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- The public may also watch or listen to the meeting live by visiting <https://us02web.zoom.us/j/85918981678> or by telephoning 1-253-215-8782 and entering Meeting ID 859 1898 1678.
- Listen to the meeting by phone: 872-240-3412, Access Code: 261-991-485
- The public is encouraged to comment via email to pced@cityofanacortes.org, via written comment addressed to PCED, P.O. Box 547, Anacortes, WA 98221, or via e-comment (<https://www.anacorteswa.gov/700/Watch-Meetings> - click on meeting you wish to provide comment and in upper right corner is an option to include Public Comment). Public comments received prior to 3:00 p.m. the day of the meeting will become part of the record for the meeting, just as if presented in person.
- Complete guidelines for virtual participation in Anacortes Planning Commission meetings are available [here](#) (page 2). View the quick video example for connecting to the meeting [here](#).

ANACORTES PLANNING COMMISSION

March 23, 2022

**Municipal Building Council Chambers
6th Street and "Q" Avenue**

AGENDA

6:00 PM

[VIEW PACKET MATERIALS HERE](#)

A. Roll Call

B. Minutes

- 1) Minutes of March 9, 2022, will be presented at a later date.

C. Correspondence

D. New Business

- 1) Public Hearing: SDP-2021-0012 Port of Anacortes JKL Lot Improvements
- 2) Public Hearing: SDP-2022-0001 - Port of Anacortes Pier 2 Segregation Curb
- 3) 2021 Docket of Comprehensive Plan and Development Regulation Amendment Work Session

E. Old Business

The City of Anacortes encourages people with disabilities to participate in public meetings. For assistance with special needs, please contact the City Clerk at 360-299-1960 in advance of the meeting.



Planning Commission Agenda Bill

Meeting Date: March 23, 2022 **Agenda Item:** D.1.

Subject: Public Hearing: SDP-2021-0012 Port of Anacortes JKL Lot Improvements

Staff Contact: LIBBY GRAGE

Approved for Submittal to Commission by

LIBBY GRAGE
DON MEASAMER

Action Type

Public Hearing

Summary Statement: The applicant has requested a shoreline substantial development permit and site plan approval to construct improvements to an existing gravel parking lot at Cap Sante Marina.

Background: Background information can be found in the Staff Report, Exhibit A.

Previous Action: None

Competing Viewpoints Considered: A public comment period and public hearing are being held to solicit public comment on this application.

Recommended Motion: I move to recommend approval of SDP-2021-0012 to City Council, including the shoreline substantial development permit and site plan, subject to the staff recommended Conditions of Approval contained within the staff report of record.

Alternative Actions: Approval with modified conditions or denial.

Attachments (listed in order presented):

1. Exhibit A - Staff Report
2. Exhibit B - Application Documents
3. Exhibit C - Noticing
4. Exhibit D - Comments
5. SDP-2021-0012 - Draft PC Recommendation



