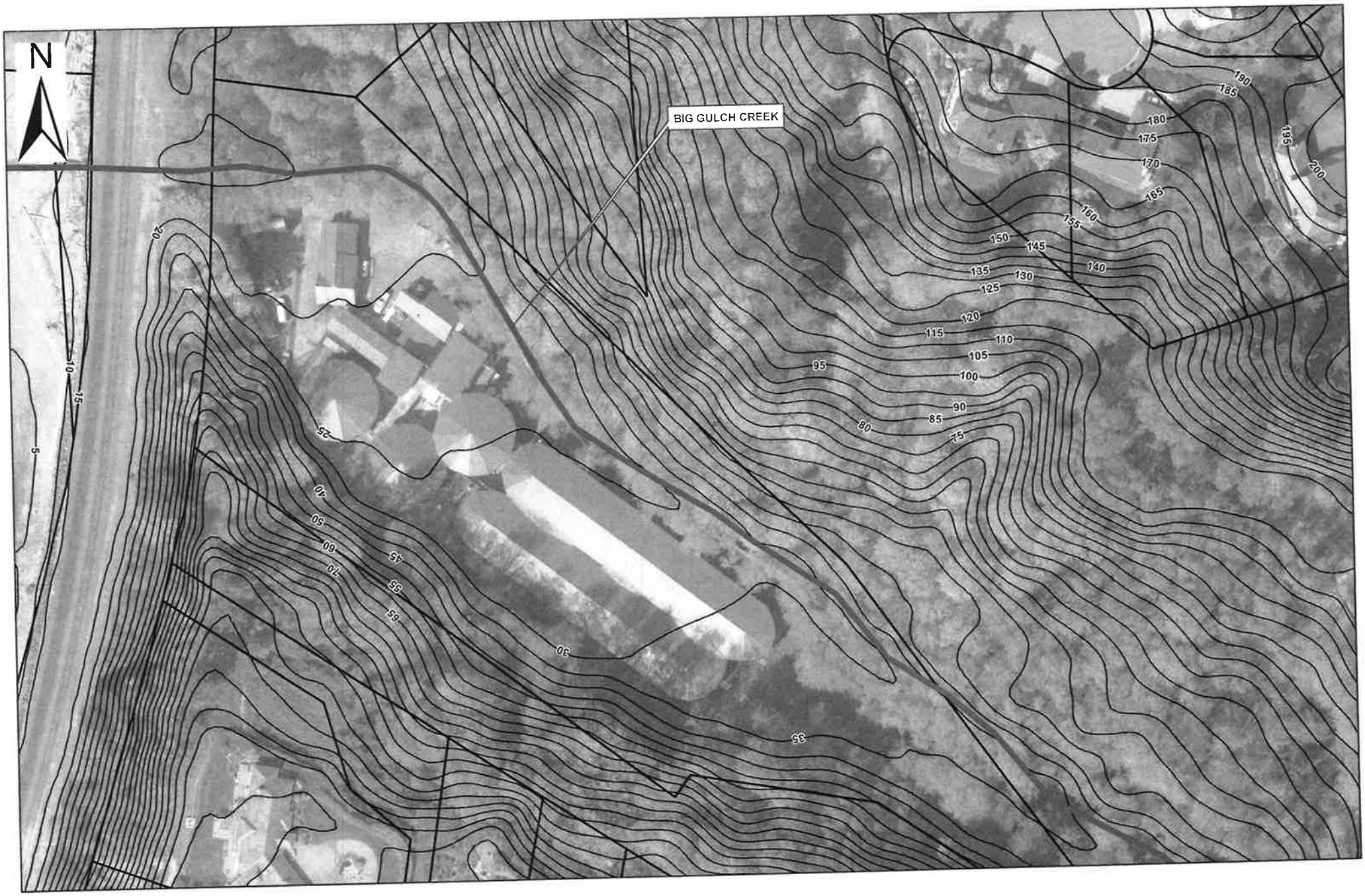
BROWN AARON & RACHELLE
BROWN AARON & RACHELLE
ATAL BISHNU S CREDIT TRUST
HARRISON ELIZABETH C
ISAKAGIC ERNES/MCCRUM HEIDI ELIZABETH
BROHAUGH GS TRUST
VARNER DEBORAH R
MANION JOSEPH E
DOLAN ROBERT T & GURI L
MUKILTEO WATER & WASTEWATER DISTRICT
BCED PAC N/W PROPERTIES INC
CAROLYN CLARE CAMERON LIVING TRUST
TRANA WALLACE C
KENDALL HELEN / SANFORD WILLIAM
EATON DAVID L & KATHLEEN M TRUST
LIN YING
XU & ZHAO RLT
FORDE ALF L
GROSSO JOHN & SHERRY
HOLT NEIL G & PATRICIA
GRIGSBY NORMA RAE REVOCALBE TRUST
BADSHAH BRIJAN & SAMIRA
GRIMES BRIAN & JANICE
HOILAND MICHAEL E & LAURA
CITY OF MUKILTEO
WEGLEY ROGER
ASHWORTH WILLIAM B
ARINK JOHN B & LINDA M
MONTAGUE RONALD J & NIETO SUSAN L
MATTER ROBERT E & REBECCA S
JOH NAHMYONG

Attachment B

Site Contour Map
Pictures of WWTF Site (Steep Hillside and Creek)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BIG GULCH CREEK
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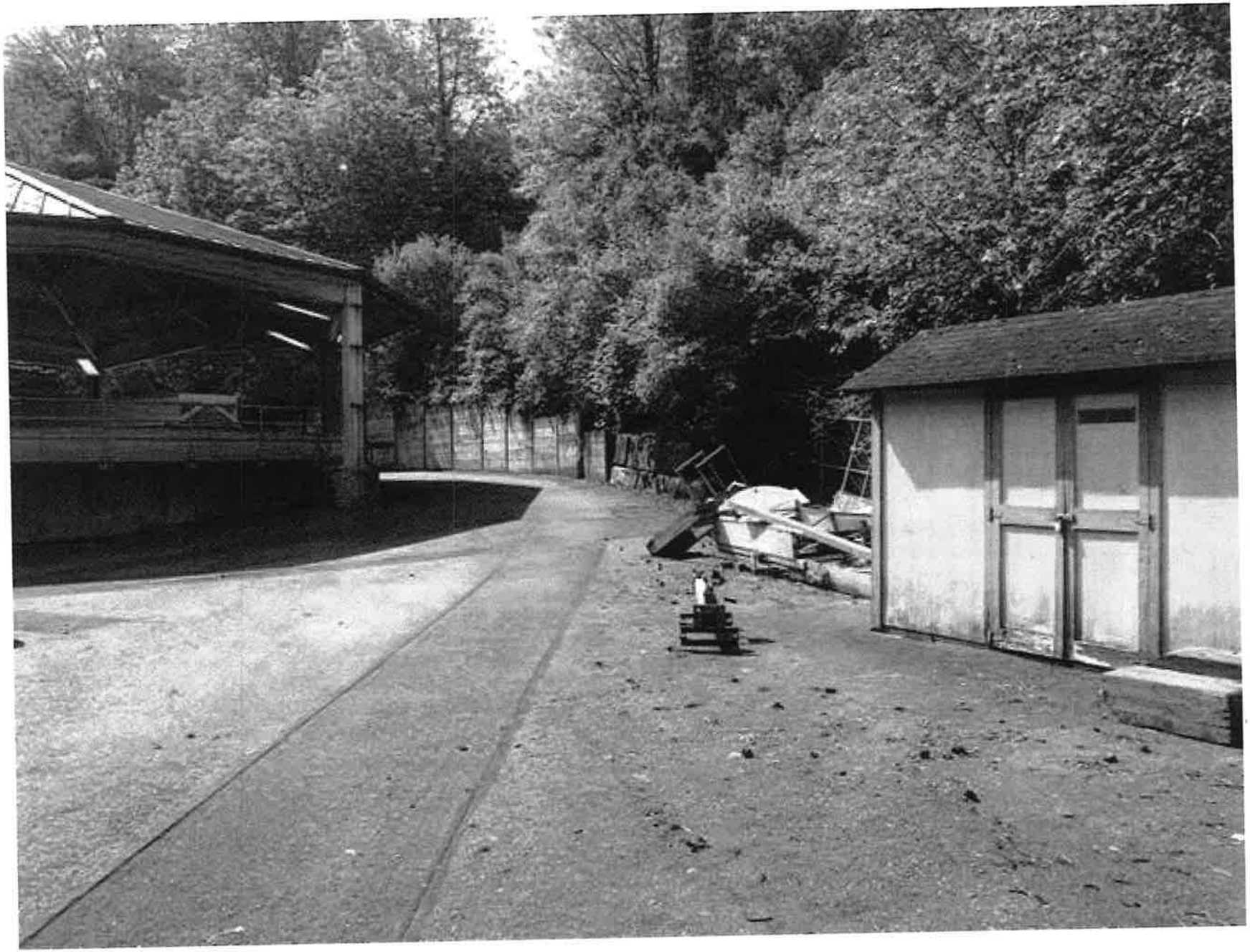
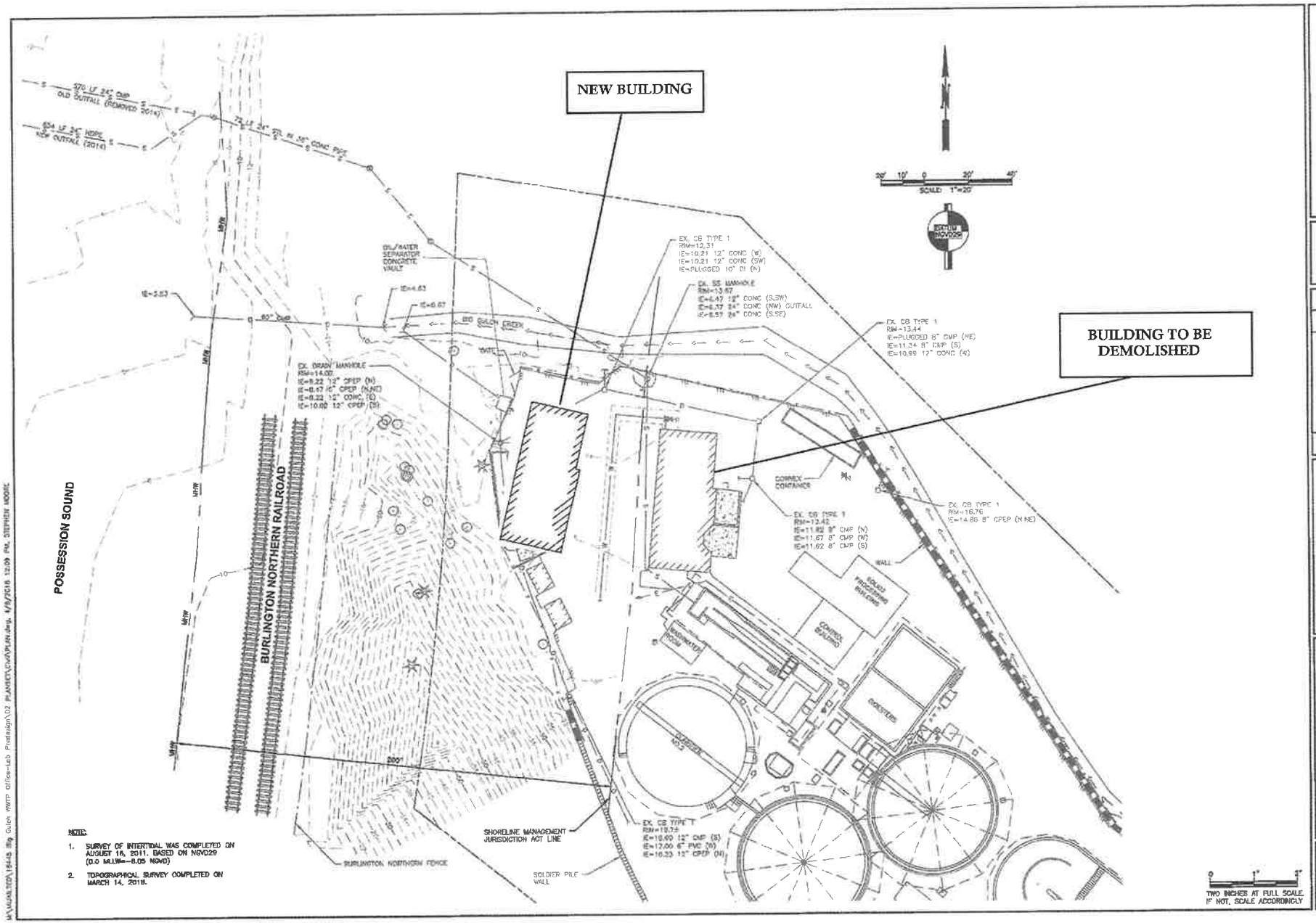


Attachment C

New Building location



NOTE:

1. SURVEY OF INTERTIDAL WAS COMPLETED ON AUGUST 16, 2011. BASED ON NGVD29 (0.0 MLLW=-8.05 NGVD)
2. TOPOGRAPHICAL SURVEY COMPLETED ON MARCH 14, 2016.

Gray & Osborne, Inc.
CONSULTING ENGINEERS
710 140th STREET NE, BLDG. B, SUITE 310
ARLINGTON, WA 98223 • (360) 454-3460

DATE: MAR 2016
SCALE: NOTED
DRAWN: SEM
CHECKED: MPR
APPROVED: SPR

PRELIMINARY NOT FOR CONSTRUCTION

No.	REVISION	DATE	APP'D

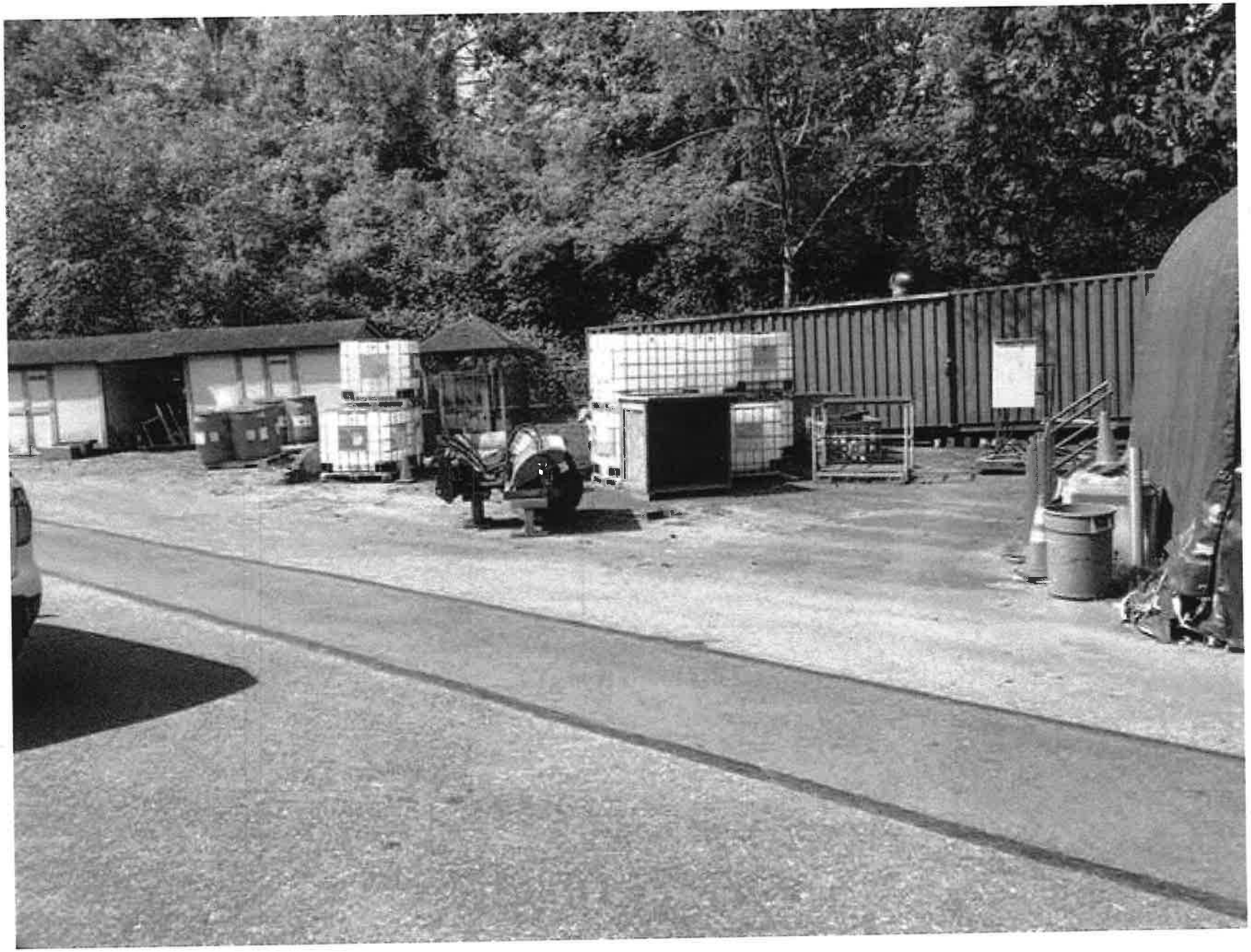
ROBERT D. BAKER — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — 2008

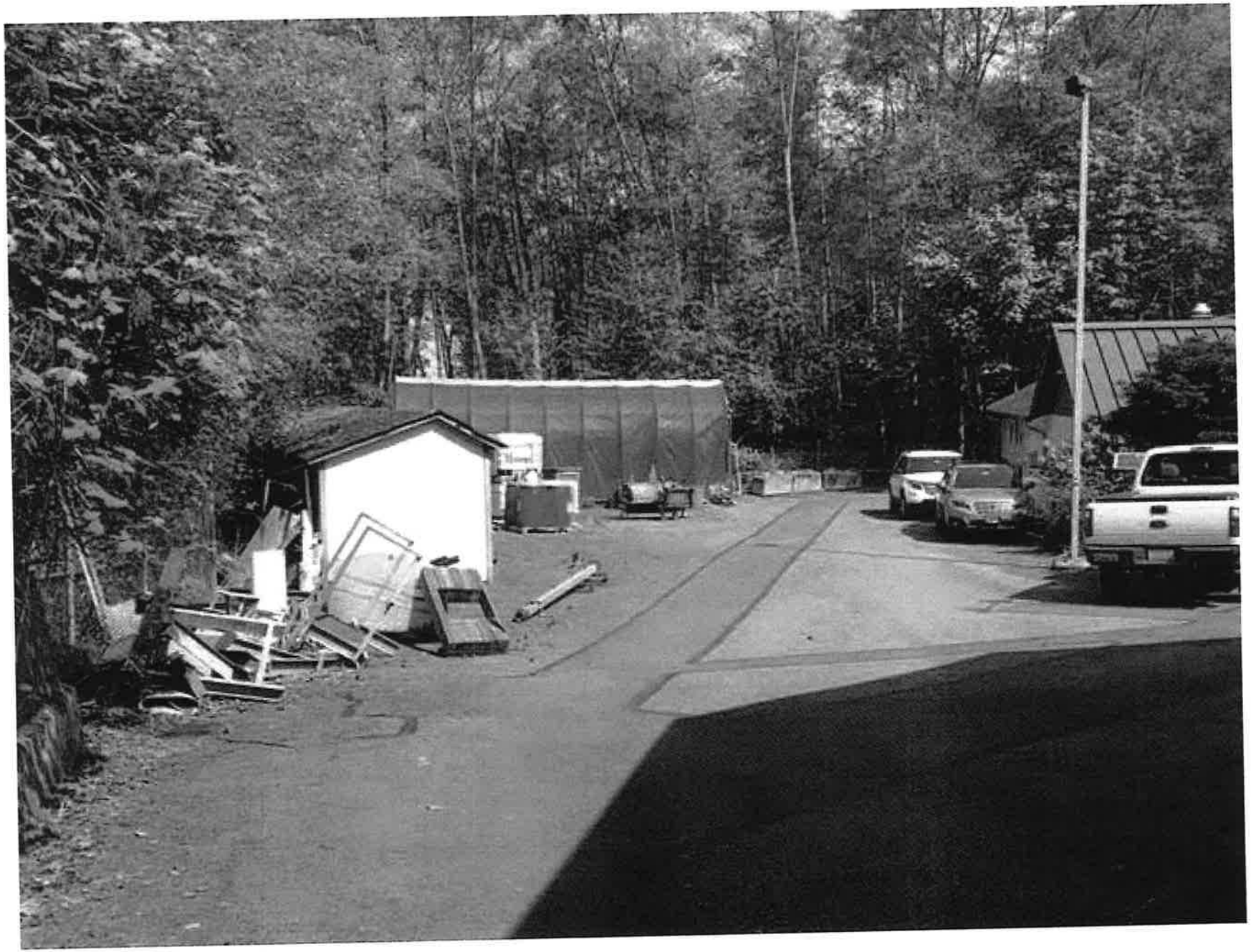
MUKILTEO WATER & WASTEWATER DISTRICT
SNOHOMISH COUNTY
WASHINGTON

BIG GULCH WWTP OFFICE AND LABORATORY PREDESIGN
PLAN

SHEET: 1
OF: 1
JOB NO.: 16445
DWG/PLAN

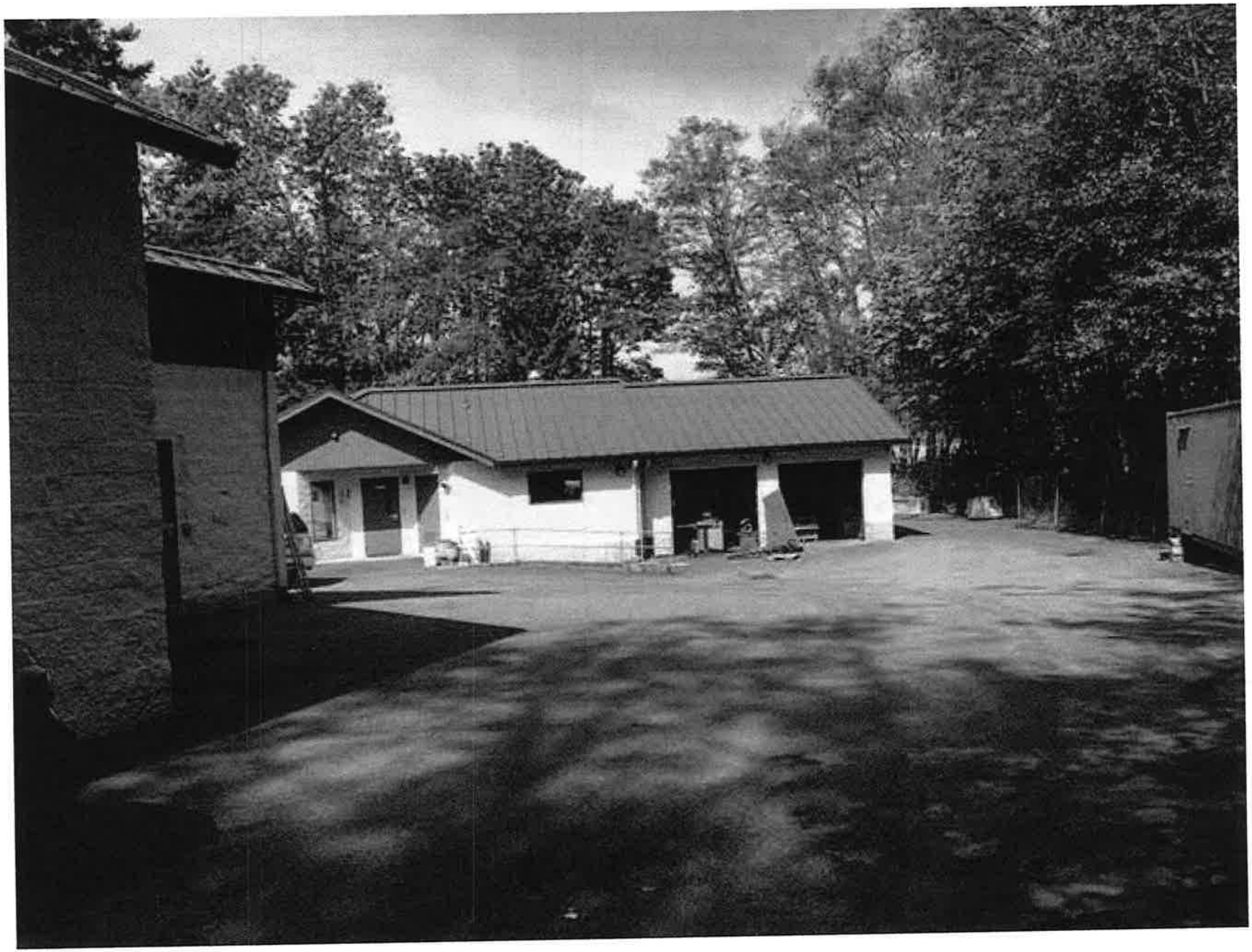
M:\MUKILTEO\16445 Big Gulch WWTP Office+Lab Predesign\02 PLANSET\CIVIL\PLAN.dwg, 4/6/2016 12:09 PM, STEPHEN MOORE

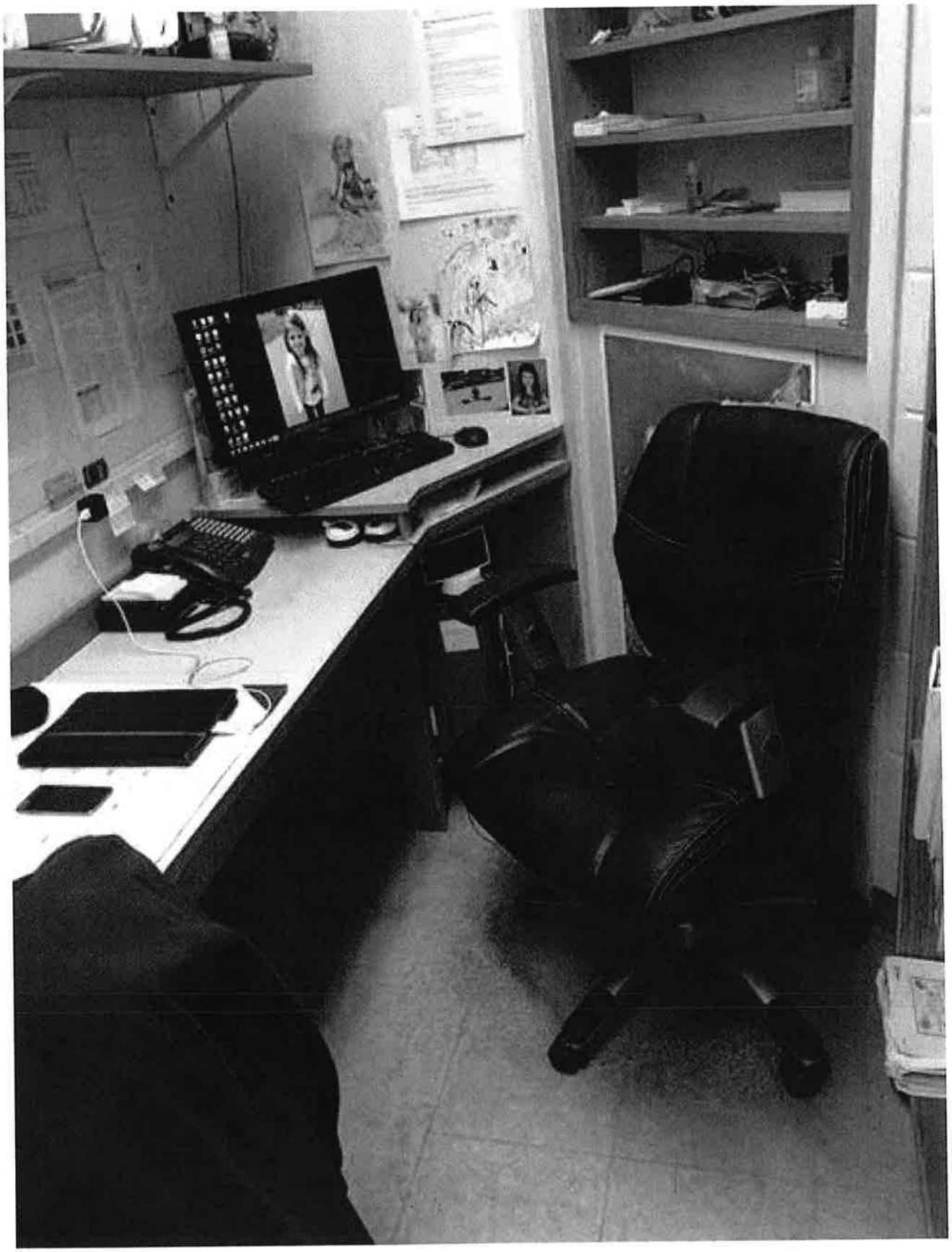


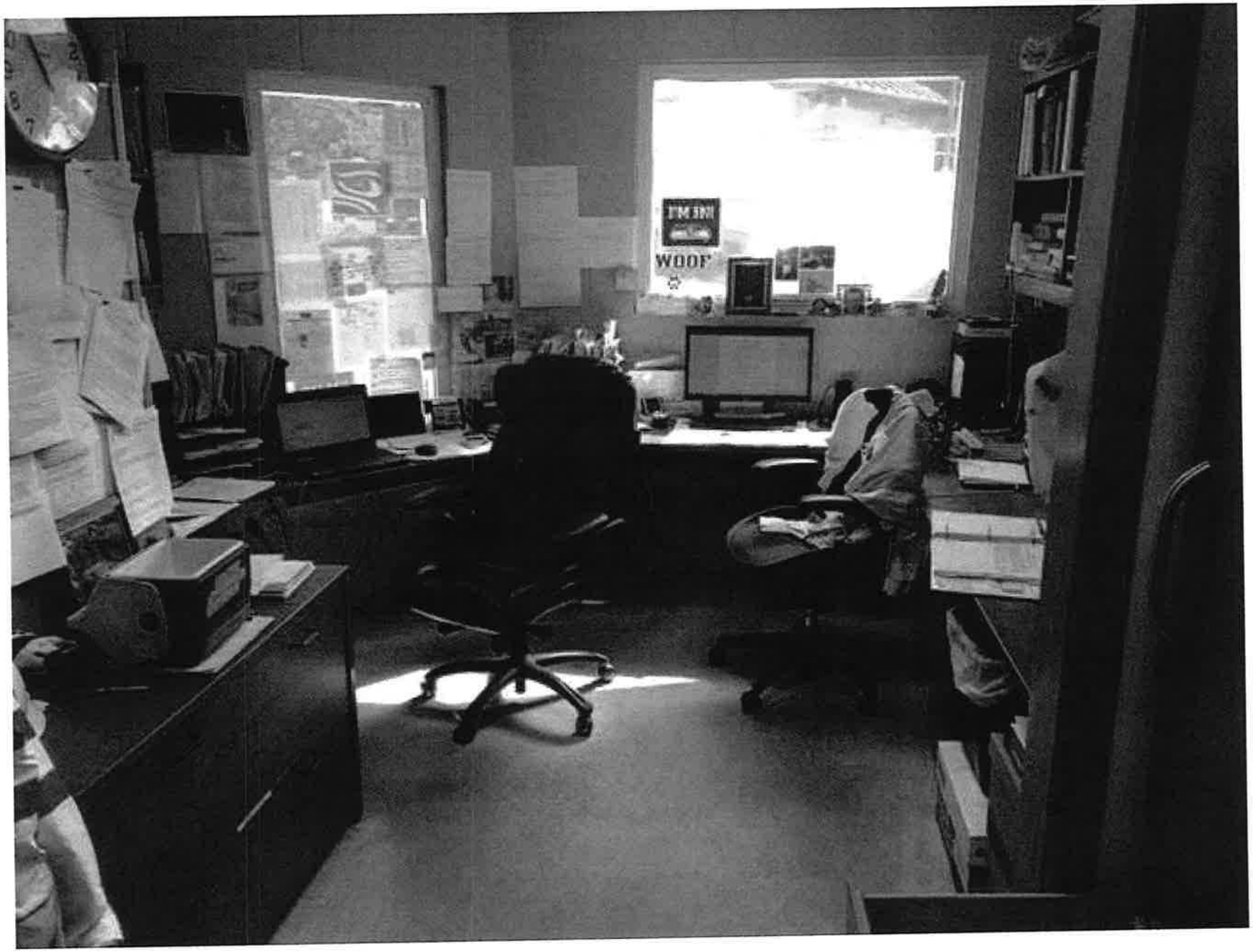


Attachment D

Pictures of Existing Admin/Lab Building



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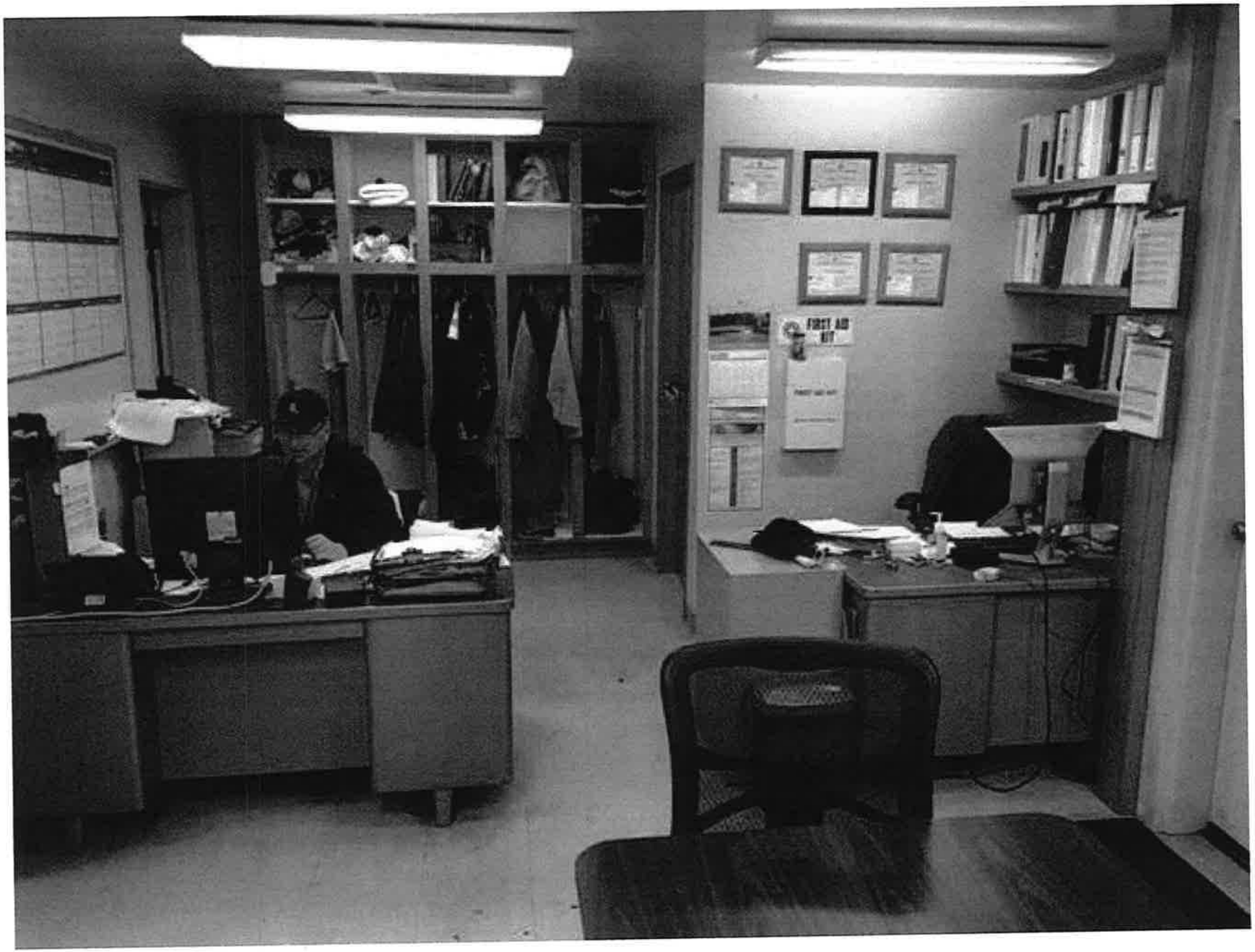
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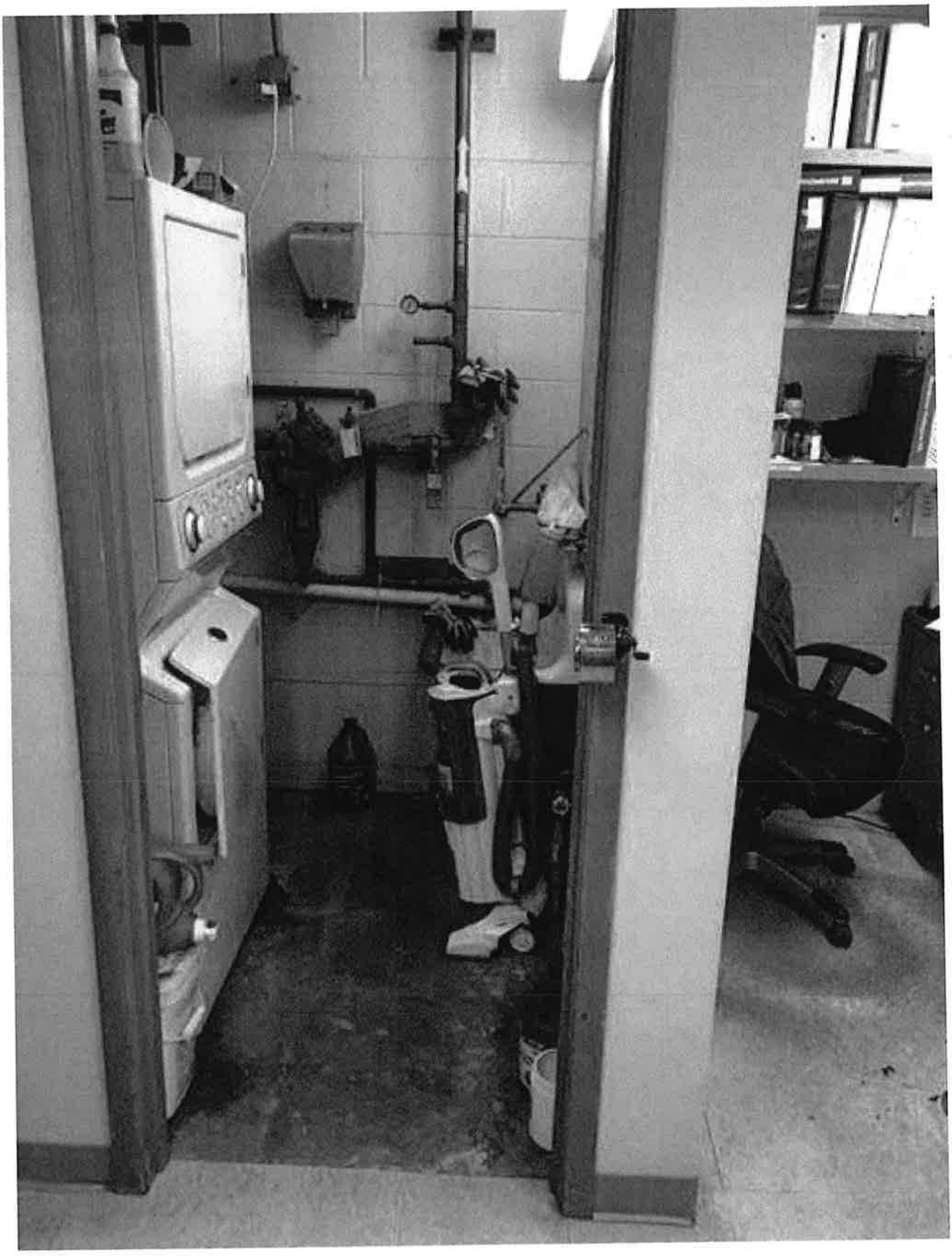
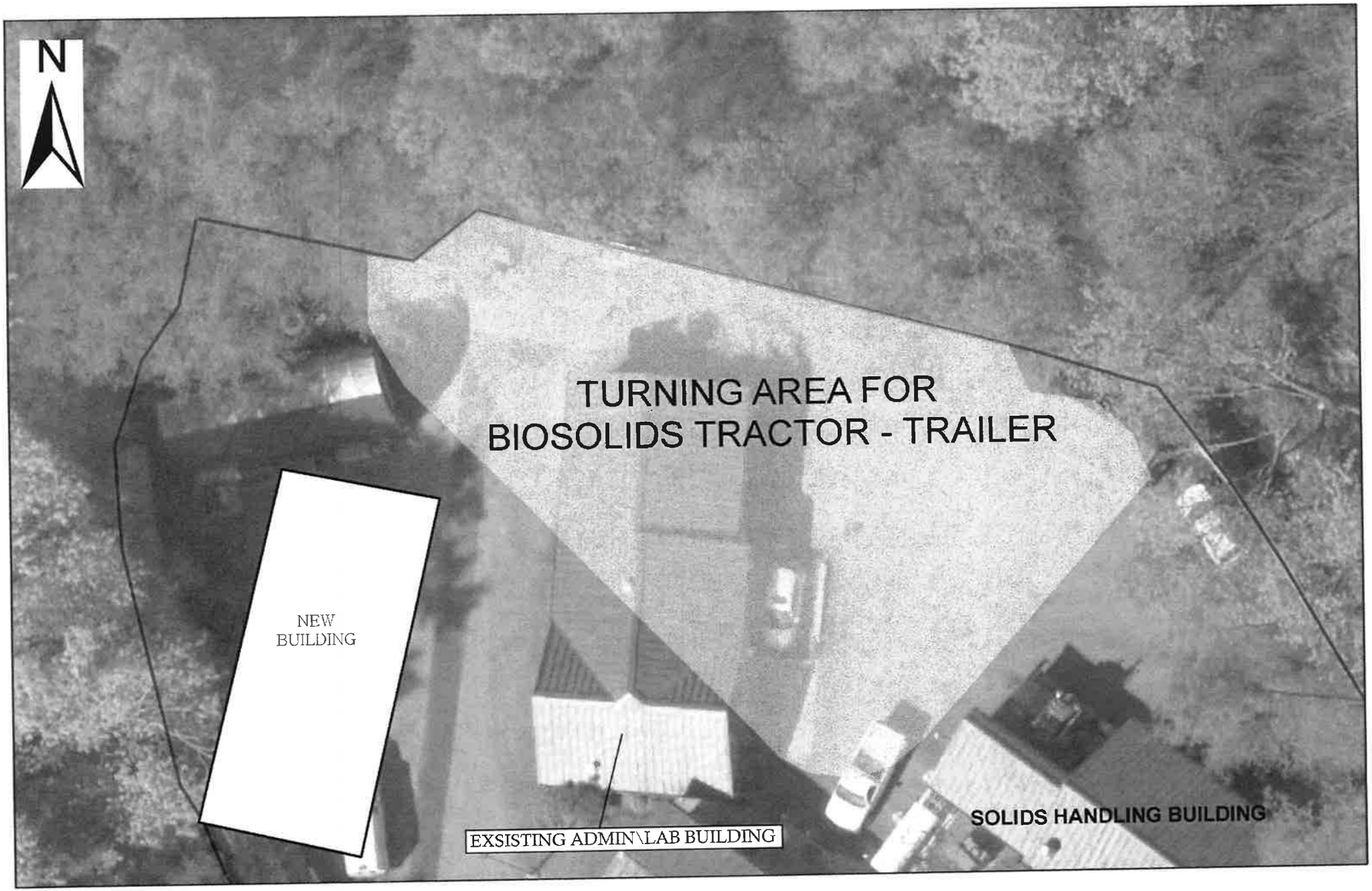



GRAINGER
GRAINGER

Attachment E

Biosolids Tractor-Trailer Turning Area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TURNING AREA FOR
BIOSOLIDS TRACTOR - TRAILER
NEW
BUILDING
EXSISTING ADMIN\LAB BUILDING
SOLIDS HANDLING BUILDING

Mukilteo Water and Wastewater District

DETERMINATION OF NONSIGNIFICANCE (DNS)

Description of proposal:
The purpose of the project is to construct a new office and laboratory at the treatment plant to replace the existing smaller office and laboratory. The new building would be 28 feet by 70 feet, having a footprint less than 2,000 square feet. The new building will have two stories; 20 feet ground floor shop and equipment storage and 8 feet second story office, laboratory, and locker rooms.

Project Name: Big Gulch Wastewater Treatment Plan Office-Lab Building

Proponent: Mukilteo Water and Wastewater District

Location of proposal: Mukilteo Big Gulch Wastewater Treatment Facility 9417 62nd Place West, Mukilteo, WA 98275 SE¼ of Section 17, T28N, R4E

Lead agency: Mukilteo Water and Wastewater District

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

Comment Period: This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by August 6, 2018 at 5:00 pm.

Comments should be sent in writing to the Mukilteo Water and Wastewater District at the address below.

Responsible official:

Jim Voetberg
General Manager
7824 Mukilteo Speedway
Mukilteo, WA 98275
(425) 355-3355

Signature: _____ Date: 7/18/18

Date of Issuance: Monday, July 23, 2018

cc: Review Agencies
Everett Herald
City of Mukilteo

Mukilteo Water and Wastewater District
Environmental Checklist

A. Background

1. Name of proposed project, if applicable:

   Big Gulch Wastewater Treatment Plant Office-Lab Building

2. Name of applicant:

   Mukilteo Water and Wastewater District
   Snohomish County

3. Address and phone number of applicant and contact person:

   Mukilteo Water and Wastewater District
   7824 Mukilteo Speedway
   Mukilteo, WA 98275
   (425) 355-3355
   Jim Voetberg, General Manager

4. Date checklist prepared:

   May 2018

5. Agency requesting checklist:

   Mukilteo Water and Wastewater District

6. Proposed timing or schedule (including phasing, if applicable):

   Construction Summer 2019

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

   Previous report for the Outfall Improvements and Gabion Wall Replacement projects, which are in the immediate vicinity of the project include:

   - ***Cultural Resources Assessment for the Mukilteo Big Gulch WWTP Outfall, Snohomish County, WA, Northwest Archaeological Associates/SWCA, June 2011.***

Environmental Information being prepare for this project includes:

- ***Critical Areas Report for Lab/Administration Building, Wetland Resouces, Inc., July 17, 2018***
- ***Geotechnical Investigation and Report, PanGEO, Inc., July 11, 2018***

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No.