Anacortes Planning, Community & Economic Development Department

904 6TH Street / P.O. Box 547, Anacortes, WA 98221

360.299-1984 - Office Hours: Mon-Fri 8:00 AM – 5:00 PM

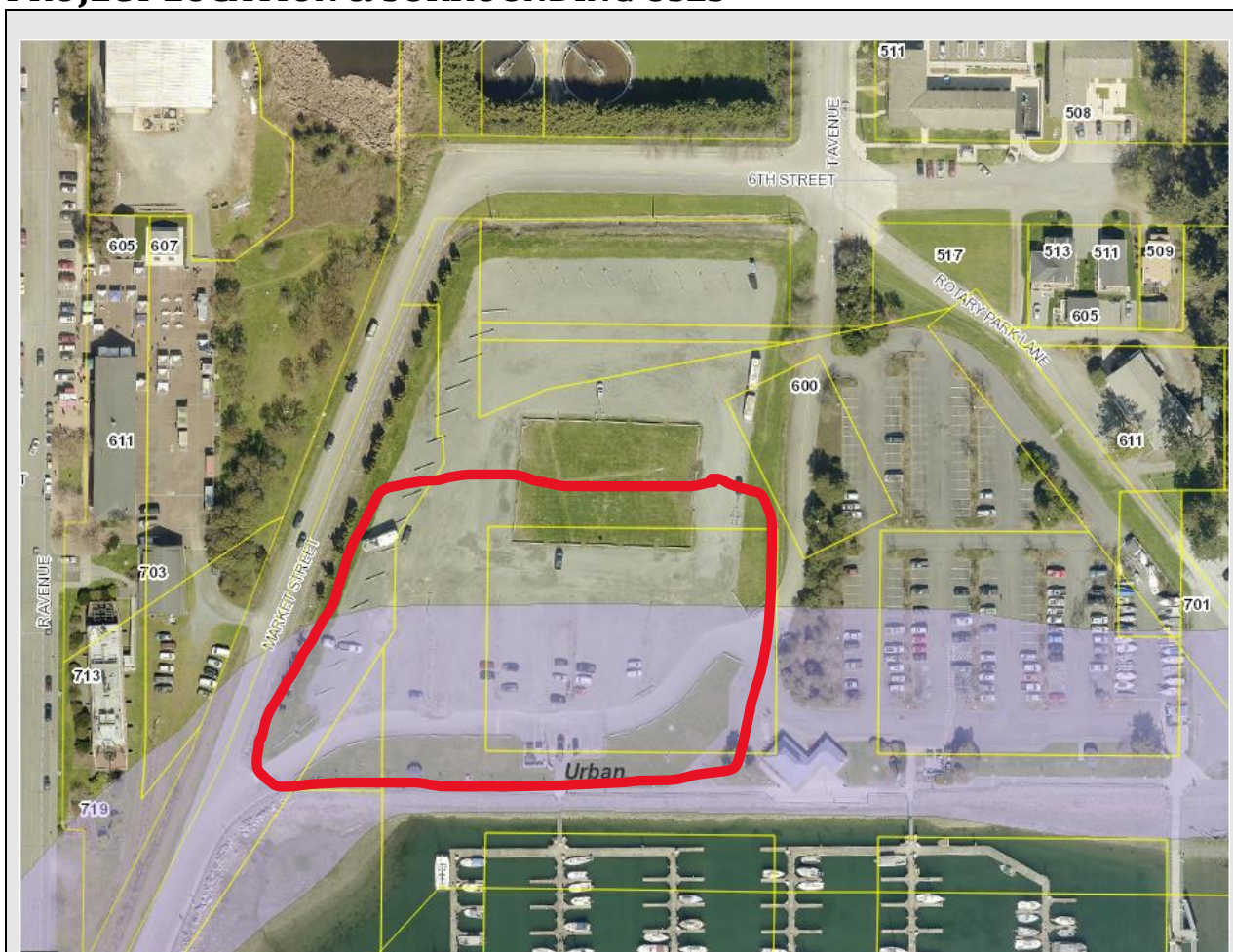
SHORELINE SUBSTANTIAL DEVELOPMENT & SHORELINE CONDITIONAL USE PERMIT: STAFF REPORT

File Number	SDP-2021-0012	Date of Report	March 17, 2022
Project Title	Port of Anacortes JKL Parking Lot Improvements	Related File(s)	Pre-2021-0041
Project Location	600 T Avenue (P53862, P56860, P56861, P32880)		
Request	Shoreline substantial development permit and site plan review & approval requested to improve an existing gravel parking lot with landscaping, paving, striping, storm drainage and treatment, and lighting.		
Landowner	Port of Anacortes 100 Commercial Ave. Anacortes, WA 98221		
Applicant	Kevin Anderson, Port of Anacortes 100 Commercial Ave. Anacortes, WA 98221		

SITE INFORMATION

Zoning	Commercial Marine	Comprehensive Plan Designation	Commercial Marine
Shoreline Environment	Urban	Water Body	Fidalgo Bay
Present Use of Property	Gravel parking lot		
Critical Areas	SMP A-1: Frequently Flood Areas Based on FEMA's National Flood Hazard Mapping, the subject property is located within FIRM panel 5303170040A. Per the provided FEMA Boundary Memo and Elevation Study prepared by PSE, Inc. on November 23, 2021, the site is located outside the flood area base flood elevation; therefore, the provisions of this section would not apply. The City's floodplain manager concurred. SMP A-3 and AMC 19.70: Geologically Hazardous Areas The preliminary geotechnical report submitted states that the site meets the definitions of an erosion hazard area and seismic hazard area. For erosion hazard areas, the report states that proper construction practices and monitoring procedures will manage the risk to the standard of practice and meet minimum mitigation requirements. There are no structures proposed on the site, therefore further evaluation of seismic hazards is not required.		