10. List any government approvals or permits that will be needed for your proposal, if known.

1. ***City of Mukliteo***
    a. ***Shoreline Condition Use Permit/Special Use Permit***
        i. ***Public Hearing Required***
        ii. ***Department of Ecology Approval Required following City's Approval***
    b. ***Substantial Development Permit***
    c. ***Building Permit***
    d. ***Engineering Permit***
    e. ***Fire Sprinkler Permit (if required)***

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The purpose of the project is to construct a new office and laboratory at the treatment plant to replace the existing smaller office and laboratory. The new building would be 28 feet by 70 feet, having a footprint less than 2,000 square feet. The new building will have two stories; 20 feet gournd floor shop and equipment storage and 8 feet second story office, laboratory, and locker rooms.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Mukilteo Big Gulch Wastewater Treatment Facility, 9417 62nd Place West, Mukilteo, WA 98275

SE1/4 of Section 17, T28N, R4E

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(circle one) (Flat,) rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

The building site is flat. The measured slopes on the parcel and adjacent the flat building site are approximately 50%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Sand and gravel; no agricultural soils. Soils in the project area are designated as "modified land" original topography disturbed by removal of some Pleistocene deposits, grading and artificial till of unknown quantity. Soils in the vicinity of the WWTF are designated as Qal "alluvium" mostly sand and gravel deposited by streams. Soils on the steep forested slopes that bound the south side of the WWTF are gravelly sandy loams derived from glacial till, as are the soils west of the facility to the shoreline. The glacial till soils are typically less than five feet below the ground surface.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Steep slopes in the general vicinity may be subject to instability during seismic activity or after heavy rains, particularly along the Puget Sound shoreline.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Approximately 75 cubic yards of existing soils and asphalt will be excavated and removed from the site and replaced with 12" of foundation gravel for the proposed building.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The new building will be located over the existing flat asphalted area. Minimal if any erosion could occur as a result of clearing and construction.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

No new impervious surface is proposed. The project is located on developed WWTF property that is currently 100 % impervious (asphalt pavement).

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Storm water best management practices will be implemented during project construction. An erosion control plan will be developed for the project.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Exhaust from equipment and dust will be the primary sources of emissions during construction of proposed project. Construction impacts will be localized, minor and temporary.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Dust suppression measures and minimization of vehicle idling will be implemented during construction.

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Yes. The proposed replacement building is in the vicinity of Puget Sound, Big Gulch Creek, and two wetlands on the project site (Wetlands A and B). Puget Sound is a Shoreline of the State, Big Gulch creek is a documented salmonid stream, and is a Type 3 stream per the City of Mukilteo stream typing system. Wetland A is a Category III wetland and Wetland Bi s a Category IV wetland.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The project will not require any work over or within any water bodies or wetlands. The proposed replacement building is within 200 feet of the wetlands and water bodies listed above. (see attached plan sheet).

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredging of wetlands or water bodies is proposed.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

The proposal will not require surface water withdrawals or diversion.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground from septic tanks or other sources

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Storm water runoff will be collected and disposed through the existing installed drainage/storm drain system.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Grading of the project site is planned to direct runoff and waste materials to the existing installed drainage/storm drain system and avoid entering ground or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Construction BMPs for the control of surface, ground, and runoff water will be implemented during construction. These include silt fence, catch basin inserts, and oil/water separator.

4. Plants

a. Check the types of vegetation found on the site:

X deciduous tree: alder, maple, aspen, other
X evergreen tree: fir, cedar, pine, other
X shrubs
X grass
__ pasture
__ crop or grain
__ Orchards, vineyards or other permanent crops.
X wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, eelgrass, milfoil, other
__ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

No vegetation will be removed as part of the proposed project.

c. List threatened and endangered species known to be on or near the site.

No known threatened or endangered plant species are know to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

None proposed; the site surface is currently asphalt and will be maintained as asphalt following construction of the new building.

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan blackberry and English Ivy.

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other: crows
mammals: deer, bear, elk, beaver, other: coyote, squirrel, raccoon
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

No threatened or endangered species are known to be on or in the immediate vicinity of the site.

c. Is the site part of a migration route? If so, explain.

Yes. Big Gulch creek is utilized for migration by anadromous fish. The project is also within the Pacific Flyway, which is a migratory bird route.

d. Proposed measures to preserve or enhance wildlife, if any:

No impacts to existing wetlands, streams, or vegetated buffers areas are proposed. All areas of existing native vegetation. Implementation of construction BMPs to will be used to prevent runoff from the site and entering Big Gulch Creek.

e. List any invasive animal species known to be on or near the site.

No known invasive animal species are present on the site..

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity (lighting, heating, power)

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

LED/Energy efficient lighting and energy efficient appliances will be included in the building design. HVAC systems are sized to meet the energy code.

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Health risks associated with the proposed project would be exposure to fuels, lubricants, and coolants associated with the various gasoline and diesel powered engines on construction equipment.

1) Describe any known or possible contamination at the site from present or past uses.

None known

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

An oil / water separator concrete vault is located adjacent to the building site. A sewer main supplies sewage to the WWTF. No underground hazardous transmission pipelines are located within the project site.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Machinary lubricants, fuels, and coolants might be stored and will be used during site excavation and backfill work.

4) Describe special emergency services that might be required.

None; the contractor will be responsible for contacting medical aid in the event

of worker injury.

5) Proposed measures to reduce or control environmental health hazards, if any:

Compliance with industrial safety standards in design, construction, and operation of facilities will be implemented during construction.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The site is an existing WWTP and has noise levels consistent with processing equipment, which includes pumps, blowers and operational equipment.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Noise from construction equipment will be generated aat the project site during construction. No change in noise levels will result from the completed building.

3) Proposed measures to reduce or control noise impacts, if any:

Construction equipment working times will be limited to daylight hours. Hauling to and from the facility would be limited to the hours of 7:00 a.m. through 5:00 p.m., Monday through Friday to reduce the impact to local residences and any noise-sensitive wildlife present in the project area.

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is used as part of the Big Gulch Creek WWTP. The Burlington Northern Santa Fe (BNSF) railroad tracks are located west and adjacent of the District's Big Gulch WWTF. Big Gulch Creek and forested areas are located just north of the WWTF, and include City of Mukilteo Park; steep forested hill slopes are located adjacent and south of the WWTF. Upland areas north and south of the WWTF are residential developments.

The proposal will not affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The project site has not been used as working farmlands or working forest lands

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

c. Describe any structures on the site.

Man-made structures that are part of the District's existing WWTP include covered wastewater treatment buildings, asphalt roadway and parking lots, and office, laboratory, and process building.

d. Will any structures be demolished? If so, what?

Yes. The existing office and lab building will be demolished as shown on the attached figure.

e. What is the current zoning classification of the site?

The Mukilteo WWTF Site is zoned Heavy Industrial and the route of the sewer mains through Big Gulch is zoned Open Space.

f. What is the current comprehensive plan designation of the site?

Industrial

g. If applicable, what is the current shoreline master program designation of the site?

Shoreline Conservancy (the work is within 200 feet of Possession Sound).

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Big Gulch Creek and surrounding riparian wetlands are designated as environmentally sensitive areas. Steep slopes along Big Gulch are also designated as sensitive areas.

i. Approximately how many people would reside or work in the completed project?

Four treatment plant operators and one Lab Analyst work at the WWTP and use the building; no additional employees would be required to operate Big Gulch WWTF after the project is completed.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None required.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

All projects must comply wiwth the City of Mukilteo Comprehensive Plan.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

Not applicable.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable / none required.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The proposed structure height is 35 feet. Principal exterior building proposed material includes concrete masonry units (CMU) and metal roofing. Doors and windows would be metal frame.

b. What views in the immediate vicinity would be altered or obstructed?

No views outside of the WWTP will be altered.

b. Proposed measures to reduce or control aesthetic impacts, if any:

No aesthetic impacts are anticipated.

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The project will not produce additional light or glare.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None required.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

Hiking, fishing, and bird watching could occur along Big Gulch Creek.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Construction BMPs for the control of sedimentation and erosion will be implemented to minimize potential for increasing turbidity to Big Gulch Creek. Noise generating work will occur during regular business hours and will avoid the period between on hour after sunrise and one hour before sunset to protect noise-sensitive wildlife in the Big Gulch Creek corridor.

The narrow, winding roadway, with fenced and gated access into and around the Big Gulch WWTF, along with on-going construction activities associated with the project, restrict public access to the WWTF and the project area.

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

No.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None known. A Cultural Resources Assessment prepared by Northwest Archaeological Associates/SWCA (June 16, 2011 for a project adjacent the proposed) did not identify any landmarks or historic sites.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

State Archaeologist, Rob Whitlam, Ph.D. reviewed and concurred with the findings of the 2011 Cultural Resources Assement report.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Existing cultural resources surveys for the project area will be reviewed and a new cultural resources survey/assessntent will be conducted by a professional archaeologist, as required by the funding or permitting agencies.

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Access to the proposed project is via the road that currently serves the Big Gulch WWTF, located at 9417 62nd Place West, Mukilteo, WA.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

No. The nearest Community Transit Bus Stop is approximately 0.9 miles to the east along the Mukilteo Speedway.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Not applicable.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). _____

No.

e. Describe the existing condition of the proposed access road, including width of easement, width of pavement or roadway, curbs, gutters, and/or sidewalks.

Existing access to the WWTF and the proposed project on the facility will be utilized; the access road pavement width is approximately 14 feet with gravel shoulders and has no curbs or sidewalks.

f. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Burlington Northern Santa Fe railroad tracks are located approximately 100 feet west of the project site. The project will not utilize water, rail, or air transportation.

g. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The completed project will not require any additional vehicle trips.

h. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

i. Proposed measures to reduce or control transportation impacts, if any:

Construction traffic will be coordinated with on-going activities associated with WWTF operations to minimize transportation conflicts.

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Not applicable.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. **Utilities**

a. Circle utilities currently available at the site:

(electricity) natural gas, (water) (refuse service) (telephone) (sanitary sewer) septic system,

(other) cable

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No new utilities are proposed for the project.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee: **Jim Voetberg**

Position and Agency/Organization: **General Manager for Mukilteo Water and Wastewater District**

Date Submitted: **7/18/18**

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.
Suite 106
Everett, Washington 98208
(425) 337-3174
Fax (425) 337-3045

CRITICAL AREA STUDY

FOR

BIG GULCH WASTEWATER TREATMENT FACILITY
MUKILTEO, WA

Wetland Resources, Inc. Project #18057

Prepared By
Wetland Resources, Inc.
9505 19th Avenue SE, Suite 106
Everett, WA 98208
(425) 337-3174

Prepared For
Mukilteo Water & Wastewater District
Attn. Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

July 17, 2018

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

1.0 INTRODUCTION

Wetland Resources, Inc. conducted a site investigation on March 1, 2018, to identify wetlands and streams on the site of Mukilteo Water and Wastewater's Big Gulch Wastewater Treatment Facility. The 4.75-acre property is located at 9417 62nd Pl SW in the city of Mukilteo, WA. The property is comprised of one tax parcel (28041700401300) and is further located as a portion of Section 17, Township 28N, Range 04E, W.M. The investigation area was limited to the west side of the site, near the location of the proposed new administrative and laboratory building.

1.1 SITE DESCRIPTION

The subject site is accessible via an access road south of 95th Pl SW. The existing Big Gulch Wastewater Treatment Facility (WWTF) is located in the center of the western side of the site. Surrounding land use is composed of single-family residential, the Big Gulch Trail System, and Puget Sound. The BNSF railroad borders the subject property to the west. Paine Field is located approximately 1.5 miles east of the subject property.

The WWTF is located within a ravine to the east of Puget Sound. The central area of the site, which contains the existing development, slopes gently to the west/northwest. The north side of the site has a southerly aspect and the south side of the site slopes down to the north. Several areas of steep slopes are present on the subject property. Big Gulch Creek runs along the northern boundary of the parcel. Per Mukilteo Municipal Code (MMC) 17.52C, this stream is a Type 3 stream and receives a 150-foot buffer. Puget Sound is a Shoreline of the State, and the area of the subject parcel that is within 200 feet of the sound is within Shoreline Jurisdiction. The Shoreline Use Designation for this site is Urban Conservancy.

Two wetlands, Wetland A and Wetland B, were identified within the investigation area. As required by the City of Mukilteo, the wetlands were classified using the *Washington State Department of Ecology's Wetland Rating System for Western Washington 2014 Update.* Wetland A is classified as Category III wetland, with habitat score of 6. Wetland B is classified as a Category IV wetland, with a habitat score of 6. Per MMC 17.52B, Category III wetlands with a 6 habitat points score receive a 165-foot buffers. Category IV wetlands typically receive standard 40-foot protective buffers.

Figure 1: Aerial view of the subject property.

1.2 PROJECT DESCRIPTION

Mukilteo Water and Wastewater district is proposing to replace an existing administration/lab building with a new building. The current administration/lab building to be demolished is a one-story building with a footprint of 1,960 square feet. The new administration/lab building will be a two-story building with the same footprint of 1,960 square feet. The proposed replacement building will be constructed to the west of the current building, over an area of existing asphalt. The proposed location of the replacement building is within a wetland and stream buffer, as well as within Shoreline Jurisdiction.

This project is necessary for two reasons. The existing administration building currently is in need of repair, and is too small to accommodate the administrative and lab functions required to run the WWTF. Also, as part of the WWTF operations, biosolids are hauled from the site. Due to site constraints, large tractor-trailer vehicles do not have enough space to turn around on the site. By removing the existing lab building from its current location and constructing a new

building to the west, the facility will be able to provide a sufficient turning radius for these vehicles.

1.3 Existing Nonconforming Use Within a Buffer

The existing WWTF development is located within the buffer of Wetlands A and B and Big Gulch Creek. Per MMC 17B.52B.070.M, where a legally established, nonconforming use of a buffer exists, proposed actions in the buffer may be permitted as long as they do not increase the degree of nonconformity. The proposed replacement building will be constructed over an area of existing asphalt. As this area is already developed, this project will not increase the extent of nonconforming use, impervious surface on the site, or impact any areas that are not currently developed. No impact will occur to any wetlands, streams, or areas of vegetated buffer on the site. A detailed functions and values analysis is provided in Section 4 of this report.

Since the proposed replacement building will be located within the limits of the nonconforming use, and will not impact any buffer vegetation or the on-site wetlands or stream, no mitigation is required or proposed.

2.0 Wetland Determination Report

2.1 Publicly Available Data

Prior to conducting the site investigation, public resource information was reviewed to gather background information on the subject property and the surrounding area in regards to wetlands, streams, and other critical areas. These sources included the following:

USDA/NRCS Web Soil Survey
One soil map unit is mapped on the subject parcel: Alderwood-Everett gravelly sandy loam, 25 to 70 percent slopes. This soil type is not considered hydric (wetland) soil. A hydric component, Norma loam, occurs in depressions.

USFWS National Wetlands Inventory (NWI)
According to NWI, a riverine system is mapped along the northern boundary of the subject property that outlets to Puget Sound (the shoreline of which is classified as an estuarine wetland). NWI does not display any other features on or within close proximity to the subject property.

Snohomish County PDS Map Portal
PDS Map Portal maps Big Gulch Creek (fish habitat) along the northern boundary of the subject property, showing an unknown/untyped tributary to Big Gulch Creek in the north-central region of the subject property. The shoreline of Puget Sound is mapped as a Shoreline of Statewide Significance and as an estuarine and marine wetland. A modeled wetland is shown in the northwest corner of the subject property. No other features are shown on or in the vicinity of the subject property.

City of Mukilteo Streams and Watersheds Map
This resource depicts Big Gulch Creek in the same location as PDS Map Portal.

DNR Forest Practices Application Mapping Tool (FPAMT)
FPAMT displays a stream in approximately the same location as PDS Map Portal shows Big Gulch Creek. However, FPAMT shows that the stream is fish bearing for approximately 470 feet east of Puget Sound, until a water break, where the stream is classified as a Type N.

WDFW Priority Habitat and Species (PHS) Interactive Map
The PHS map shows the presence of resident cutthroat trout and Coho salmon in Big Gulch Creek. It also shows Puget Sound and its shoreline as estuarine and marine wetland, serving as habitat for geoduck, panalid shrimp, and Dungeness crab.

WDFW Salmonscape Interactive Mapping System
Salmonscape further confirms the presence of the Big Gulch Creek on-site, noting that it has documented presence of Coho salmon. Salmonscape also shows 3 ephemeral tributaries flowing south to north, into Big Gulch Creek.

2.2 Field Determination Methodology

Ordinary High Water Mark (OHWM) boundaries of lakes, streams, and marine waters are determined through use of methodology presented in The Washington State Department of Ecology document *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et al 2016).

Wetland conditions were evaluated using routine methodology described in the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, (referred as 2010 Regional Supplement). Our findings are consistent with these manuals.

The following criteria descriptions were used in the boundary determination:

1.) Examination of the site for hydrophytic vegetation (species present and percent cover);

2.) Examination of the site for hydric soils;

3.) Determining the presence of wetland hydrology

2.2.1 Hydrophytic Vegetation Criteria

The manuals define hydrophytic vegetation as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. One of the most common indicators for hydrophytic vegetation is when more

than 50 percent of a plant community consists of species rated "Facultative" and wetter on lists of plant species that occur in wetlands.

2.2.2 Soils Criteria and Mapped Description

The manuals define hydric soils as those that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Field indicators are used for determining whether a given soil meets the definition for hydric soils.

According to NRCS Web Soil Survey, the soil map unit Alderwood-Everett gravelly sandy loam, 25 to 70 percent slopes is predicted to occur. This soil type is not considered hydric (wetland) soil. A hydric component, Norma loam, occurs in depressions.

2.2.3 Hydrology Criteria

The 2010 Regional Supplement defines wetland hydrology as "areas that are inundated (flooded or ponded) or the water table is less than or equal to 12 inches below the soil surface for 14 or more consecutive days during the growing season at a minimum frequency of 5 years in 10." During the early growing season, wetland hydrology determinations are made based on physical observation of surface water, a high water table, or saturation in the upper 12 inches. Outside of the early growing season, wetland hydrology determinations are made based on physical evidence of recent inundation or saturation (i.e. water marks, surface soil cracks, water-stained leaves).

Based on the results of the site investigation, two wetlands were identified on the subject property. The wetlands were rated pursuant to the *Washington State Wetland Rating System for Western Washington (updated 2014)*.

2.3 Boundary Determination Findings

2.3.1 Wetland A

Cowardin Classification: Palustrine, Forested, Broad-leaved Deciduous, Seasonally flooded
HGM Classification: Depressional
Department of Ecology Rating: Category III, habitat score 6
City of Mukilteo Standard Buffer: 165-feet

Wetland A is a depressional wetland located to the north of the wastewater facilities, on the north side of Big Gulch Creek. This wetland extends off-site to the north. Vegetation within Wetland A includes red alder (*Alnus rubra*; FAC), western red cedar (*Thuja plicata*; FAC), Oso-berry (*Oemleria cerasiformis*; FAC), red osier dogwood (*Cornus sericea*; FACW), salmonberry (*Rubus spectabilis*; FAC), Himalayan blackberry (*Rubus armeniacus*; FAC), piggyback plant (*Tolmeia menziesii*; FAC), sword fern (*Polystichum munitum*; FACU), and ivy (*Hedera helix*; FACU). The dominant species rate "facultative" or wetter, indicating that a hydrophytic vegetative community is present in the areas mapped as wetland.

Typical wetland soils are a Munsell color of very dark grayish brown (2.5Y 3/2) and a silty loam texture in the upper layer. The sublayer is generally dark gray (10YR 4/1) silt loam with light yellowish brown (10YR 6/4) redoximorphic features. These soils meet the F3 (Depleted Matrix) hydric soil indicator. Soils were saturated at 9 inches below the surface during the March 2018 site visit.

Field observations indicate that the area mapped as wetland is flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soils. The vegetation, soil, and hydrologic criteria are all met for this wetland.

2.3.2 Wetland B

Cowardin Classification: Palustrine, Forested, Broad-leaved Deciduous, Saturated Only
HGM Classification: Slope
Department of Ecology Rating: Category IV, habitat score 6
City of Mukilteo Standard Buffer: 40-feet

The delineation of Wetland B was conducted by others prior to the WRI site investigation. Wetland flagging was still present on-site, and WRI reviewed the boundary and concurs with the previous delineation. This wetland is located on the south side of the property on a hillside, and appears to extend off-site to the south. Vegetation within Wetland B includes red alder (*Alnus rubra*; FAC), salmonberry (*Rubus spectabilis*; FAC), and piggyback plant (*Tolmeia menziesii*; FAC). The dominant species rate "facultative" or wetter, indicating that a hydrophytic vegetative community is present in the areas mapped as wetland.

Soils in Wetland B are generally very dark gray (10YR 3/1) sandy clay loam in the upper layer. The sublayer is generally dark grayish brown (10YR 4/2) silt loam containing redoximorphic features. These soils meet the F3 (Depleted Matrix) hydric soil indicator. Soils were saturated and seeps on the hillside were observed during the March 2018 site visit.

Field observations indicate that the area mapped as wetland is flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soils. The vegetation, soil, and hydrologic criteria are all met for this wetland.

2.3.3 Non-wetland Areas

Dominant vegetation in the non-wetland areas adjacent to the wetlands is represented by big leaf maple (*Acer macrophyllum*; FACU), Oso-berry (*Oemleria cerasiformis*; FAC), oceanspray (*Holodiscus discolor*; FACU), salal (*Gaultheria shallon*; FACU), and sword fern (*Polystichum munitum*; FACU).

Typical soils in the area mapped as non-wetland have a Munsell color of very dark grayish brown (10YR 3/2), with a sandy loam texture, from 0 to 16 inches below the soil surface. No redoximorphic features were present within the soil profile. Soils sampled in the area mapped as non-wetland do not appear to be flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part, and therefore do not appear to meet wetland soils criteria.

Given that the dominant vegetative community is not hydrophytic, direct hydrologic indicators are lacking, and hydric soils are absent in these areas, it appears that areas mapped as non-wetland do not meet criteria for wetlands.

2.3.4 Big Gulch Creek

Big Gulch Creek flows from east to west, along the north side of the site. It flows through a culvert under the railroad and into the sound. This stream is a documented salmonid stream, and is a Type 3 stream per MMC. 17.52C. Type 3 streams receive a 150-foot buffer.

2.3.5 Puget Sound

Puget Sound is located just off-site to the west. This waterbody is classified as a Shoreline of the State. The area of the subject parcel that is within 200 feet of the sound is within Shoreline Jurisdiction. The Shoreline Use Designation for this site is Urban Conservancy.

3.0 WILDLIFE

Avian species expected to use the subject site include: American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), House finch (*Carpodacus mexicanus*), Black-capped chickadee (*Poecile atricapillus*), Dark-eyed junco (*Junco hyemalis*), Bushtit (*Psaltriparus minimus*), Northern flicker (*Colaptes auratus*), Hairy woodpecker (*Picoides villosus*), Downy woodpecker (*Dendrocopus villosus*), Red-breasted nuthatch (*Sitka canadensis*), Brown creeper (*Certhia americana*), Varied thrush (*Ixoreus naevius*), Rufous hummingbird (*Selasphorus rufus*), Western tanager (*Piranga ludoviciana*), Glaucous-winged gull (*Larus glaucescens*), Rock pigeon (*Columba livia*), Belted king fisher (*Megaceryle alcyon*), Bald eagle (*Haliaeetus leucocephalus*), and Red-tailed hawk (*Buteo jamaicensis*).

Mammals expected to use this site include: Virginia opossum (*Didelphis virginiana*), shrews (*Sorex spp.*), eastern gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), and eastern cottontail rabbits (*Sylvilagus floridanus*). Other wildlife expected to use this site include: pacific tree frog (*Hyla regilla*), northwestern salamander (*Ambystoma gracile*), and rough-skinned newt (*Taricha granulosa*).

Salmonid fish species documented in Big Gulch Creek include: resident coastal cutthroat (*Oncorhynchus clarki*) and Coho salmon (*Oncorhynchus kisutch*).

These lists are not meant to be all-inclusive and may omit species that currently utilize or could utilize the site.

4.0 Functions and Values Analysis

4.1 Methodology

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetland and buffers, but is typical for assessments of similar systems common to Western Washington.

4.1.1 Wetland Functional Components

Wetlands in Western Washington perform a variety of ecosystem functions. Included among the most important functions provided by wetlands are stormwater control, water quality improvement, fish and wildlife habitat, aesthetic value, recreational opportunities and education. The most commonly assessed functions and their descriptions are listed below.

Hydrologic Functions

Wetlands often function as natural water storage areas during periods of precipitation and flooding. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or floodflow and controlling baseflows of downstream systems. Stormwater storage capacity and floodflow attenuation are generally a function of the size of the wetland and their topographic characteristics.

Water Quality

Surface water quality improvement is an additional important wetland function. Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Ponded areas within depressional wetlands also allow sediments to drop out of suspension, thereby increasing water quality. The size of wetlands and the vegetation structure within them are some of the limiting factors of this function.

Wildlife Habitat

Wetlands have potential to provide diverse habitat for aquatic, terrestrial, and avian species for nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including wetlands, adjacent uplands, large bodies of water, and movement corridors between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

4.1.2 Buffer Functional Components

Water Quality

Vegetated wetland buffers obstruct water flow, thereby decreasing water velocity, allowing infiltration into the soil, and reducing soil erosion potential.

Hydrologic functions

Wetland buffers help to moderate water level fluctuations. Buffer vegetation impedes the flow of runoff, increases the humus content of soil (greater adsorption capacity), and preserves soil composition as intense rainfall hits the ground.

Wildlife Habitat

Many birds, mammals, and amphibians use wetland buffers for some part of their life needs. Their use of these sites is dependent on the valuable edge habitat found at the wetland/upland border.

4.2 Functions and Values Assessment – Existing conditions

4.2.1 Wetland A

Hydrologic Function

Wetland A is a depressional wetland along the north site of Big Gulch Creek. In general, depressional wetlands help control flood events by slowing and storing precipitation and runoff. This wetland helps control flood events by collecting and temporarily storing hydrology from the surrounding area during storm events, slowing water as it moves toward Big Gulch Creek. This wetland provides a moderate value for this function.

Water Quality

This wetland provides water quality benefits as water collects in the depressional area, helping settle any contaminants. The fairly dense shrubs and herbaceous plants assist in filtering sediment from stormwater and in improving water quality as water moves through the system and toward Big Gulch Creek. This wetland provides a moderate value for this function.

Wildlife Habitat

Wetland A is a forested wetland, with multi-level understory. This wetland contains multiple hydroperiods and habitat features, including snags and downed logs. The vegetation within the wetland provides resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. However, the adjacent development and the urbanized nature of the surrounding area, limit the habitat functions this wetland provides for wildlife. This wetland provides a moderate value for this function.

4.2.2 Wetland B

Hydrologic Function

Wetland B is a slope wetland along the southern side of the site. In general, slope wetlands provide limited water storage. However, since this wetland is densely vegetated, it helps control flood events by slowing precipitation and runoff from the surrounding area during storm events.

Water Quality

This wetland provides water quality benefits as water moves through the wetland. The shrubs and herbaceous plants within the wetland assist in filtering sediment from stormwater, improving water quality as water moves through the wetland. However, the sloped nature of this wetland limits this function.

Wildlife Habitat

Wetland B is a forested wetland, with multi-level understory. This wetland contains multiple hydroperiods and habitat features, including snags and downed logs. The vegetation within the wetland provides resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. However, adjacent development and urbanized nature of the surrounding area limits the functions this wetland can provide for wildlife. This wetland provides a moderate level of value for this function.

4.2.3 Buffers

The forested buffer areas contain multiple vegetation strata in the understory and are dominated by native species. These buffer areas moderate stormwater runoff and reduce soil erosion potential. They provide opportunity for perching, refuge, and availability of native food sources benefits wildlife utilizing the site. Overall these areas provide a moderate to high level of buffer functions.

The developed areas within the buffer do not currently provide water quality benefits, storm water infiltration, support native vegetation, or wildlife habitat. These areas that contain existing development do not presently contribute to the health or functions of the wetland or stream.

4.3 Post-Development Functions and Values

No impacts to the on-site wetlands or Big Gulch Creek are proposed. The on-site wetlands will continue to provide the same level of functions post-construction as they currently provide.

The new lab/administration building will be constructed over an area that is currently asphalt, which does not provide water quality, hydrological, or wildlife functions. The total area of development (nonconforming use) within the wetland and stream buffers will remain the same. No impacts to vegetation within the buffer areas are proposed. The proposed project will maintain the existing buffer functions and values and will not reduce the protections currently provided to the on-site wetlands and stream.

5.0 Use Of This Report

This Critical Area Study is supplied to the Mukilteo Water & Wastewater District as a means of determining on-site critical area conditions, as required by the City of Mukilteo. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report, and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.

Meryl Kamowski
Senior Ecologist

6.0 REFERENCES

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APPENDIX A: WETLAND RATING FORMS AND FIGURES

Wetland name or number **Wetland A**

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A - 18057 MWWD Date of site visit: 3/1/18

Rated by MK Trained by Ecology? ✓ Yes ___No Date of training 03/2015

HGM Class used for rating DEPRESSIONAL Wetland has multiple HGM classes? ___Y ✓ N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY III (based on functions ✓ or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

___ **Category II** – Total score = 20 - 22

✓ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H [M] L	H [M] L	H M [L]	
Landscape Potential	H [M] L	[H] M L	H [M] L	
Value	H M [L]	H M [L]	[H] M L	TOTAL
Score Based on Ratings	**5**	**6**	**6**	**17**

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	☑

Wetland name or number **Wetland A**

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number **Wetland A**

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   - The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   - At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   - The wetland is on a slope (*slope can be very gradual*),
   - The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   - The water leaves the wetland **without being impounded**.

NO – go to 5 **YES** – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   - The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   - The overbank flooding occurs at least once every 2 years.

Wetland name or number **Wetland A**

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated		HGM class to use in rating
Slope + Riverine	☐	Riverine
Slope + Depressional	☐	Depressional
Slope + Lake Fringe	☐	Lake Fringe
Depressional + Riverine along stream within boundary of depression	☐	Depressional
Depressional + Lake Fringe	☐	Depressional
Riverine + Lake Fringe	☐	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	☐	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number **Wetland A**

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?

D 1.1. Characteristics of surface water outflows from the wetland: ☐ Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 ☐ Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 ☑ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1		**1**
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4	No = 0	**0**
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): ☑ Wetland has persistent, ungrazed, plants > 95% of area points = 5 ☐ Wetland has persistent, ungrazed, plants > ½ of area points = 3 ☐ Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 ☐ Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0		**5**
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* ☐ Area seasonally ponded is > ½ total area of wetland points = 4 ☐ Area seasonally ponded is > ¼ total area of wetland points = 2 ☑ Area seasonally ponded is < ¼ total area of wetland points = 0		**0**
Total for D 1	Add the points in the boxes above	**6**

Rating of Site Potential If score is: ___ **12-16 = H** ✓ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?

D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	**1**
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	**1**
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	**0**
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____	Yes = 1 No = 0	**0**
Total for D 2	Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___ **3 or 4 = H** ✓ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0	**0**
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	**0**
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)?	Yes = 2 No = 0	**0**
Total for D 3	Add the points in the boxes above	**0**

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** ✓ **0 = L** *Record the rating on the first page*

Wetland name or number **Wetland A**

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: — **0**

- ☐ Wetland is a depression or flat depression with no surface water leaving it (no outlet) — points = 4
- ☐ Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet — points = 2
- ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch — points = 1
- ☑ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing — points = 0

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* — **3**

- ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet — points = 7
- ☐ Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet — points = 5
- ☑ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet — points = 3
- ☐ The wetland is a "headwater" wetland — points = 3
- ☐ Wetland is flat but has small depressions on the surface that trap water — points = 1
- ☐ Marks of ponding less than 0.5 ft (6 in) — points = 0

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* — **3**

- ☐ The area of the basin is less than 10 times the area of the unit — points = 5
- ☑ The area of the basin is 10 to 100 times the area of the unit — points = 3
- ☐ The area of the basin is more than 100 times the area of the unit — points = 0
- ☐ Entire wetland is in the Flats class — points = 5

Total for D 4 — Add the points in the boxes above — **6**

Rating of Site Potential If score is: ___ **12-16 = H** ✓ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	**1**
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	**1**
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	**1**
Total for D 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: ✓ **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* — **0**

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

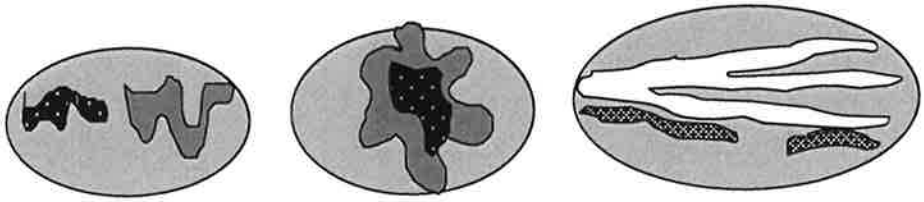
- ☐ • Flooding occurs in a sub-basin that is immediately down-gradient of unit. — points = 2
- ☐ • Surface flooding problems are in a sub-basin farther down-gradient. — points = 1
- ☐ Flooding from groundwater is an issue in the sub-basin. — points = 1
- ☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ — points = 0
- ☑ There are no problems with flooding downstream of the wetland. — points = 0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 — **0**

Total for D 6 — Add the points in the boxes above — **0**

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** ✓ **0 = L** *Record the rating on the first page*

Wetland name or number **Wetland A**

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed ____Emergent ____Scrub-shrub (areas where shrubs have > 30% cover) __✓__Forested (areas where trees have > 30% cover) *If the unit has a Forested class, check if:* __✓__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon 4 structures or more: points = 4 3 structures: points = 2 **2 structures: points = 1** 1 structure: points = 0	**1**
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated __✓__Seasonally flooded or inundated ____Occasionally flooded or inundated __✓__Saturated only ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** ____**Freshwater tidal wetland** 4 or more types present: points = 3 3 types present: points = 2 **2 types present: points = 1** 1 type present: points = 0 **2 points** **2 points**	**1**
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species **5 - 19 species** < 5 species points = 2 **points = 1** points = 0	**1**
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	**0**

Wetland name or number **Wetland A**

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ✓ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ✓ Standing snags (dbh > 4 in) within the wetland ✓ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ___ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**3**
Total for H 1 — Add the points in the boxes above	**6**

Rating of Site Potential If score is: ___ **15-18 = H** ___ **7-14 = M** ✓ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 6 = 6 % If total accessible habitat is: ☐ > 1/3 (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 1 + [(% moderate and low intensity land uses)/2] 28 = 29 % ☐ Undisturbed habitat > 50% of Polygon — points = 3 ☑ Undisturbed habitat 10-50% and in 1-3 patches — points = 2 ☐ Undisturbed habitat 10-50% and > 3 patches — points = 1 ☐ Undisturbed habitat < 10% of 1 km Polygon — points = 0	**2**
H 2.3. Land use intensity in 1 km Polygon: If ☐ > 50% of 1 km Polygon is high intensity land use — points = (- 2) ☑ ≤ 50% of 1 km Polygon is high intensity — points = 0	**0**
Total for H 2 — Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___ **4-6 = H** ✓ **1-3 = M** ___ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: — points = 2 ☑ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan ☐ Site has 1 or 2 priority habitats (listed on next page) within 100 m — points = 1 ☐ Site does not meet any of the criteria above — points = 0	**2**

Rating of Value If score is: ✓ **2 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number **Wetland A**

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

☑ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☑ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

☑ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number **Wetland A**

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

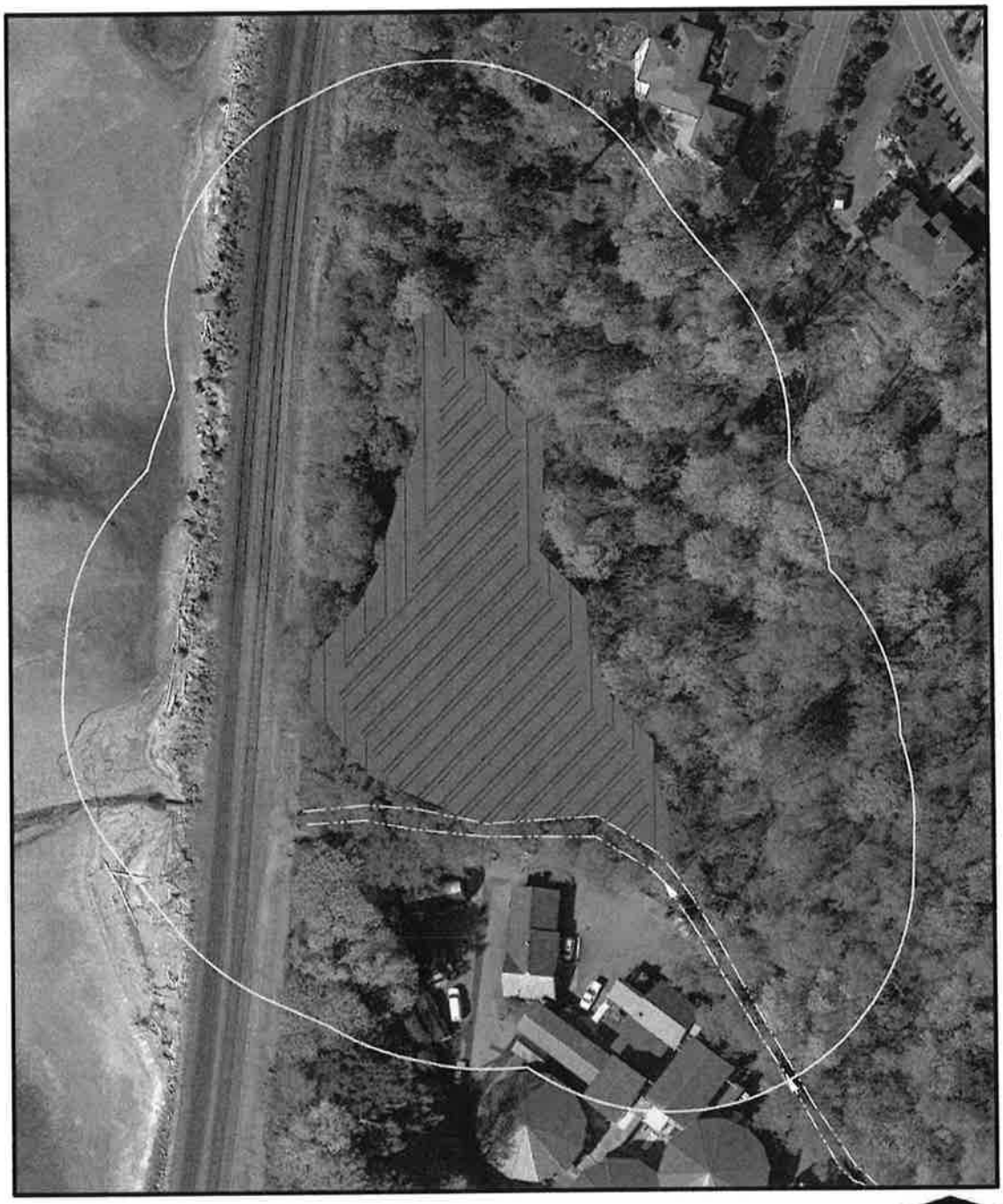
Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number **Wetland A**

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon**	**Cat. I**
SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating**	**Cat I**
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**	**Cat. II**
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3**	**Cat. III**
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**N/A**

MWWD - WWTF LAB-ADMIN BLDG

WETLAND RATING FIGURE 1- WETLAND A



LEGEND

- FORESTED VEGETATION
- SATURATED ONLY
- SEASONALLY FLOODED
- 150' FROM WL BOUNDARY
- PERENNIAL STREAM

Scale 1" = 100'

0 50 100 150 200

Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E. Suite 106 Everett, Washington 98208

Phone: (425) 337-3174

Fax: (425) 337-3045

Email: mailbox@wetlandresources .com

WETLAND RATING

Wetland A

Mukilteo Water & Wastewater District

Attn: Rick Matthews

7824 Mukilteo Speedway

Mukilteo, WA 98275

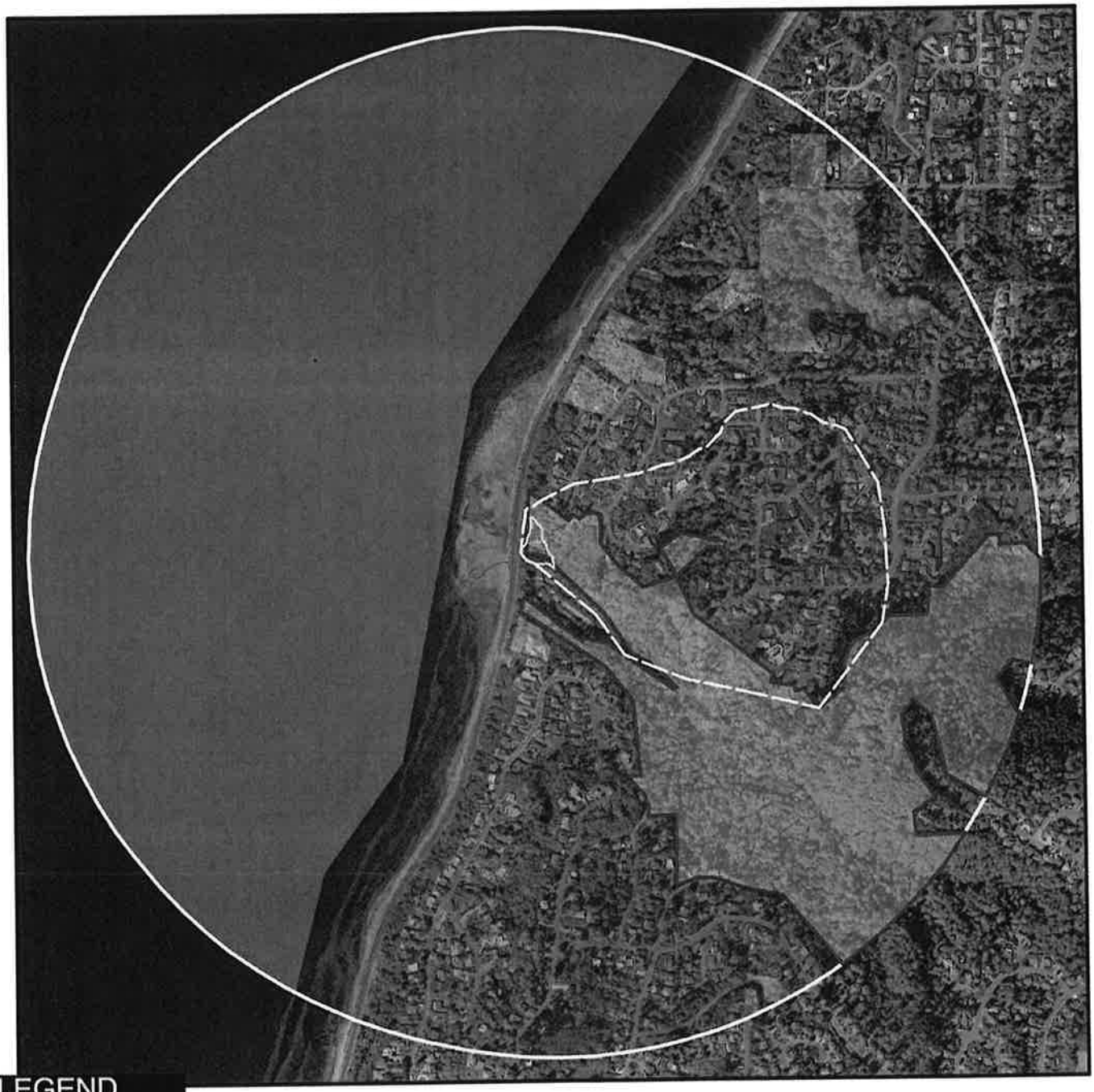
Figure A-1

WRI Job # 18057

Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG

WETLAND RATING FIGURE 2- WETLAND A



LEGEND

- RELATIVELY UNDISTURBED
- LOW/MOD. INTENSITY
- HIGH INTENSITY
- ACCESSIBLE HABITAT
- WETLAND
- 1 KM FROM WETLAND
- CONTRIBUTING BASIN

Scale 1" = 1,000'

0 1,000 2,000

CONTRIBUTING BASIN AREA RELATIVE TO WETLAND UNIT IS 93:1

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Phone: (425) 337-3174

Fax: (425) 337-3045

Email: mailbox@wetlandresources .com

WETLAND RATING

Wetland A

Mukilteo Water & Wastewater District

Attn: Rick Matthews

7824 Mukilteo Speedway

Mukilteo, WA 98275

Figure A-2

WRI Job # 18057

Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG

WETLAND RATING FIGURE 3- WETLAND A

LEGEND

WETLAND

AQUATIC RESOURCES ON THE 303(d) LIST

Scale 1" = 2,000'

0 2,000 4,000

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Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources .com

WETLAND RATING
Wetland A

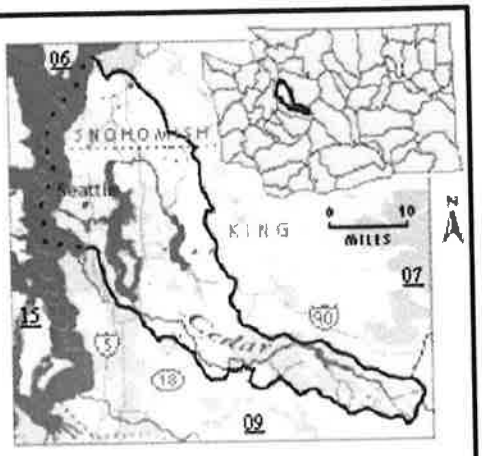
Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure A-3
WRI Job # 18057
Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG
WETLAND RATING FIGURE 4- WETLAND A

WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.



Counties

- King
- Snohomish

Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
	Dissolved Oxygen Temperature	Approved by EPA	
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	Tricia Shoblom 425-649-7288
Issaquah Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Little Bear Creek Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svricek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svricek 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svricek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svricek 425-649-7036

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources .com

WETLAND RATING
Wetland A

Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure A-4
WRI Job # 18057
Rated by: MK

Wetland name or number **Wetland B**

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B - 18057 MWWD Date of site visit: 3/1/18

Rated by MK Trained by Ecology? ✓ Yes ___No Date of training 3/2015

HGM Class used for rating SLOPE Wetland has multiple HGM classes? ___Y ✓ N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY III (based on functions ✓ or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

___ **Category II** – Total score = 20 - 22

✓ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M [L]	H [M] L	H M [L]	
Landscape Potential	H [M] L	H [M] L	H [M] L	
Value	H M [L]	H M [L]	[H] M L	TOTAL
Score Based on Ratings	**4**	**5**	**6**	**15**

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	✓

Wetland name or number **Wetland B**

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	A1
Hydroperiods	H 1.2	A1
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	A5
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	A5
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	A1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	A3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	A4

Wetland name or number **Wetland B**

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

✓ The wetland is on a slope (*slope can be very gradual*),
✓ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
✓ The water leaves the wetland **without being impounded**.