PROJECT LOCATION & SURROUNDING USES



	Comprehensive Plan	Zoning
North	Commercial Marine	Commercial Marine (CM)
South	Commercial Marine	Commercial Marine (CM)
West	Commercial Marine	Commercial Marine (CM)
East	Commercial Marine	Commercial Marine (CM)

PROCEDURAL

1. **Type of Review.** According to AMC 19.20.030(1) and 18.16.100(B) shoreline substantial development permit applications for projects valued greater than \$1 million or on sites of 3-acres or more require a Type 4 type of review. Site plan review for more than 12,000 sq. ft. of nonresidential improvements is a Type 2 review type. The applications are being processed collectively under the highest numbered type of procedure required for either permit type – Type 4. For Type 4 reviews, the Planning Commission provides a recommendation for final decision to City Council.
2. **Project History & Public Notice.** A mandatory preapplication meeting was held on October 20, 2021. A neighborhood meeting was held on November 30, 2021. The application was submitted on December 21, 2021.

A notice of application with a 30-day public comment period and notice of public hearing were distributed as required by the Anacortes Municipal Code, as follows:

Determination of Completeness Issued	January 27, 2022
Notice of Application with Optional DNS Published	February 2, 2022
Notice of Hearing Published	February 16, 2022
Open Record Public Hearing (Planning Commission)	March 23, 2022
Closed Record Public Hearing (City Council)	April 4, 2022

3. **Environmental Review.** The Port of Anacortes, the lead SEPA agency for this proposal, issued a Determination of Nonsignificance (DNS) on June 17, 2021.
4. **Reviewing departments/agencies.** The project application was routed for review to applicable agencies and City departments as follows:

REVIEWING DEPARTMENTS & AGENCIES:				
City of Anacortes	Local Agencies & Districts	State & Federal	Skagit County	Other
☒ Building ☒ Fire Dept. ☒ Fiber ☒ Parks ☒ Planning ☒ Police ☒ Public Works ☒ Operations	☒ Skagit Transit ☐ Anacortes School District 103 ☐ Port of Anacortes	☒ DOE ☒ WDFW ☐ WSDOT ☐ DNR ☒ DAHP ☐ USACE	☐ Health District ☐ Planning ☐ Public Works	☒ Swinomish Tribe ☒ Samish Tribe ☒ Upper Skagit Tribe
X = Request for review/comments sent to department or agency.				

5. **Consideration of written comments and applicant responses.** The notice of application public comment period ended on March 4, 2022. In making its recommendation, the Department considered timely received written comments and the applicant's responses, if any, as required in AMC 19.20.130(C). The following public and agency comments were received:
 - 5.1. Comment from the City's Public Works Engineering Dept. stated that the department will be reviewing the stormwater and civil plans and will provide comments during that review. Otherwise, there were no Public Works Engineering issues identified.
 - 5.2. Comment from the City's Building Department stated no concerns at this time. Also, "the site plan indicates that the actual elevation of the site is well outside of the flood zone. City staff have visited the site and concur that no flood development permit is required based on actual existing site topography."
 - 5.3. Other City department comments did not identify any concerns or recommended conditions.
 - 5.4. No comments from the public or other agencies were received.