NO – go to 5 **YES – The wetland class is Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number **Wetland B**

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number **Wetland B**

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)*		
☐ Slope is 1% or less	points = 3	**0**
☐ Slope is > 1%-2%	points = 2	
☐ Slope is > 2%-5%	points = 1	
☑ Slope is greater than 5%	points = 0	
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 [No = 0]		**0**
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.*		
☐ Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6	**3**
☑ Dense, uncut, herbaceous plants > ½ of area	points = 3	
☐ Dense, woody, plants > ½ of area	points = 2	
☐ Dense, uncut, herbaceous plants > ¼ of area	points = 1	
☐ Does not meet any of the criteria above for plants	points = 0	
Total for S 1 — Add the points in the boxes above		**3**

Rating of Site Potential If score is: ___ **12 = H** ___ **6-11 = M** ✓ **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? [Yes = 1] No = 0	**1**
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? [No = 0] Yes = 1 Other sources _____	**0**
Total for S 2 — Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: ✓ **1-2 = M** ___ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? [No = 0] Yes = 1	**0**
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* [No = 0] Yes = 1	**0**
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* [No = 0] Yes = 2	**0**
Total for S 3 — Add the points in the boxes above	**0**

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** ✓ **0 = L** *Record the rating on the first page*

Wetland name or number **Wetland B**

SLOPE WETLANDS **Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream erosion	
S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* ☑ Dense, uncut, **rigid** plants cover > 90% of the area of the wetland — points = 1 ☐ All other conditions — points = 0	**1**

Rating of Site Potential If score is: **✓ 1 = M ___0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	**1**

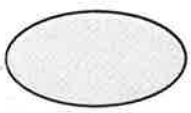
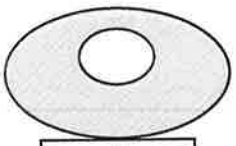
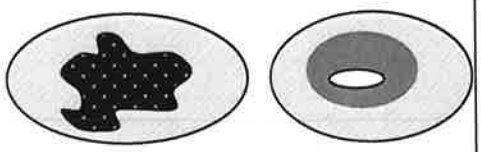
Rating of Landscape Potential If score is: **✓ 1 = M ___0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: ☐ The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) — points = 2 ☐ Surface flooding problems are in a sub-basin farther down-gradient — points = 1 ☑ No flooding problems anywhere downstream — points = 0	**0**
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	**0**
Total for S 6 — Add the points in the boxes above	**0**

Rating of Value If score is: **___2-4 = H ___1 = M ✓ 0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number **Wetland B**

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed ____Emergent ____Scrub-shrub (areas where shrubs have > 30% cover) __✓__Forested (areas where trees have > 30% cover) *If the unit has a Forested class, check if:* __✓__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon 4 structures or more: points = 4 3 structures: points = 2 **2 structures: points = 1** 1 structure: points = 0	**1**
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated ____Seasonally flooded or inundated ____Occasionally flooded or inundated __✓__Saturated only ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** ____**Freshwater tidal wetland** 4 or more types present: points = 3 3 types present: points = 2 2 types present: points = 1 **1 type present: points = 0** **2 points** **2 points**	**0**
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species **5 - 19 species** < 5 species points = 2 **points = 1** points = 0	**1**
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low = 1 point**  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	**1**

Wetland name or number **Wetland B**

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ✓ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ✓ Standing snags (dbh > 4 in) within the wetland ___ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ___ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ✓ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**3**
Total for H 1 — Add the points in the boxes above	**6**

Rating of Site Potential If score is: ___ **15-18 = H** ___ **7-14 = M** ✓ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 8 = 8 % If total accessible habitat is: ☐ > 1/3 (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 1 + [(% moderate and low intensity land uses)/2] 26 = 27 % ☐ Undisturbed habitat > 50% of Polygon — points = 3 ☑ Undisturbed habitat 10-50% and in 1-3 patches — points = 2 ☐ Undisturbed habitat 10-50% and > 3 patches — points = 1 ☐ Undisturbed habitat < 10% of 1 km Polygon — points = 0	**2**
H 2.3. Land use intensity in 1 km Polygon: If ☐ > 50% of 1 km Polygon is high intensity land use — points = (- 2) ☑ ≤ 50% of 1 km Polygon is high intensity — points = 0	**0**
Total for H 2 — Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___ **4-6 = H** ✓ **1-3 = M** ___ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: — points = 2 ☑ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan ☐ Site has 1 or 2 priority habitats (listed on next page) within 100 m — points = 1 ☐ Site does not meet any of the criteria above — points = 0	**2**

Rating of Value If score is: ✓ **2 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number **Wetland B**

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

☑ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☑ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

☑ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number **Wetland B**

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number **Wetland B**

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon**	**Cat. I**
SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating**	**Cat I**
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**	**Cat. II**
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3**	**Cat. III**
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**N/A**

MWWD - WWTF LAB-ADMIN BLDG
WETLAND RATING FIGURE 1- WETLAND B

LEGEND

- FORESTED VEGETATION
- SATURATED ONLY
- 150' FROM WL BOUNDARY
- PERENNIAL STREAM

Scale 1" = 100'

0 50 100 150 200

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources .com

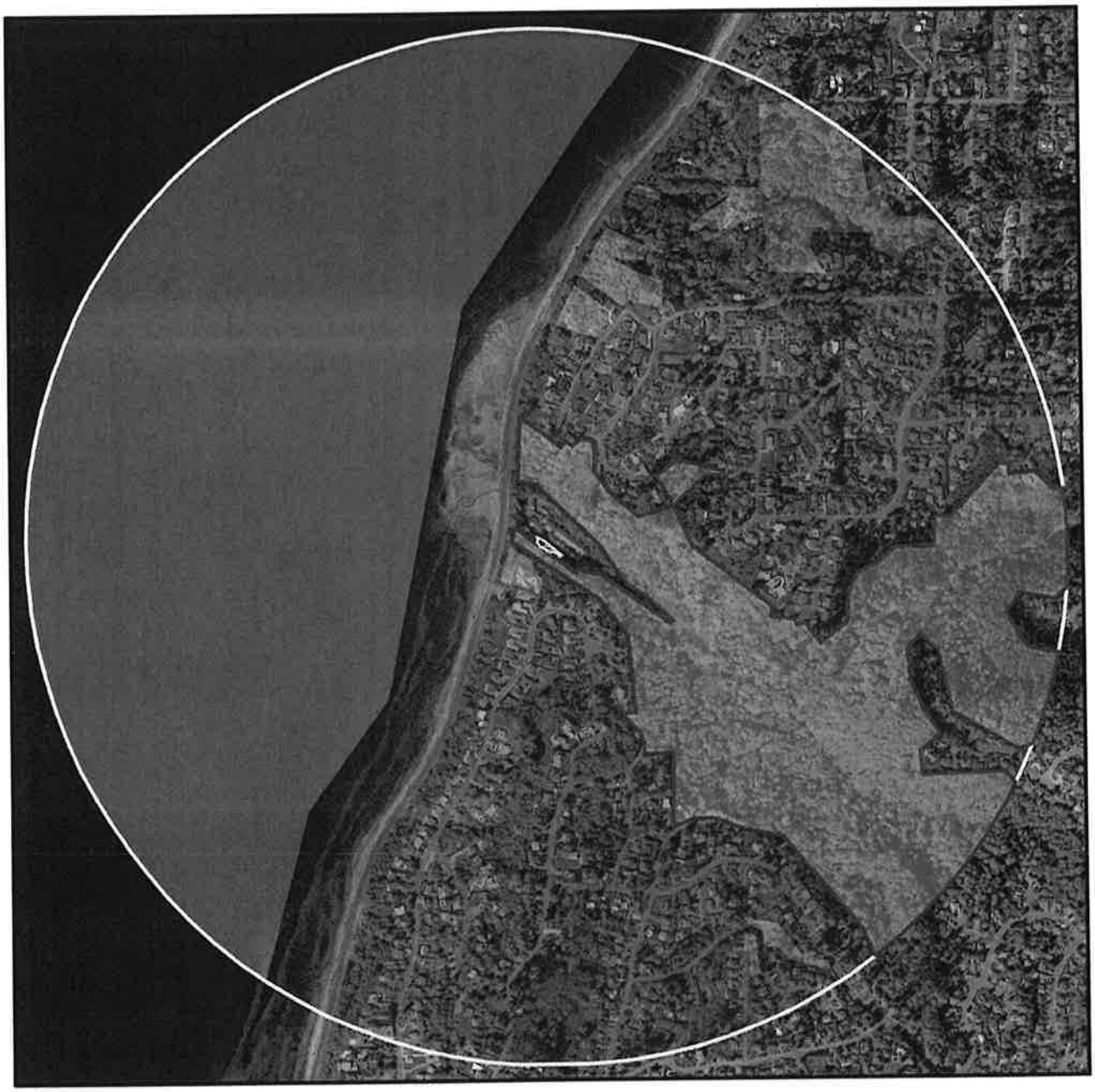
WETLAND RATING
Wetland B

Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure B-1
WRI Job # 18057
Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG

WETLAND RATING FIGURE 2- WETLAND B



LEGEND

- RELATIVELY UNDISTURBED
- LOW/MOD. INTENSITY
- HIGH INTENSITY
- ACCESSIBLE HABITAT
- WETLAND
- 1 KM FROM WETLAND

Scale 1" = 1,000'

0 1,000 2,000

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Email: mailbox@wetlandresources .com

WETLAND RATING

Wetland B

Mukilteo Water & Wastewater District

Attn: Rick Matthews

7824 Mukilteo Speedway

Mukilteo, WA 98275

Figure B-2

WRI Job # 18057

Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG
WETLAND RATING FIGURE 3- WETLAND B

LEGEND

WETLAND

AQUATIC RESOURCES ON THE 303(d) LIST

Scale 1" = 2,000'

0 2,000 4,000

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Email: mailbox@wetlandresources .com

WETLAND RATING
Wetland B

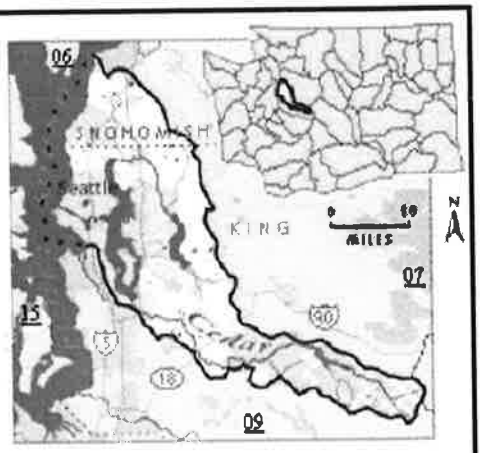
Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure B-3
WRI Job # 18057
Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG
WETLAND RATING FIGURE 4- WETLAND B

WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.



Counties

- King
- Snohomish

Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
	Dissolved Oxygen Temperature	Approved by EPA	
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	Tricia Shoblom 425-649-7288
Issaquah Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Little Bear Creek Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svrjcek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svrjcek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

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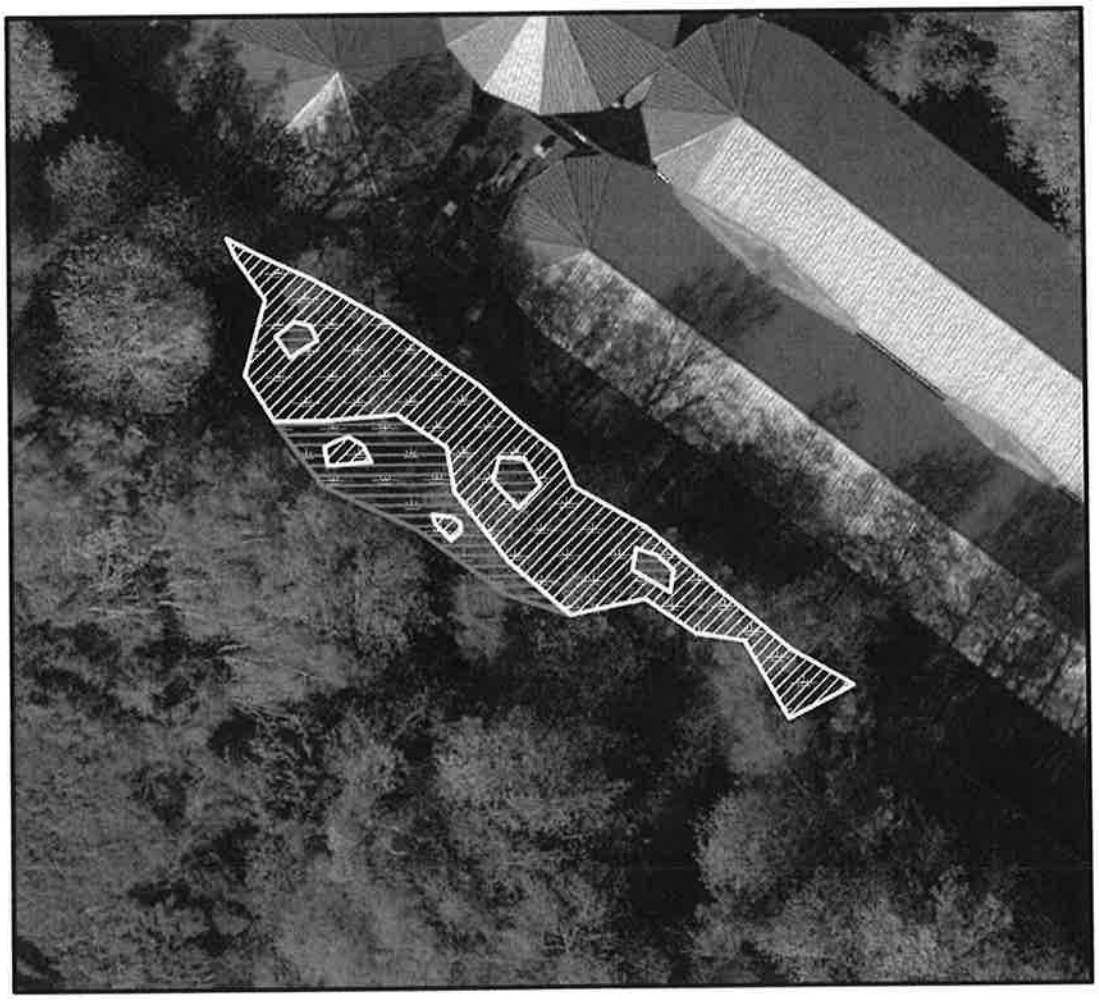
Fax: (425) 337-3045
Email: mailbox@wetlandresources .com

WETLAND RATING
Wetland B

Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure B-4
WRI Job # 18057
Rated by: MK

MWWD - WWTF LAB-ADMIN BLDG
WETLAND RATING FIGURE 5- WETLAND B



Scale 1" = 50'

0 25 50 75 100

LEGEND

- WETLAND
- DENSE WOODY
- DENSE UNCUT HERBACEOUS
- DENSE UNCUT RIDGID

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Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
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WETLAND RATING
Wetland B

Mukilteo Water & Wastewater District
Attn: Rick Matthews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Figure B-5
WRI Job # 18057
Rated by: MK

APPENDIX B: WETLAND DETERMINATION DATA SHEETS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Big Gulch WWTF City/County: City of Mukilteo Sampling Date: 3/1/18

Applicant/Owner: Mukilteo Water & Wastewater District State: WA Sampling Point: S1 (in Wet A)

Investigator(s): MK, EC Section, Township, Range: S17, 28N, 04E, W.M.

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): LRR-A Lat: 47.911 Long: -122.313 Datum: NAD83

Soil Map Unit Name: Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes NWI classification: PFOC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑ No ☐	
Wetland Hydrology Present?	Yes ☑ No ☐	

Remarks:

In Wetland A (north of stream). The period prior to the site investigation (December 2017, January-February 2018) was wetter than normal, based on WETS table analysis.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m^2			
1. Alnus rubra	85	Y	FAC
2.			
3.			
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m^2			
1. Rubus spectabilis	50	Y	FAC
2. Oemleria cerasiformis	35	Y	FACU
3.			
4.			
5.			
	85	= Total Cover	
Herb Stratum (Plot size: 1m^2			
1. Tolmeia menziesii	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 3m^2			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S1 (in Wet A)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y 3/2	100					Silty Loam	
10-16	10YR 4/1	85	10YR 4/6	15	C	M	Silty Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 9"

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Big Gulch WWTF City/County: City of Mukilteo Sampling Date: 3/1/18

Applicant/Owner: Mukilteo Water & Wastewater District State: WA Sampling Point: S2

Investigator(s): MK, EC Section, Township, Range: S17, 28N, 04E, W.M.

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): LRR-A Lat: 47.911 Long: -122.313 Datum: NAD83

Soil Map Unit Name: Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks:

Outside Wetland A (north of stream). The period prior to the site investigation (December 2017, January-February 2018) was wetter than normal, based on WETS table analysis.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m^2			
1. Acer macrophyllum	50	Y	FACU
2.			
3.			
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m^2			
1. Oemleria cerasiformis	35	Y	FACU
2. Holodiscus discolor	25	Y	FACU
3.			
4.			
5.			
	60	= Total Cover	
Herb Stratum (Plot size: 1m^2			
1. Polystichum munitum	25	Y	FACU
2. Gaultheria shallon	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	= Total Cover	
Woody Vine Stratum (Plot size: 3m^2			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	155	x 4 =	620
UPL species		x 5 =	0
Column Totals:	155 (A)		620 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

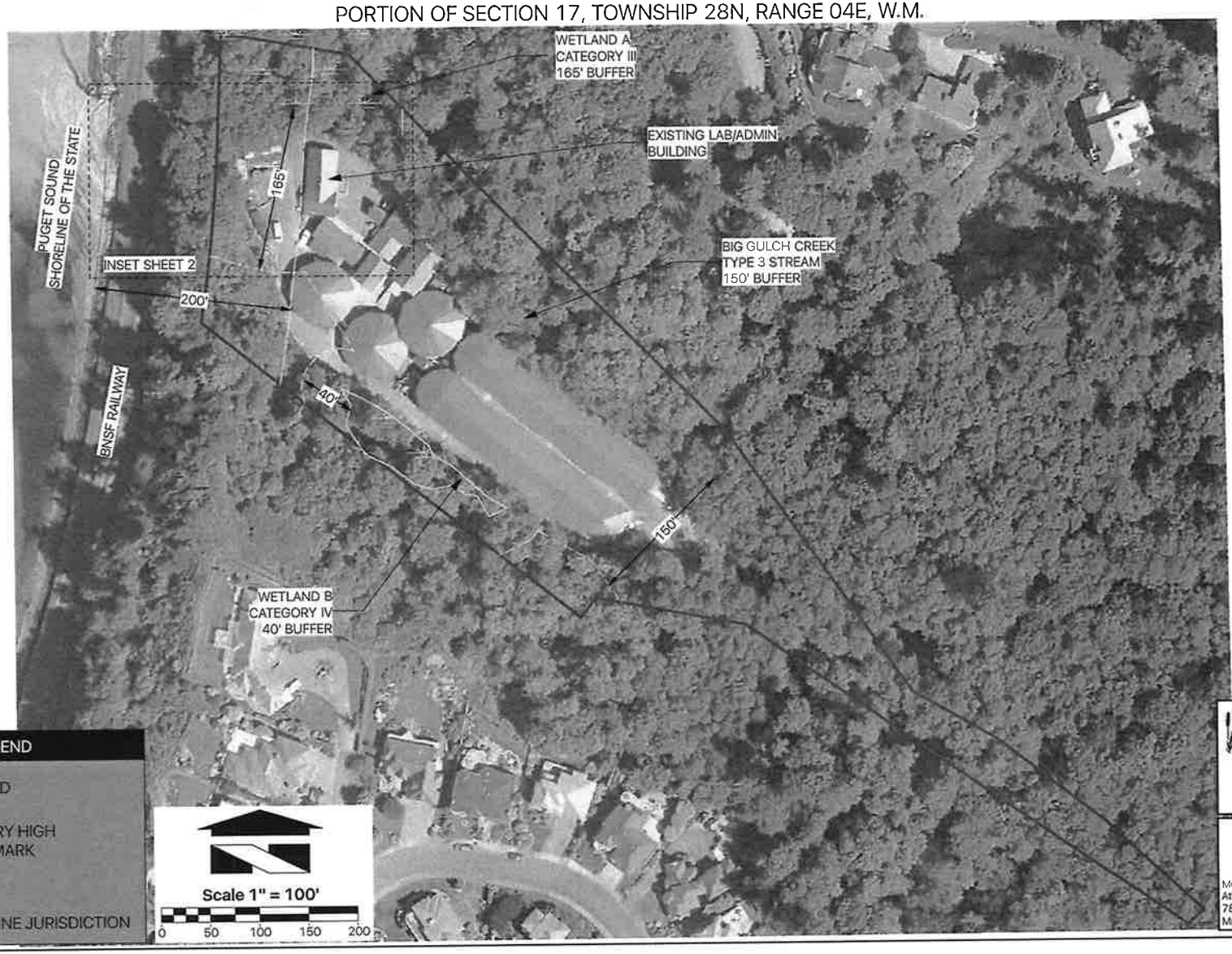
Remarks:

APPENDIX C: CRITICAL AREAS STUDY MAPS

CRITICAL AREA STUDY - EXISTING CONDITIONS

MWWD - Big Gulch WWTF

PORTION OF SECTION 17, TOWNSHIP 28N, RANGE 04E, W.M.



Wetland Resources, Inc.
Delineation | Mitigation | Restoration | Habitat Creation | Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

Critical Area Study - Existing Conditions
MWWD - Big Gulch WWTF
City of Mukilteo

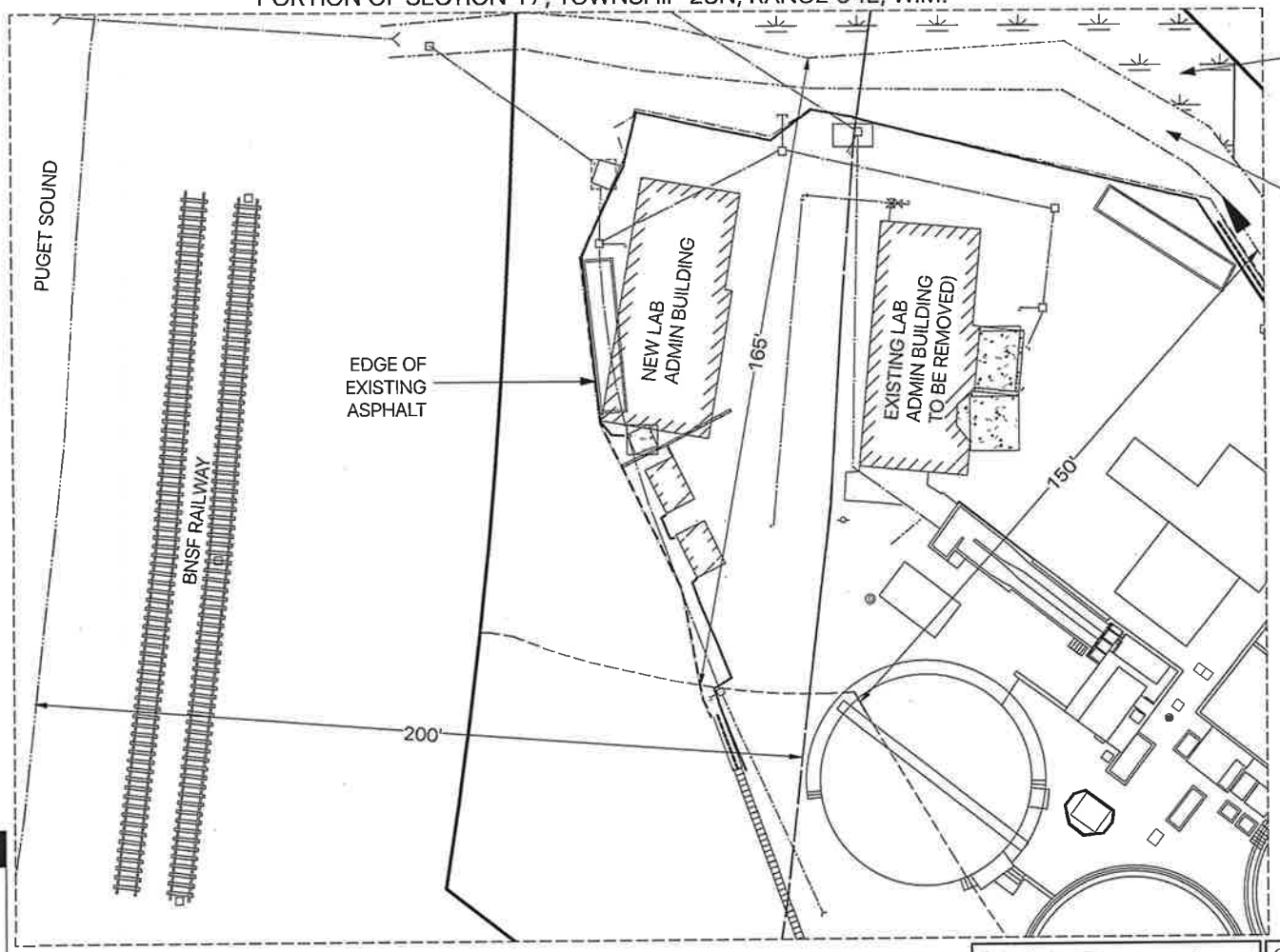
Mukilteo Water & Wastewater District
Attn: Rick Mathhews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Sheet 1/2
WRI#: 18057
Drawn by: MK
7.17.2018

CRITICAL AREA STUDY - PROPOSED DEVELOPMENT

MWWD - Big Gulch WWTF

PORTION OF SECTION 17, TOWNSHIP 28N, RANGE 04E, W.M.



Scale 1" = 100'

0 50 100 150 200

LEGEND

- WETLAND
- ORDINARY HIGH WATER MARK
- BUFFER
- SHORELINE JURISDICTION

Wetland Resources, Inc.
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources .com

Critical Area Study - Proposed Development
MWWD - Big Gulch WWTF
City of Mukilteo

Mukilteo Water & Wastewater District
Attn: Rick Mathhews
7824 Mukilteo Speedway
Mukilteo, WA 98275

Sheet 2/2
WRI#: 18057
Drawn by: MK
7.17.2018

PanGEO
INCORPORATED
Geotechnical & Earthquake Engineering Consultants

July 11, 2018
PanGEO Project No. 18-113

Mr. Barry Baker, P.E.
Gray & Osborne, Inc.
1130 Rainier Avenue South, Suite 300
Seattle, WA 98144

Subject: Preliminary Geotechnical Report
Proposed Office-Laboratory Building
Big Gulch WWTF, Mukilteo, Washington

Dear Mr. Baker:

As requested, PanGEO, Inc. is pleased to present this preliminary geotechnical report for the proposed building to be constructed at the existing Big Gulch Wastewater Treatment Facility (WWTF) in Mukilteo, Washington. Design details of the proposed building are not available at this time. As such, we anticipate that additional geotechnical input will likely be needed during the final design phase of the project, or the preliminary recommendations outlined in this report may need to be modified.

In summary, the site is underlain by about 35 to 40 feet of soils and is prone to post-construction settlement and seismically-induced soil liquefaction. It is our opinion that the proposed building should be supported on piles.

Should you have any questions, please do not hesitate to call.

Sincerely,

Siew L. Tan, P.E.
Principal Geotechnical Engineer

Encl.: Geotechnical Report

3213 Eastlake Avenue East, Suite B
Seattle, WA 98102
T. (206) 262-0370
F. (206) 262-0374

TABLE OF CONTENTS

LIST OF ATTACHMENTS

PRELIMINARY GEOTECHNICAL REPORT
PROPOSED OFFICE-LABORATORY BUILDING
BIG GULCH WWTF
MUKILTEO, WASHINGTON

1.0 GENERAL

This report presents the results of geotechnical studies that were undertaken to support the design of the proposed office-laboratory building to be constructed at the Big Gulch Wastewater Treatment Facility in Mukilteo, Washington. Our service scope included reviewing readily available geologic and geotechnical data, observing the drilling of two test borings at the site, and developing the conclusions and recommendations presented in this report.

2.0 SITE AND PROJECT DESCRIPTION

The existing Big Gulch WWTF is located at 9417 62nd Place West, Mukilteo, WA 98275. The approximate location of the facility is shown in Figure 1. It generally borders Big Gulch Creek to the north and east, Puget Sound shoreline to the west, and a steep undeveloped slope to the south.

The area of proposed construction is located at the northwest corner of the WWTF. The area is paved with asphalt, and is being used as a storage area. We understand that the proposed building will be a two-story at-grade building. The approximate footprint of the proposed building is shown on the attached Figure 2, but may be subject to change. No other design details are available at this time.

The conclusions and recommendations in this report are based on our understanding of the proposed development, which is in turn based on the project information provided. If the above project description is incorrect, or the project information changes, we should be consulted to review the recommendations contained in this study and make modifications, if needed.

3.0 SUBSURFACE EXPLORATIONS

3.1 CURRENT EXPLORATIONS

On May 31, 2018, PanGEO completed two test borings (PG-1 and PG-2) at the approximate locations shown on Figure 2. The test borings were drilled by Boretec1 of Bellevue, Washington, using 6-inch diameter (outside) hollow stem augers. Both test borings were drilled to about 51½ feet below the existing ground surface. Soil samples were obtained from the borings at 2½- and 5-foot intervals in conjunction with Standard Penetration Test (SPT) sampling methods in general

accordance with ASTM test method D-1586, in which the samples are obtained using a 2-inch outside diameter split-spoon sampler. The sampler was driven into the soil a distance of 18 inches using a 140-pound weight falling a distance of 30 inches. The number of blows required for each 6-inch increment of sampler penetration was recorded. The number of blows required to achieve the last 12 inches of sample penetration is defined as the SPT N-value. The N-value provides an empirical measure of the relative density of cohesionless soil, or the relative consistency of fine-grained soils.

An engineer from PanGEO was present on a full time basis to observe the drilling, assist in sampling, and to describe and document the soil samples obtained from the borings. The soil samples were described and field classified in general accordance with the symbols and terms outlined in Figure A-1, and the summary boring logs are included as Figures A-2 and A-3.

Representative soil samples were submitted to laboratory for index testing. The tests include moisture contents, grain size distribution, and Atterberg Limits. The results are included in Appendix B of this report.

3.2 Previous Exploration

In addition to our test borings completed for the current study, we also reviewed readily available subsurface data completed for previous projects at the site. Specifically, we found one test boring (B-27) previously completed near the site. The approximate location of this test boring is shown in Figure 2, and the boring log is included in Appendix A, after the log for boring PG-2. This previous boring was drilled to a depth of about 29 feet.

4.0 SUBSURFACE CONDITIONS

4.1 Soil Conditions

The soil conditions encountered in the test borings completed at the site are quite consistent. For engineering purposes, the soils encountered in the test borings can be categorized into two engineering soil units (ESU). The following is a generalized description of the observed subsurface conditions:

Asphalt: Both borings PG-1 and PG-2 were drilled within the paved area, and encountered approximately 4 to 9 inches of asphalt.

Engineering Soil Unit 1 (ESU): Directly below the asphalt, the test borings encountered a thick layer of very loose to loose sand and soft silt. This soil unit was about 40-foot thick in PG-1 and about 35-foot thick in PG-2. The previous test boring B-27 was terminated at about 29 feet, within this soil unit, and hence the thickness of this soil unit at B-27 is not readily known. We interpret this soil unit as a combination of fill, alluvium deposited by the Big Gulch Creek, and landslide deposits originated from the upslope area.

Engineering Soil Unit 2 (ESU-2): Directly below ESU-1, PG-1 and PG-2 encountered dense to very dense sand with silt layers. This unit extended to at least the termination depths of PG-1 and PG-2 at about 51 ½ feet below the existing ground surface.

Our descriptions of subsurface conditions are based on the conditions encountered at the time of our exploration. Soil conditions between our exploration locations may vary from those encountered. The nature and extent of variations between our exploratory locations may not become evident until construction. If variations do appear, PanGEO should be requested to reevaluate the recommendations in this report and to modify or verify them in writing prior to proceeding with earthwork and construction.

4.2 GROUNDWATER

Groundwater was encountered at about 7 feet deep in both test borings PG-1 and PG-2 at the time of drilling. In the previous test boring B-27, the measured groundwater was about 3 feet deep. We anticipate that the groundwater levels at the site to fluctuate seasonally, and may be influenced by the water level in the Big Gulch Creek, and potentially the tidal fluctuations in Puget Sound. During significant storm events, groundwater may be near the ground surface.

Because of shallow groundwater conditions at the site, the finished floor of the proposed building should be placed as high as practical, to avoid potential intrusion of groundwater into the building.

5.0 GEOTECHNICAL RECOMMENDATIONS

5.1 Seismic Design Considerations

5.1.1 IBC Seismic Site Class

The 2015 International Building Code (IBC) seismic design section provides a basis for seismic design of structures. Because the submerged Engineering Soil Unit 1 (upper 35 to 40 feet of the site soils) is prone to soil liquefaction (see additional discussions in Section 5.1.2 of this report), Site Class F should be assumed for the seismic design of the project. With Site Class F, a site-specific ground response analysis will be required unless the fundamental period of vibration of the building is less than 0.5 seconds. Based the currently-proposed building height of two stories, we anticipate the building period of vibration to be less than 0.5 seconds, but should be verified by the structural engineer. As such, we do not anticipate the needs for a site-specific ground response analysis, and Site Class E may be used for the seismic design of the proposed building. However, if the building period exceeds 0.5 seconds, PanGEO should be contacted to perform a site-specific ground response analysis.

5.1.2 Liquefaction Potential and Seismic Settlement

Liquefaction could occur when saturated soils are subjected to cyclic loading which can cause the pore water pressure to increase in the soils thereby reducing the inter-granular stresses. As the inter-granular stresses are reduced, the shearing resistance of the sand decreases. If pore pressures develop to the point where the effective stresses acting between the grains become zero, the soil particles will be in suspension and behave like a viscous fluid. Typically loose, saturated granular soils have the greatest potential for liquefaction, while more dense soil deposits with higher silt or clay contents have a lesser potential. Primary factors controlling the development of liquefaction include intensity and duration of strong ground motion, characteristics of subsurface soils, in-situ stress conditions and the depth to groundwater. Potential effects of soil liquefaction include temporary loss/reduction of bearing capacity and settlement.

For the levels of ground shaking consistent with 2015 IBC, it is our opinion that the potential for soil liquefaction at the site is high. Based on our analysis, we estimate that liquefaction-induced ground subsidence due from a seismic consistent with the 2015 IBC may be as much a foot.

It is our opinion that conventional footings are not appropriate for the proposed development unless the risk of soil liquefaction is properly mitigated by means of soil densification such as

aggregate piers, compaction grouting, etc. Alternatively, a deep foundation system such as augercast piles can be utilized to transfer the building loads below the liquefiable layer.

5.2 Foundation Support Alternatives

5.2.1 Conventional Footing with Ground Improvement

Conventional footings may be utilized to support the proposed building provided that the liquefiable soil layer is adequately improved to meet the project performance criteria. Aggregate piers such as Geopiers® and stone columns are commonly used to densify sand, but the vibrations associated with its installation should be considered. Alternatively, it is our opinion that compaction grouting may be used to densify the sand. Compaction grouting involves injecting low-slump concrete at high pressure to density the targeted soil layer. The vibrations associated with compaction grouting is relatively minor. However, the cost for compaction grouting is likely significantly higher than aggregate piers, and may not be cost effective given the relatively small building footprint.

For a small lightweight two-story building, we anticipate that soil improvements to mitigate liquefaction settlement may need to extend to at least 15 to 20 feet below the ground surface. The design of compaction grouting and aggregate piers are typically performed by specialty contractors, based on settlement criteria provided by the structural engineer. PanGEO can provide additional input if needed.

Once the ground improvements are completed, conventional footings or a mat foundation may be constructed directly on the improved ground. The footings and mat foundation should be sized using the following parameters:

- Allowable Bearing Pressure – 4,000 psf
- Allowable Friction Coefficient – 0.35
- Allowable Passive Pressure – 250 pcf (main basement level)

These parameters may be increased by one-third for transient loads.

Soil improvements between footings should also be considered to improve the performance of the floor slabs.

5.2.3 Augercast Piles

Based on the size of the project and site access, it is our opinion that augercast piles are an appropriate option. Augercast piles are installed by drilling with a continuous flight hollow stem auger to the required depth, and pumping grout through the hollow stem of the auger as the auger is slowly withdrawn from the hole. After the auger is completely removed, steel reinforcement is placed in the grout-filled hole. The rate at which the auger is withdrawn must be consistent with the grout supply. If the auger is withdrawn too quickly, the pile will be under-grouted, resulting in "necking" of the pile. Necking can lead to contamination of the grout column from the caving or squeezing of the soil during the rapid withdrawal of the auger. The "necked" section of the pile would have a reduced load carrying capacity. Augercast piles may also have difficulty penetrating obstructions such as old foundations or boulders. However, obstructions encountered within about 10 feet of the surface could be readily removed with an excavator.

Minimum Pile Embedment/Spacing – Pile tips should extend at least 10 feet into competent soils. The top of competent soils (Soil Unit 2) ranged from about 35 to 40 feet deep in our test borings. For planning purposes, a pile length of 50 feet should be assumed, based on the results of boring PG-1. We also recommend that a minimum horizontal pile spacing of three times the pile diameter (center-to-center) be maintained.

Axial Capacity – We anticipate that 16- to 24-inch diameter piles will likely be used. We recommend that the following parameters be used to estimate the axial capacities of augercast piles. In the event of soil liquefaction, downdrag on the piles due to settlement of the liquefied soils should be considered in the sizing of piles.

Scenario 1 – No Liquefaction

- Allowable Passive Pressure – 350 pcf (within 5 feet of existing ground surface)
- Allowable Passive Pressure – 200 pcf (below 5 feet of existing ground surface)

Scenario 2 – Liquefaction

- Allowable Passive Pressure – 350 pcf (within 5 feet of existing ground surface)
- Allowable Passive Pressure – ignore (below 5 feet of existing ground surface)

Lateral Resistance from Pile Caps and Grade Beams – Lateral loads acting on the structure will be resisted by a combination of passive earth pressure acting on the pile caps and grade beams as well as from the lateral resistance of the augercast piles. The following passive pressure against the pile caps and grade beams may be used for design:

Lateral Pile Capacity - Lateral capacities of the augercast piles depends on a number of factors, including pile diameter, pile length, pile spacing and connection details. PanGEO is available to evaluate the lateral resistance of the augercast piles when the foundation design reaches a more advanced stage, with input from the structural engineer.

5.3 Floors Slabs

The selection of floor types (i.e., conventional slab-on grade versus structural slab) largely depends of the desired level of seismic performance. During a strong seismic event and occurrence of soil liquefaction, we estimated that the liquefaction-induced settlement may be as much as one foot, and conventional slab-on-grade floor will likely crack and damage due to settlement. Alternatively, the floor should be designed as structural slab to span between pile caps.

Concrete slab-on-grade floors, if selected, may be supported on on-site soils compacted in-place to a firm and unyielding condition or on newly placed structural fill placed upon adequately compacted onsite soils. If the onsite soils cannot be adequately compacted, overexcavation and replacement with granular structural fill such as Gravel Borrow is recommended. The adequacy of the floor subgrade should be evaluated by PanGEO during construction.

In spaces where moisture may be sensitive, the concrete slabs on grade should be constructed on a minimum 6-inch thick capillary break. The capillary break material should consist of open-graded, free-draining, crushed rock compacted to a firm and unyielding condition. The capillary break material should have no more than 10 percent passing the No. 4 sieve and less than 5 percent by weight of the material passing the U.S. Standard No. 100 sieve.

We also recommend that a 10-mil polyethylene vapor barrier be placed below the entire slab on grade.

6.0 CONSRUCTION CONSIDERATIONS

6.1 Temporary Dewatering

The groundwater levels at the site are anticipated to fluctuate seasonally, and may be subjected to tidal influence and the water levels in the Big Gulch Creek. If the earthwork construction will be performed in the drier summer months, and assuming that the excavation will be no more than 4 to 5 feet deep, it is likely that construction dewatering will not be needed. However, during winter-spring months, the groundwater level maybe quite shallow and close to the existing ground surface. As such, if excavation will be performed in the wet seasons, construction dewatering may be

needed. It is our opinion that if water is present in the excavation, it is likely that it can be controlled using sumps and pumps.

6.2 Temporary Sloped Excavations

It is our understanding the lower finished floor of the proposed building will roughly matches the existing grade. As such, we assume that the excavation for the building construction will be no more than about 4 to 5 feet deep. Where space is available, temporary sloped cuts can be used to reduce the height, extent and cost of temporary shoring. For planning purposes, temporary excavations may be sloped as steep as 1½H:1V (Horizontal:Vertical).

Temporary excavations should be constructed in accordance with Part N of the WAC (Washington Administrative Code) 296-155. The contractor is responsible for maintaining safe excavation slopes and/or shoring.

Temporary excavations should be evaluated in the field during construction based on actual observed soil conditions. If seepage is encountered, excavation slope inclinations may need to be reduced. During wet weather, the cut slopes may need to be flattened to reduce potential erosion or should be covered with plastic sheeting.

6.3 Structural Fill and Compaction

It is our opinion that on-site soils should not be used as structural fill. Imported structural fill should consist of Gravel Borrow or Crushed Surfacing Base Course as specified in WSDOT Standard Specifications, or an approved similar material.

Structural fill should be moisture conditioned to near its optimum moisture content, placed in loose, horizontal lifts less than 8 to 12 inches in thickness, and compacted to at least 95 percent of its maximum dry density as determined using ASTM D-1557 (Modified Proctor). The procedure to achieve proper density of a compacted fill depends on the size and type of compacting equipment, the number of passes, thickness of the lifts being compacted, and certain soil properties. If the excavation to be backfilled is constricted and limits the use of heavy equipment, smaller equipment can be used, but the lift thickness will need to be reduced to achieve the required relative compaction.

Generally, inadequately compacted soils are a result of poor construction technique or improper moisture content. Soils with high fines contents are particularly susceptible to becoming too wet and coarse-grained materials easily become too dry, for proper compaction. Silty or clayey soils

with a moisture content too high for adequate compaction should be dried as necessary, or moisture conditioned by mixing with drier materials, or other methods.

6.4 Wet Weather Earthwork Recommendations

General recommendations relative to earthwork performed in wet weather or in wet conditions are presented below. The following procedures are best management practices recommended for use in wet weather construction:

- Earthwork should be performed in small areas to minimize subgrade exposure to wet weather. Excavation or the removal of unsuitable soil should be followed promptly by the placement and compaction of clean structural fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance.
- During wet weather, the allowable fines content of the structural fill should be reduced to no more than 5 percent by weight based on the portion passing the 0.75-inch sieve. The fines should be non-plastic.
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water.
- Geotextile silt fences should be installed at strategic locations around the site to control erosion and the movement of soil.
- Excavation slopes and soils stockpiled on site should be covered with plastic sheeting.

6.5 Erosion and Drainage Considerations

Surface runoff can be controlled during construction by careful grading practices. Typically, this includes the construction of shallow, upgrade perimeter ditches or low earthen berms in conjunction with silt fences to collect runoff and prevent water from entering excavations or to prevent runoff from the construction area leaving the immediate work site. Temporary erosion control may require the use of geotextile silt fences and hay bales on the downhill side of the project to prevent water from leaving the site and potential storm water detention to trap sand and silt before the water is discharged to a suitable outlet. All collected water should be directed under control to a positive and permanent discharge system.

Permanent control of surface water should be incorporated in the final grading design. Adequate surface gradients and drainage systems should be incorporated into the design such that surface runoff is collected and directed away from the structure to a suitable outlet. Potential issues

associated with erosion may also be reduced by establishing vegetation within disturbed areas immediately following grading operations.

7.0 CLOSURE

We have prepared this report for Gray & Osborne and the project design team. Recommendations contained in this report are based on a site reconnaissance, a subsurface exploration program, review of pertinent subsurface information, and our understanding of the project. The study was performed using a mutually agreed-upon scope of services.

Variations in soil conditions may exist between the locations of the explorations and the actual conditions underlying the site. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at the site that are different from those described in this report, we should be notified immediately to review the applicability of our recommendations. Additionally, we should also be notified to review the applicability of our recommendations if there are any changes in the project scope.

The scope of our work does not include services related to construction safety precautions. Our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design. Additionally, the scope of our services specifically excludes the assessment of environmental characteristics, particularly those involving hazardous substances. We are not mold consultants nor are our recommendations to be interpreted as being preventative of mold development. A mold specialist should be consulted for all mold-related issues.

This report has been prepared for planning and design purposes for specific application to the proposed project in accordance with the generally accepted standards of local practice at the time this report was written. No warranty, express or implied, is made.

This report may be used only by the client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both off and on-site), or other factors including advances in our understanding of applied science, may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 24 months from its issuance. PanGEO should be notified if the project is delayed by more than 24 months from the date of this report so that we may review the applicability of our conclusions considering the time lapse.

It is the client's responsibility to see that all parties to this project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk. Any party other than the client who wishes to use this report shall notify PanGEO of such intended use and for permission to copy this report. Based on the intended use of the report, PanGEO may require that additional work be performed and that an updated report be reissued. Noncompliance with any of these requirements will release PanGEO from any liability resulting from the use this report.