DEPARTMENT REVIEW – FINDINGS OF FACT

1. The proposal is to improve the parking lot serving J, K, and L docks (JKL) at Cap Sante Marina. Improvements to the approximately 1.5-acre parking lot would include regrading, paving, landscaping, stormwater improvements, and pedestrian pathways. The project would reconfigure the lot from the current 90 unmarked spaces to 136 defined parking spaces with 4 spaces reserved as ADA accessible. Parking lot internal landscaping and screening will be provided, in addition to two green

spaces totaling 0.7 acres reserved for informal recreation. Lighting for safety will be provided in the lot. The improvements aim to improve user safety, provide ADA access, increase and formalize parking spaces, handle and treat stormwater, and provide public-use green spaces for marina users and the public.

2. Updated stormwater handling and treatment facilities are proposed to meet applicable stormwater requirements. Stormwater generated at the site will be treated with a hydrodynamic separator and modular wetlands to remove trash, turbidity, and hydrocarbons prior to discharge to Fidalgo Bay.
3. The proposed improvements will occur partially within shoreline jurisdiction. The site is not located within a shoreline of statewide significance.
4. SMP Chapter 5 provides policies and regulations related to shoreline environment designations and shoreline use and modification standards.
 - 4.1. The subject property is located within the Urban shoreline environment designation. According to table 5.1 of the SMP, the existing and proposed use of the site would be considered an “accessory parking facility” (accessory to a marina) and is a permitted use in the Urban shoreline environment designation.
5. SMP Chapter 6 provides policies and general regulations for environmental protection. Based on the application materials, the proposed project would not result in a loss of ecological function or an adverse impact to critical areas. All development activities are to take place within the footprint of the currently developed parking lot. Improvements to stormwater infrastructure, including design consistent with the City and Department of Ecology stormwater management regulations, and a total reduction in impervious surface within the shoreline area are anticipated to result a new benefit to ecological functions, including water quality improvements.
 - 5.1. Per DR-6.4.2, all shoreline permits shall contain provisions that require developers to comply with all applicable state law requirements regarding preservation of archaeological and historic resources, including provisions to stop work and notify appropriate agencies.
 - 5.1.1. The site is located on fill and no archeological or historical sites have been identified. The Port proposes providing Unanticipated Discoveries Protocol training to Port staff and a copy of the UDP would be kept in Port vehicles in case they encounter cultural resources during this project. The project has been conditioned appropriately.
 - 5.2. Where lighted signs and illuminated areas are permitted, such illuminating devices shall be shaded and directed so as to minimize, to the extent practicable, light and glare from negatively impacting neighboring properties, streets, public areas or waterbodies.
 - 5.2.1. As conditioned, a lighting plan demonstrating conformance with SMP lighting provisions, will need to be provided prior to construction plan approval. Following the recommendations of the Dark Sky Association and the Illuminating Engineering Society of North America is encouraged.
6. SMP Chapter 8 contains specific use policies and development regulations for shoreline development.
 - 6.1. SMP Section 8.7 contains the policies and regulations for marinas. The in-water marina itself is not proposed to be impacted under this permit application, only the upland accessory parking area. Per DR-8.7.5, marinas shall provide parking facilities adequate to meet demand/need analysis projects.
 - 6.1.1. According to a parking analysis provided by the applicant, the improved parking lot will provide 0.6 stalls per slip and is adequate for predicted use at the marina.
 - 6.2. SMP Section 8.9 contains the policies and regulations for parking areas. Per DR-8.9.1 and 8.9.3 parking in shoreline areas must serve an approved shoreline use; be located on the

landward side of the development it serves; assure surface water runoff will not pollute adjacent waters or cause soil or beach erosion; have lighting directed so as to not cause nuisance glare; be screened or separated from residential, recreation, and natural areas, by landscaping consisting of native vegetation; and be maintained in a neat and orderly manner.

6.2.1. The parking lots will serve, and is located landward of, a marina. A stormwater management report and stormwater site plan are currently under review by the Public Works Engineering Department. Department of Ecology and city stormwater standards require treatment of stormwater to meet water quality standards prior to discharge to the Puget Sound. This project proposes use of Stormfilter devices and Modular Wetlands Systems to provide water quality treatment to pollution generating impervious surfaces. The project will install landscaping along the perimeter of the lot and between internal lot boundaries, along with two informal greens spaces. Native vegetation will be preferred.