Sincerely,

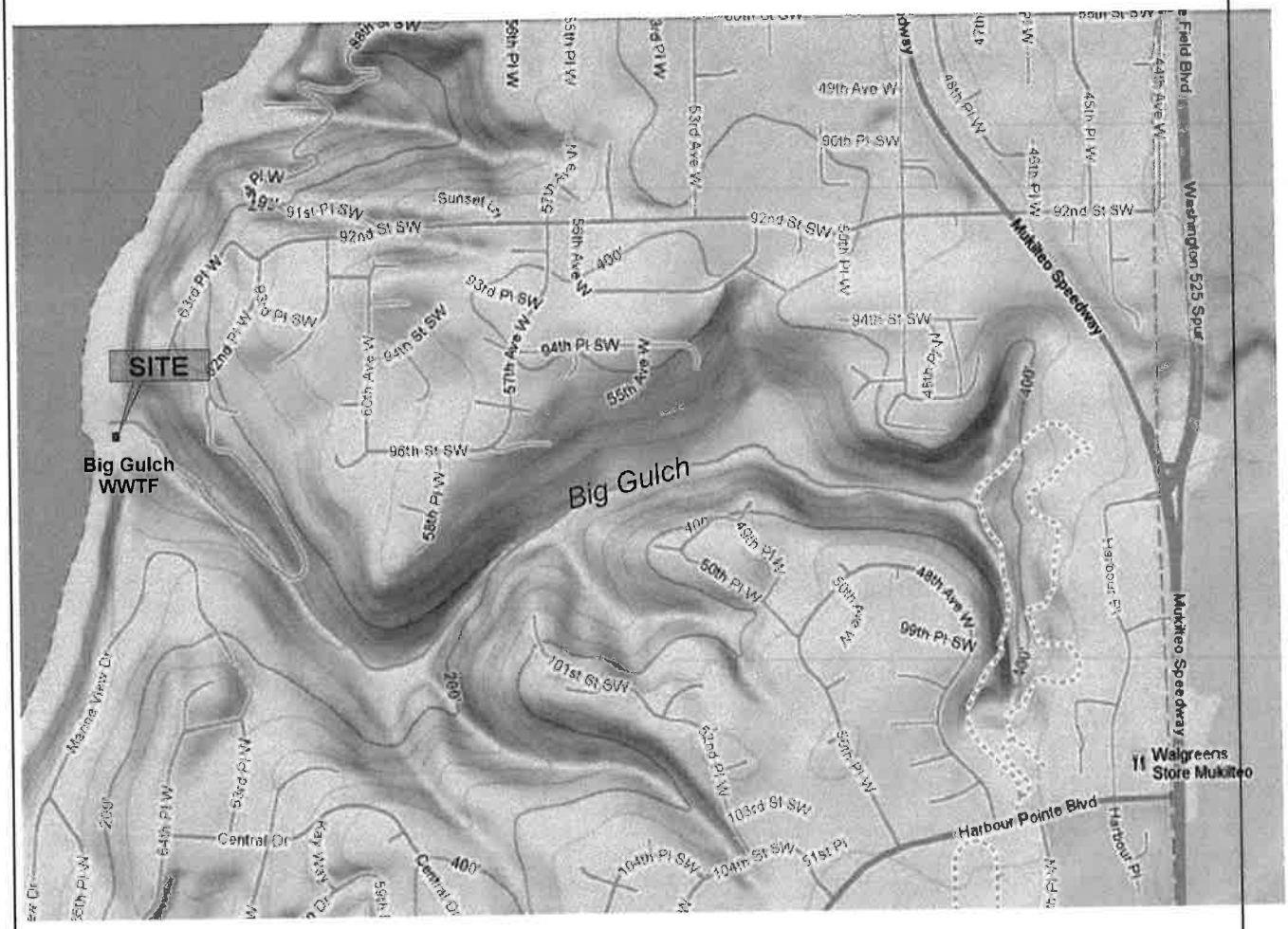
PanGEO, Inc.

Siew L Tan, P.E.
Principal Geotechnical Engineer

8.0 REFERENCES

International Code Council, 2015, *International Building Code (IBC), 2015.*

WSDOT, 2018, *Standard Specifications for Road, Bridge and Municipal Construction, M 41-10.*

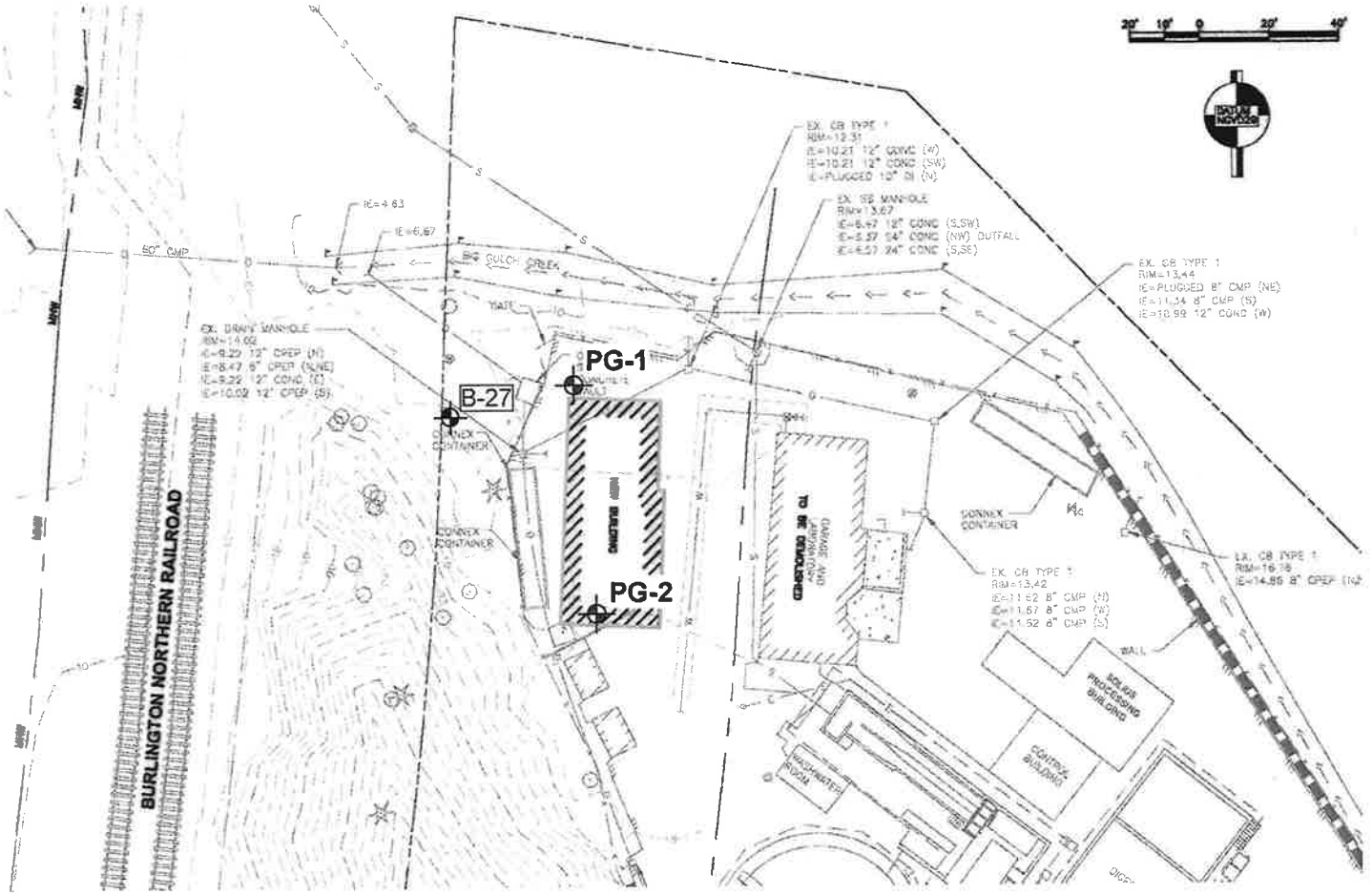


1000 Feet

Image Source: Google Maps.

PanGEO INCORPORATED	Proposed Office & Laboratory Building Big Gulch WWTF Mukilteo, Washington	VICINITY MAP	
		Project No. 13-004	Figure No. 1

13-004 Fig 1 Vicinity.grf 5/30/18 STS



Legend:

Current Test Boring

Previous Test Boring (ZZA-Terracon)

Location of Proposed Building

PanGEO INCORPORATED

Proposed Office & Laboratory Building
Big Gulch WWTF
Mukilteo, WA

SITE AND EXPLORATION PLAN

Project No.	Figure No.
18-113	2

APPENDIX A

SUMMARY BORING LOGS

RELATIVE DENSITY / CONSISTENCY

SAND / GRAVEL			SILT / CLAY		
Density	SPT N-values	Approx. Relative Density (%)	Consistency	SPT N-values	Approx. Undrained Shear Strength (psf)
Very Loose	<4	<15	Very Soft	<2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Med. Dense	10 to 30	35 - 65	Med. Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	>50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	>30	>4000

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP DESCRIPTIONS	
Gravel 50% or more of the coarse fraction retained on the #4 sieve. Use dual symbols (eg. GP-GM) for 5% to 12% fines.	GRAVEL (<5% fines)	GW	Well-graded GRAVEL
		GP	Poorly-graded GRAVEL
	GRAVEL (>12% fines)	GM	Silty GRAVEL
		GC	Clayey GRAVEL
Sand 50% or more of the coarse fraction passing the #4 sieve. Use dual symbols (eg. SP-SM) for 5% to 12% fines.	SAND (<5% fines)	SW	Well-graded SAND
		SP	Poorly-graded SAND
	SAND (>12% fines)	SM	Silty SAND
		SC	Clayey SAND
Silt and Clay 50%or more passing #200 sieve	Liquid Limit < 50	ML	SILT
		CL	Lean CLAY
		OL	Organic SILT or CLAY
	Liquid Limit > 50	MH	Elastic SILT
		CH	Fat CLAY
		OH	Organic SILT or CLAY
Highly Organic Soils		PT	PEAT

Notes:

1. Soil exploration logs contain material descriptions based on visual observation and field tests using a system modified from the Uniform Soil Classification System (USCS). Where necessary laboratory tests have been conducted (as noted in the "Other Tests" column), unit descriptions may include a classification. Please refer to the discussions in the report text for a more complete description of the subsurface conditions.

2. The graphic symbols given above are not inclusive of all symbols that may appear on the borehole logs. Other symbols may be used where field observations indicated mixed soil constituents or dual constituent materials.

DESCRIPTIONS OF SOIL STRUCTURES

Layered: Units of material distinguished by color and/or composition from material units above and below

Laminated: Layers of soil typically 0.05 to 1mm thick, max. 1 cm

Lens: Layer of soil that pinches out laterally

Interlayered: Alternating layers of differing soil material

Pocket: Erratic, discontinuous deposit of limited extent

Homogeneous: Soil with uniform color and composition throughout

Fissured: Breaks along defined planes

Slickensided: Fracture planes that are polished or glossy

Blocky: Angular soil lumps that resist breakdown

Disrupted: Soil that is broken and mixed

Scattered: Less than one per foot

Numerous: More than one per foot

BCN: Angle between bedding plane and a plane normal to core axis

COMPONENT DEFINITIONS

COMPONENT	SIZE / SIEVE RANGE	COMPONENT	SIZE / SIEVE RANGE
Boulder:	> 12 inches	Sand	
Cobbles:	3 to 12 inches	Coarse Sand:	#4 to #10 sieve (4.5 to 2.0 mm)
Gravel		Medium Sand:	#10 to #40 sieve (2.0 to 0.42 mm)
Coarse Gravel:	3 to 3/4 inches	Fine Sand:	#40 to #200 sieve (0.42 to 0.074 mm)
Fine Gravel:	3/4 inches to #4 sieve	Silt	0.074 to 0.002 mm
		Clay	<0.002 mm

TEST SYMBOLS

for In Situ and Laboratory Tests listed in "Other Tests" column.

ATT	Atterberg Limit Test
Comp	Compaction Tests
Con	Consolidation
DD	Dry Density
DS	Direct Shear
%F	Fines Content
GS	Grain Size
Perm	Permeability
PP	Pocket Penetrometer
R	R-value
SG	Specific Gravity
TV	Torvane
TXC	Triaxial Compression
UCC	Unconfined Compression

SYMBOLS

Sample/In Situ test types and intervals

- 2-inch OD Split Spoon, SPT (140-lb. hammer, 30" drop)
- 3.25-inch OD Spilt Spoon (300-lb hammer, 30" drop)
- Non-standard penetration test (see boring log for details)
- Thin wall (Shelby) tube
- Grab
- Rock core
- Vane Shear

MONITORING WELL

- Groundwater Level at time of drilling (ATD)
- Static Groundwater Level
- Cement / Concrete Seal
- Bentonite grout / seal
- Silica sand backfill
- Slotted tip
- Slough
- Bottom of Boring

MOISTURE CONTENT

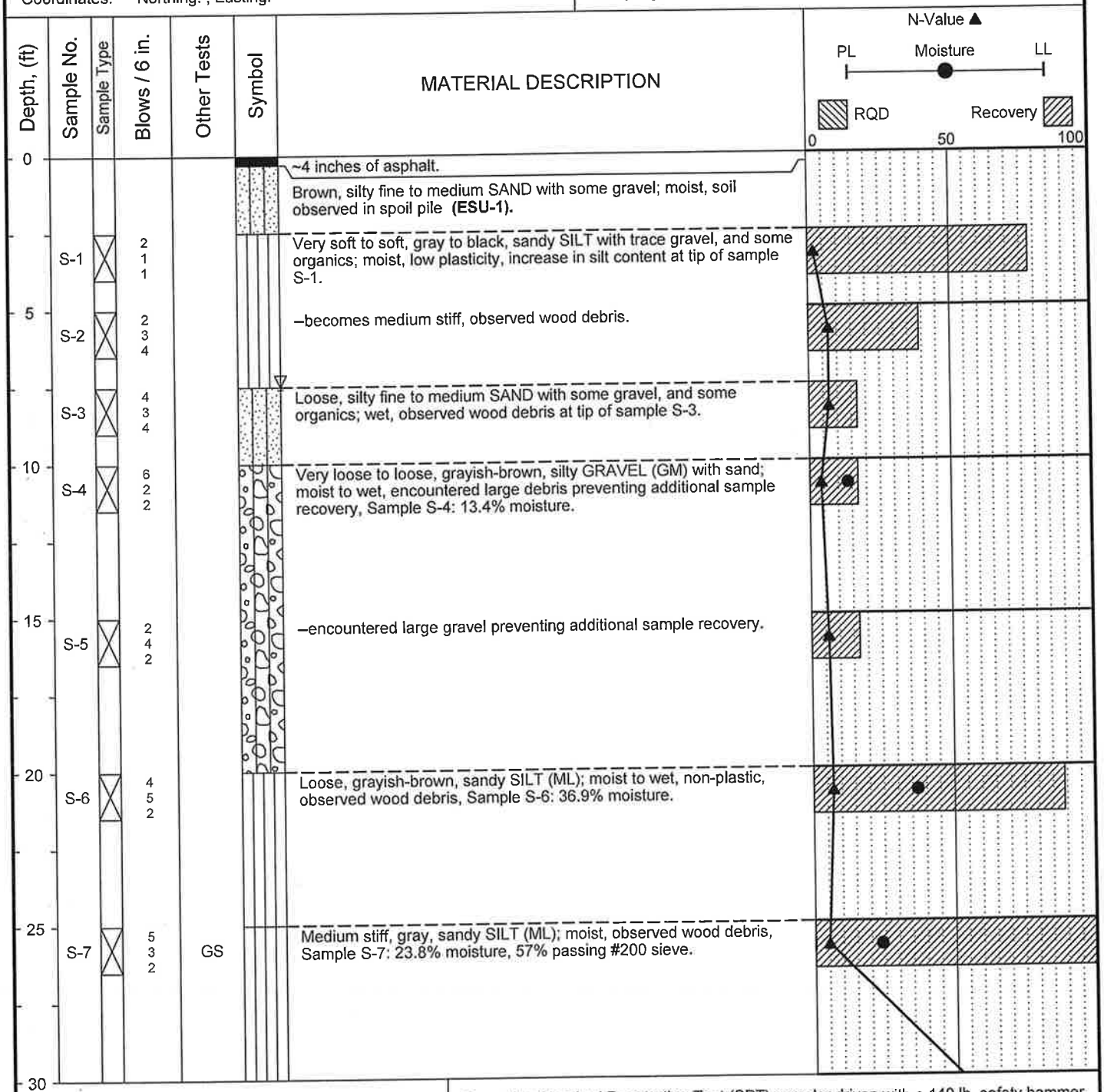
Dry	Dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water

PanGEO INCORPORATED
Phone: 206.262.0370

Terms and Symbols for Boring and Test Pit Logs

Figure A-1

Project:	Proposed Laboratory - Office Building	Surface Elevation:	~13 ft
Job Number:	18-113	Top of Casing Elev.:	Not Applicable
Location:	9417 62nd Place West, Mukilteo, Washington	Drilling Method:	HSA
Coordinates:	Northing: , Easting:	Sampling Method:	SPT



Completion Depth:	51.5ft
Date Borehole Started:	5/31/18
Date Borehole Completed:	5/31/18
Logged By:	R. Ragudos
Drilling Company:	Boretec1, Inc

Remarks: Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Boring drilled by Boretec1, Inc using a Track Mounted Drill Rig. This surface elevation is provided for relative information only and is not a substitution for a field survey.

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LOG OF TEST BORING PG-1

Figure A-2

The stratification lines represent approximate boundaries. The transition may be gradual.

Project:	Proposed Laboratory - Office Building	Surface Elevation:	~13 ft
Job Number:	18-113	Top of Casing Elev.:	Not Applicable
Location:	9417 62nd Place West, Mukilteo, Washington	Drilling Method:	HSA
Coordinates:	Northing: , Easting:	Sampling Method:	SPT

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
30	S-8		10 28 32			Very dense, gray, silty fine to medium SAND with trace gravel; wet; observed minor wood debris at tip of sample S-8, blowcounts may be overstated due to wood debris **(ESU-1).**
35	S-9		7 19 6	GS		Medium dense, gray, silty SAND (SM) with gravel; wet, observed minor wood debris and roots, blowcounts may be overstated due to wood debris, Sample S-9: 22.5% moisture, 41% passing #200 sieve.
40	S-10		10 18 34			Hard, gray, silty CLAY with trace gravel; moist, bottom half of sample S-10 becomes brown **(ESU-2).**
45	S-11		18 33 50/6			Very dense, brown, silty very fine SAND with interbedded silt lenses; moist.
50	S-12		17 34 50/6			Very dense, brown, silty very fine SAND; moist.
55						Boring was terminated at approximately 51.5 feet below ground surface (bgs). Groundwater was encountered at approximately 7.5 feet bgs at the time of drilling. Note: ESU=Engineering Soil Unit.
60						

N-Value ▲

PL Moisture LL

RQD Recovery

0 50 100

Completion Depth:	51.5ft
Date Borehole Started:	5/31/18
Date Borehole Completed:	5/31/18
Logged By:	R. Ragudos
Drilling Company:	Boretec1, Inc

Remarks: Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Boring drilled by Boretec1, Inc using a Track Mounted Drill Rig. This surface elevation is provided for relative information only and is not a substitution for a field survey.

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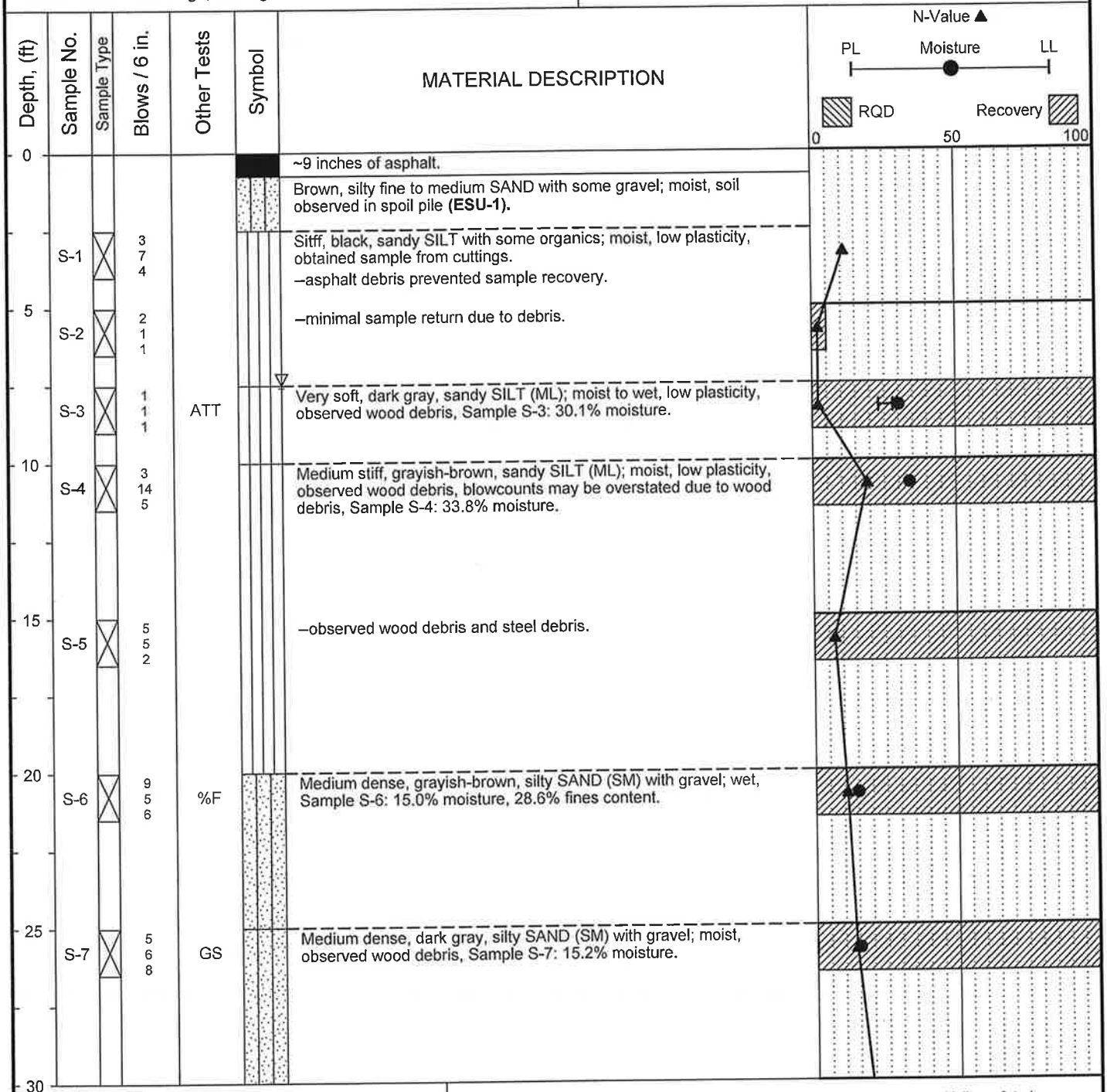
LOG OF TEST BORING PG-1

Figure A-2

The stratification lines represent approximate boundaries. The transition may be gradual.

Project:	Proposed Laboratory - Office Building	Surface Elevation:	~16 ft
Job Number:	18-113	Top of Casing Elev.:	Not Applicable
Location:	9417 62nd Place West, Mukilteo, Washington	Drilling Method:	HSA
Coordinates:	Northing: , Easting:	Sampling Method:	SPT



Completion Depth:	51.5ft
Date Borehole Started:	5/31/18
Date Borehole Completed:	5/31/18
Logged By:	R. Ragudos
Drilling Company:	Boretec1, Inc

Remarks: Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Boring drilled by Boretec1, Inc using a Track Mounted Drill Rig. This surface elevation is provided for relative information only and is not a substitution for a field survey.

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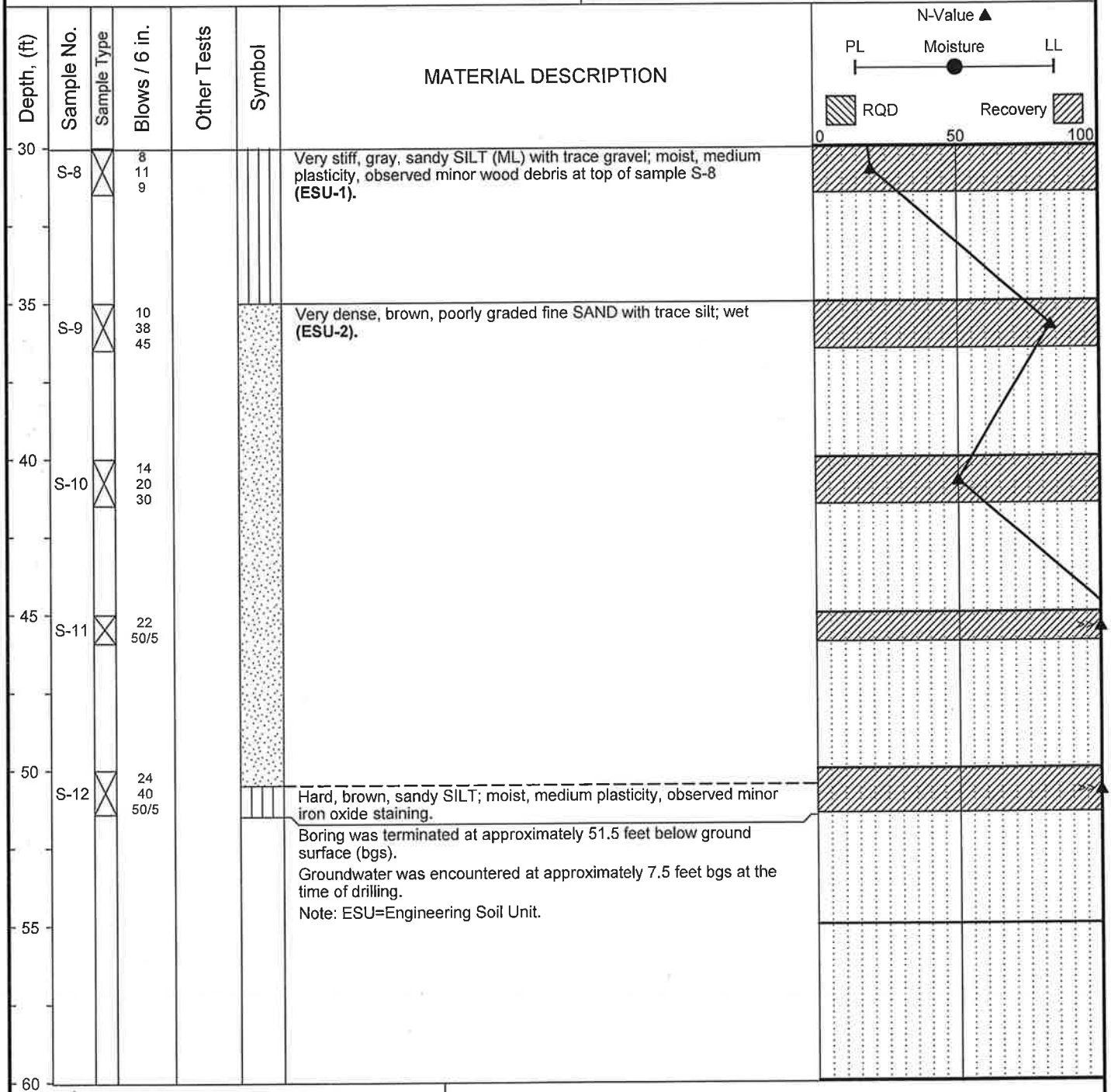
LOG OF TEST BORING PG-2

Figure A-3

The stratification lines represent approximate boundaries. The transition may be gradual.

Project:	Proposed Laboratory - Office Building	Surface Elevation:	~16 ft
Job Number:	18-113	Top of Casing Elev.:	Not Applicable
Location:	9417 62nd Place West, Mukilteo, Washington	Drilling Method:	HSA
Coordinates:	Northing: , Easting:	Sampling Method:	SPT



Completion Depth:	51.5ft
Date Borehole Started:	5/31/18
Date Borehole Completed:	5/31/18
Logged By:	R. Ragudos
Drilling Company:	Boretec1, Inc

Remarks: Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Boring drilled by Boretec1, Inc using a Track Mounted Drill Rig. This surface elevation is provided for relative information only and is not a substitution for a field survey.

PanGEO INCORPORATED

LOG OF TEST BORING PG-2

Figure A-3

The stratification lines represent approximate boundaries. The transition may be gradual.

PROJECT: Big Gulch Sewer Repair Project | **JOB NO.:** 81075016 | **BORING:** B-27 | **PAGE 1 OF 2**

Location: Mukilteo, WA | **Approximate Surface Elevation:** 15.4 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0, 10, 20, 30, 40, 50)	N-values	Testing
0	3 inches of gravel over loose, wet, gray, silty SAND with trace gravel. (Fill)						
	Medium stiff, moist, gray-brown, sandy, gravelly SILT with some wood debris. (Fill)		S-1	02/08/08, 12/28/07, 11/05/07, 03/04/08		7	GSA
5	Grades to stiff.		S-2			11	
	Loose, moist to wet, gray-brown, silty, gravelly SAND with some wood debris. (Fill)		S-3			9	GSA
10	Medium dense, saturated, gray, silty SAND with trace gravel and some wood debris. (Colluvium)		S-4	ATD		20	
	Grades to medium dense, saturated, gray, silty, gravelly SAND to silty, sandy GRAVEL		S-5			29	GSA
15	Grades to medium dense, saturated, gray, silty, gravelly SAND with some wood debris.		S-6			16	
	Very stiff, saturated, gray, sandy SILT with some gravel and fine wood debris. (Colluvium)		S-7			18	GSA
20							
			S-8			19	
25							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Testing Key

GSA = Grain Size Analysis
200W = 200 Wash Analysis
Att. = Atterberg Limits
Consol. = Consolidation Test

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Geotechnical and Environmental Consulting

BORING LOG | **Figure A-12**

Date Drilled: 9/7/2007 | **Logged By:** RWS

PROJECT: Big Gulch Sewer Repair Project | **JOB NO.:** 81075016 | **BORING:** B-27 | **PAGE 2 OF 2**

Location: Mukilteo, WA | **Approximate Surface Elevation:** 15.4 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
25	Very stiff, saturated, gray, sandy SILT with some gravel and fine wood debris.						
	Medium dense, saturated, gray, silty, gravelly SAND.	I	S-9		▲	23	
30	Boring completed at 29 feet on 09/07/07. Groundwater observed at approximately 10.5 feet at time of drilling. Well ID: APQ 701 Groundwater measured at 3.6 feet on 11/05/07. Groundwater measured at 2.9 feet on 12/28/07. Groundwater measured at 2.7 feet on 02/08/08. Groundwater measured at 3.6 feet on 03/04/08.						
35							
40							
45							
50							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Testing Key

GSA = Grain Size Analysis
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Geotechnical and Environmental Consulting

BORING LOG	Figure A-12
Date Drilled: 9/7/2007	Logged By: RWS

APPENDIX B

LABORATORY TEST RESULTS

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Inspection & Testing

June 15, 2018
HWA Project No. 2012-022-23 Task 11900

PanGEO Inc.
3213 Eastlake Ave E., Suite B
Seattle, Washington 98102

Attention: Mr. Romulos P. Ragudos Jr., E.I.T.

Subject: **Materials Laboratory Report**
Soil Index Testing
Big Gulch WWTF
PanGEO Project No. 18-113

Dear Mr. Ragudos;

In accordance with your request, HWA GeoSciences Inc. (HWA) performed laboratory testing for the above referenced project. Herein we present the results of our laboratory analyses, which are summarized on the attached report. The laboratory testing program was performed in general accordance with your instructions and appropriate ASTM Standards as outlined below.

SAMPLE DESCRIPTION: The subject samples were delivered to our laboratory on June 11, 2018 by Courier. The samples were delivered in re-sealable plastic bags and were designated with exploration ID, sample number, and depth of sampling. The soil samples were classified using visual-manual methods the descriptions may be found on the attached Figure 1.

MOISTURE CONTENT OF SOIL: The moisture contents of the soil samples (percent by dry mass) were determined in general accordance with ASTM D 2216. The results are shown on Figure 1.

PERCENTAGE FINER THAN #200 SIEVE: The percentage of material finer than the #200 sieve was determined for a selected sample in general accordance with ASTM D1140. The soil was oven dried, and washed over a #200 sieve to determine the percentage of fines. The results are shown on Figure 2.

PARTICLE SIZE ANALYSIS OF SOILS: The particle size distribution of each specified sample was determined in general accordance with ASTM D6913. The results are plotted on the attached Particle Size Analysis of Soil Report, Figures 2 and 3, which also indicates the moisture content of the soil samples at the time of testing.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ATTERBERG LIMITS): One selected sample was tested using method ASTM D4318, multi-point method. The results are reported on the attached Liquid Limit, Plastic Limit, and Plasticity Index report, Figure 4.

21312 30th Drive SE
Suite 110
Bothell, WA 98021-7010
Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

CLOSURE: Experience has shown that test values on soil and other natural materials vary with each representative sample. As such, HWA has no knowledge as to the extent and quantity of material the tested samples may represent. HWA also makes no warranty as to how representative either the samples tested or the test results obtained are to actual field conditions. It is a well-established fact that sampling methods present varying degrees of disturbance that affect sample representativeness.

No copy should be made of this report except in its entirety.

We appreciate the opportunity to provide laboratory testing services on this project. Should you have any questions or comments, or if we may be of further service, please call.

HWA GEOSCIENCES INC.

Stephen Wright
Materials Laboratory Manager

Steven E. Greene, L.G, L.E.G.
Principal Engineering Geologist
Vice President

Attachments:

Figure 1	Summary of Material Properties
Figures 2-3	Particle Size Analysis of Soils
Figure 4	Liquid Limit, Plastic Limit and Plasticity Index of Soils

EXPLORATION DESIGNATION	TOP DEPTH (feet)	BOTTOM DEPTH (feet)	MOISTURE CONTENT (%)	ORGANIC CONTENT (%)	SPECIFIC GRAVITY	ATTERBERG LIMITS (%)			% GRAVEL	% SAND	% FINES	ASTM SOIL CLASSIFICATION	SAMPLE DESCRIPTION
						LL	PL	PI					
PG-1,S-4	10.0	11.5	13.4									GM	Grayish-brown, silty GRAVEL with sand
PG-1,S-6	20.0	21.5	36.9									ML	Grayish-brown, sandy SILT
PG-1,S-7	25.0	26.5	23.8						4.6	38.3	57.0	ML	Gray, sandy SILT
PG-1,S-9	35.0	36.5	22.5						16.9	42.0	41.1	SM	Gray, silty SAND with gravel
PG-2,S-3	7.5	9.0	30.1			28	23	5				ML	Dark gray, SILT
PG-2,S-4	10.0	11.5	33.8									ML	Grayish-brown, sandy SILT
PG-2,S-6	20.0	21.5	15.0								28.6	SM	Grayish-brown, silty SAND with gravel
PG-2,S-7	25.0	26.5	15.2						39.5	36.2	24.2	GM	Dark gray, silty GRAVEL with sand

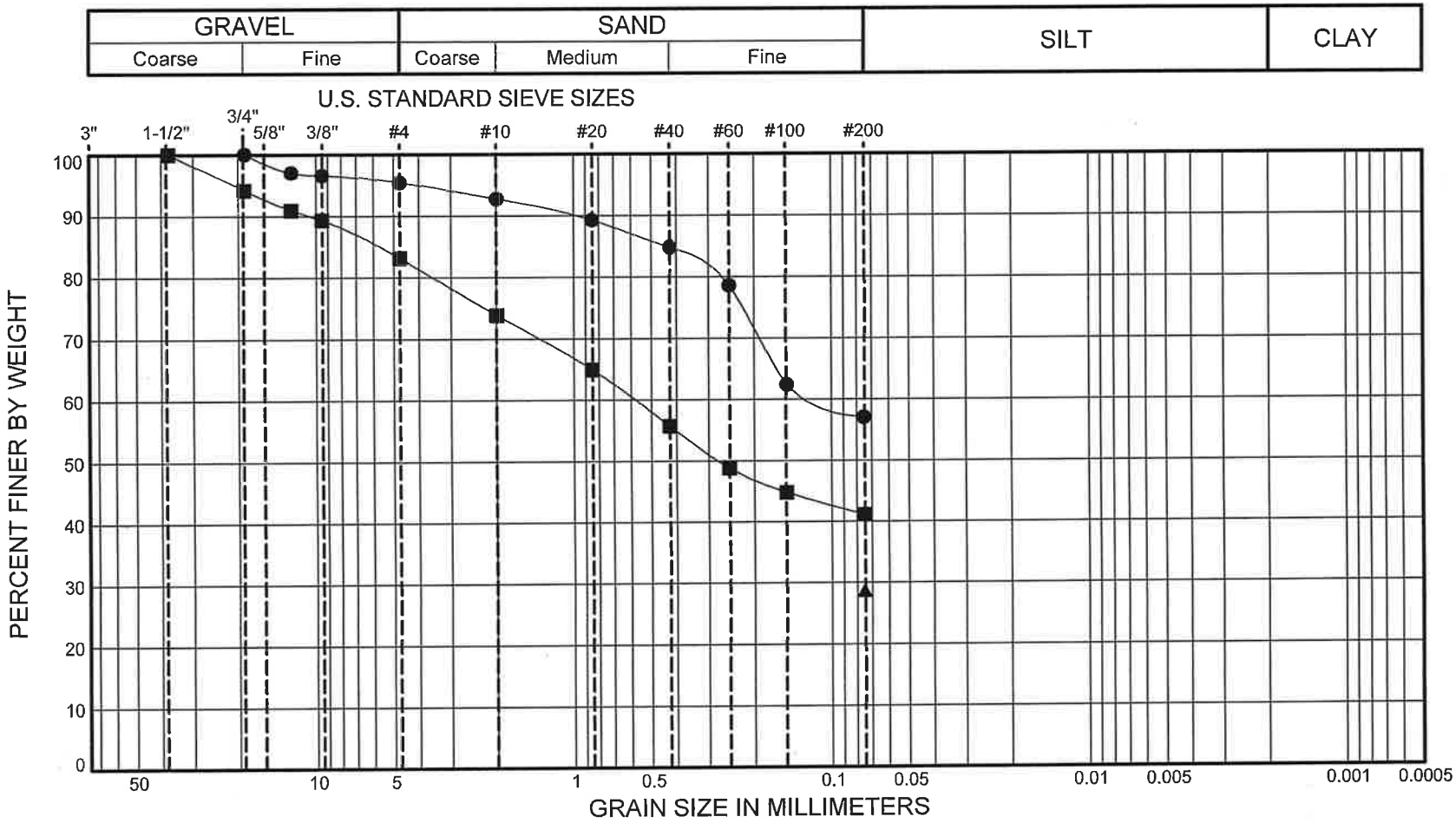
Notes: 1. This table summarizes information presented elsewhere in the report and should be used in conjunction with the report test, other graphs and tables, and the exploration logs.
2. The soil classifications in this table are based on ASTM D2487 and D2488 as applicable.

HWA GEOSCIENCES INC.

Laboratory Testing for PanGEO
Big Gulch WWTF
Client Project No.: 18-113

SUMMARY OF
MATERIAL PROPERTIES

PROJECT NO.: 2012-022 T11900 FIGURE: 1



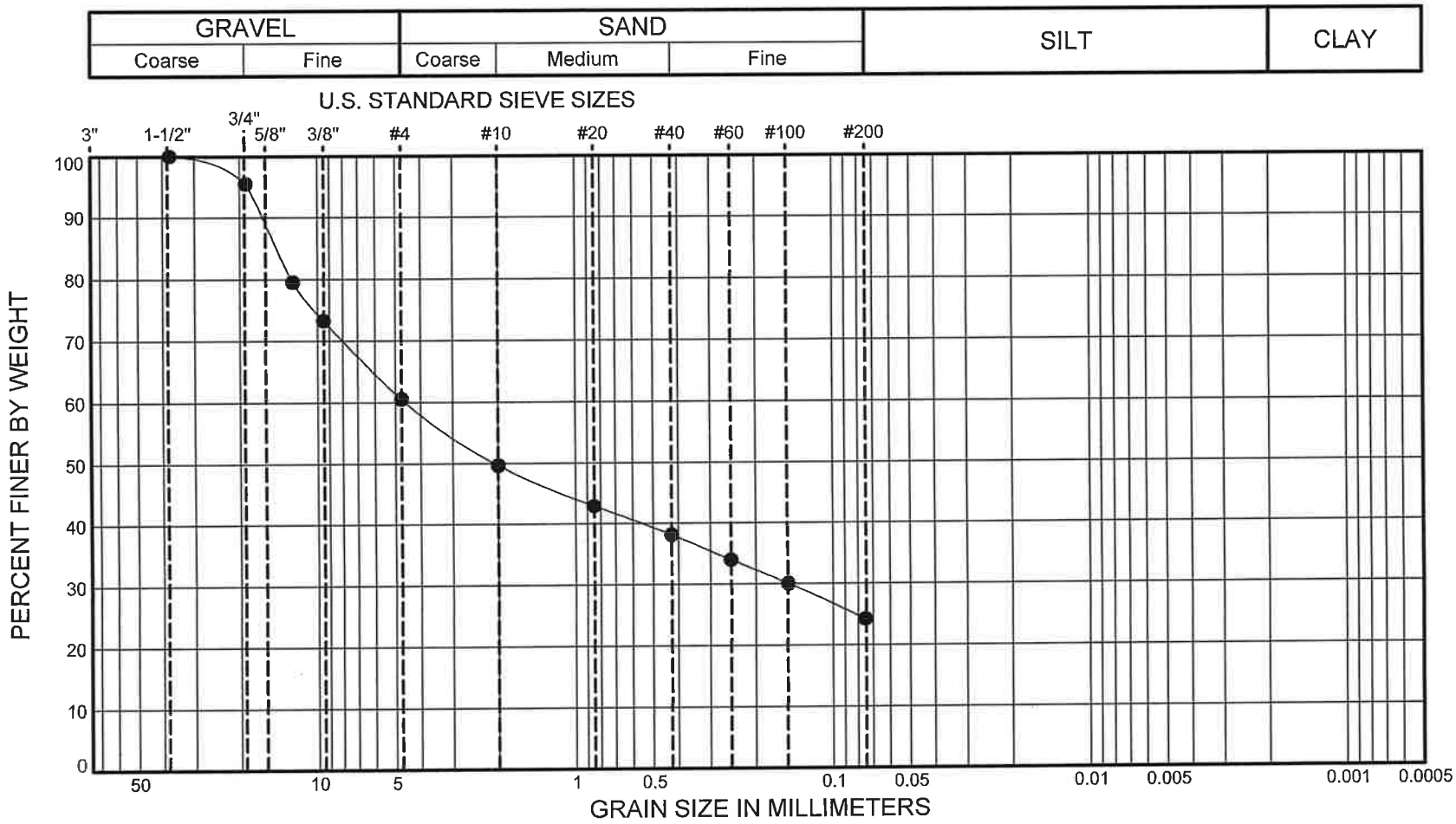
SYMBOL	SAMPLE		DEPTH (ft.)	CLASSIFICATION OF SOIL- ASTM D2487 Group Symbol and Name	% MC	LL	PL	PI	Gravel %	Sand %	Fines %
●	PG-1	S-7	25.0 - 26.5	(ML) Gray, sandy SILT	24				4.6	38.3	57.0
■	PG-1	S-9	35.0 - 36.5	(SM) Gray, silty SAND with gravel	23				16.9	42.0	41.1
▲	PG-2	S-6	20.0 - 21.5	(SM) Grayish-brown, silty SAND with gravel	15						28.6

HWA GEOSCIENCES INC.

Laboratory Testing for PanGEO
Big Gulch WWTF
Client Project No.: 18-113

PARTICLE-SIZE ANALYSIS
OF SOILS
METHOD ASTM D6913

PROJECT NO.: 2012-022 T11900 FIGURE: 2



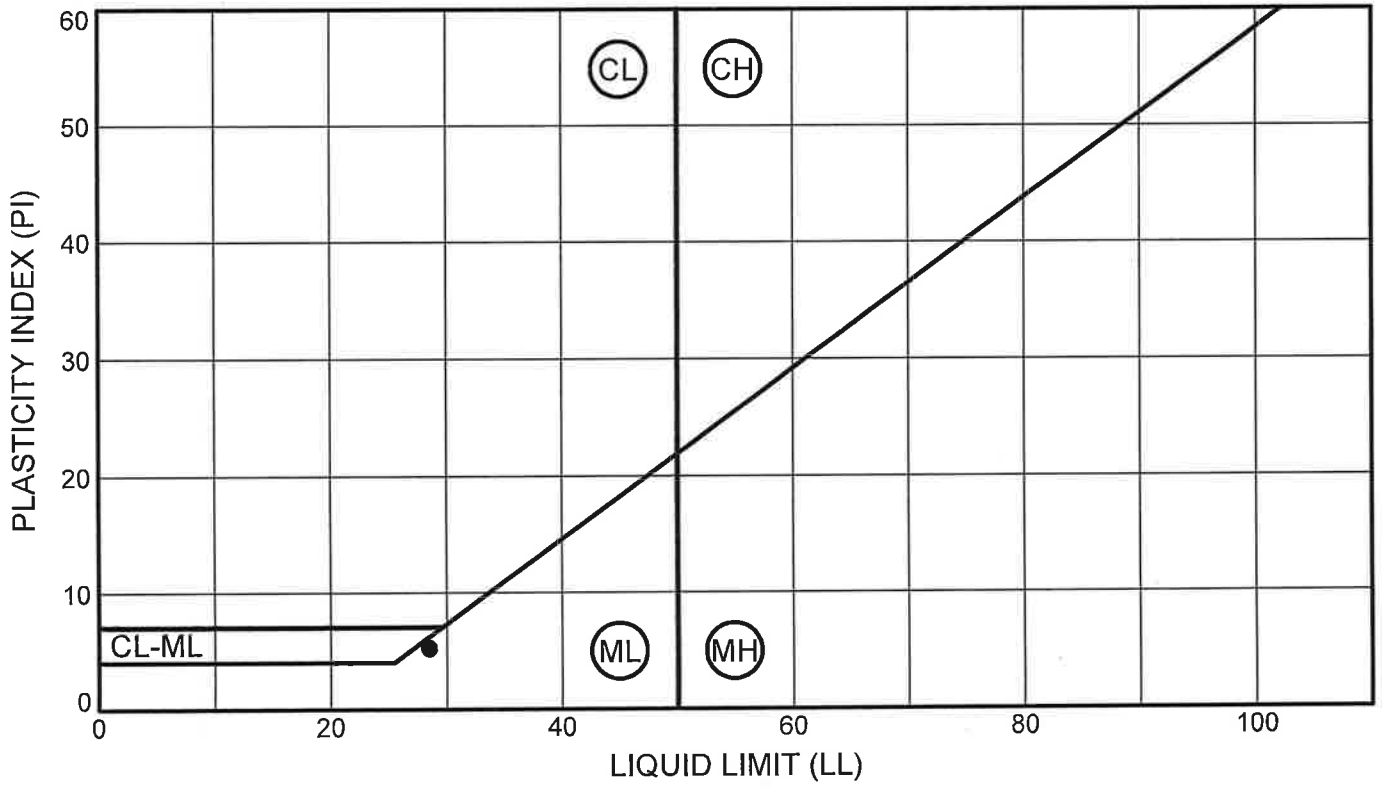
SYMBOL	SAMPLE		DEPTH (ft.)	CLASSIFICATION OF SOIL- ASTM D2487 Group Symbol and Name	% MC	LL	PL	PI	Gravel %	Sand %	Fines %
●	PG-2	S-7	25.0 - 26.5	(GM) Dark gray, silty GRAVEL with sand	15				39.5	36.2	24.2

HWA GEOSCIENCES INC.

Laboratory Testing for PanGEO
Big Gulch WWTF
Client Project No.: 18-113

PARTICLE-SIZE ANALYSIS
OF SOILS
METHOD ASTM D6913

PROJECT NO.: 2012-022 T11900 FIGURE: 3



SYMBOL	SAMPLE		DEPTH (ft)	CLASSIFICATION	% MC	LL	PL	PI	% Fines
●	PG-2	S-3	7.5 - 9.0	(ML) Dark gray, SILT	30	28	23	5	

HWA GEOSCIENCES INC.

Laboratory Testing for PanGEO
Big Gulch WWTF
Client Project No.: 18-113

LIQUID LIMIT, PLASTIC LIMIT AND
PLASTICITY INDEX OF SOILS
METHOD ASTM D4318

PROJECT NO.: 2012-022 T11900 FIGURE: 4