7. Anacortes Municipal Code (AMC) Chapter 19.30 provides certain criteria for approval of a site plan. Below are the review criteria, along with findings:

7.1. Conformance with all other applicable laws, ordinances, and regulations.

7.1.1. Conformance with the Shoreline Master Program and applicable Anacortes Municipal Code development regulations has been evaluated with this application.

7.2. AMC 19.32, Underground Utilities.

7.2.1. As conditioned, all site utilities will be placed underground.

7.3. AMC 19.22, Concurrency –

7.3.1. The application was routed to the City's Public Works, Police, and Fire Departments for review and comment. Based on this review it was determined that the capacity of concurrency facilities is equal to or greater than the capacity required to maintain the level of services standard for the impact from this development application. Through payment of impact fees and general facilities charges prior to grading and clearing permit issuance the development will pay for its proportionate share of new public facilities and infrastructure needed to serve the development.

7.4. Conformance with the applicable zoning provisions of Division 4: AMC 19.41, Allowed Uses; AMC 19.42, Form & Intensity Standards; and the applicable use standards of AMC Chapters 19.43 through 19.48.

7.4.1. The subject property is located within the Commercial Marine zone which allows parking accessory to a marina. The development, per the submitted site plan (Exhibit B) meets the required form and intensity standards in the CM zone per AMC Table 19.42.030, as follows:

- Density minimum: No residential development proposed
- Maximum building size without a CUP: Not applicable – no building proposed
- Landscaped area, minimum – 15%, 37% proposed
- Maximum building height – 35': No buildings proposed
- Minimum setbacks: not applicable – no structures proposed

7.5. Conformance with the applicable zoning provisions of Division 5: AMC 19.51 Public Street Improvements Required; AMC 19.52, Public Street Design; AMC 19.53, Private Driveways & Access; and AMC 19.54, Subdivision & Block Structure;

7.5.1. The proposal is subject to applicable public street improvements and street standards pursuant to AMC 19.51.020. The project site has project frontage on Market Street. Market Street is designated as a Minor Arterial in the Transportation Element of the Comprehensive Plan. Street improvements are proposed along the project's frontage on Market Street, including a 6' wide landscape strip with street trees, a 6' wide sidewalk and crosswalks. Conformance with specific standards will be reviewed by the Public Works Department when civil construction plans are submitted, prior to grading permit approval.

7.6. Conformance with the applicable zoning provisions of Division 6: AMC 19.61, Block Frontage; AMC 19.62, Site Planning, AMC 19.63, Building Design; AMC 19.64, Parking; AMC 19.65, Landscaping; AMC 19.66, Fences, Walls, and Hedges; AMC 19.67, Signs; and AMC 19.69, Standards, Generally.

7.6.1. The proposal constitutes a Level III improvement per AMC 19.60.020, which requires that the proposal conform to all applicable standards in Division 6 Project Design.

AMC 19.61 - Block Frontage Standards. The Market St. frontage has an "Undesignated" block frontage, which is subject to conformance with AMC 19.61.110, Undesignated (streets with no designated block frontage). Landscaping, identified in AMC 19.65.070 is required, including a 10' Type C landscape buffer along the west side of the parking lot. The standards are intended to mitigate the potential impacts of parking lots and blank walls along streets.

AMC 19.62 - Site Planning. Most of these provisions are not applicable because the proposal does not include residential development or dwelling units. Service areas and mechanical equipment screening requirements apply; however, the site plan does not indicate that any new ones are proposed.

AMC 19.64 – Parking. Per AMC 19.64.030, minimum off-street parking requirements for a marina are a 'director decision'. This requires the applicant to provide documentation of actual parking demand for the proposed use, technical studies prepared by a qualified professional relating to the parking need for the proposed use, or documentation of parking requirements for the proposed use from other comparable jurisdictions. As the number of parking spaces is increasing, the number of off-street parking spaces to meet the needs of the marina is adequate.

The development is not required to provide short and long-term bicycle parking per AMC 19.64.100.

AMC 19.65 – Landscaping. A landscape plan prepared by a WA State licensed landscape architect in conformance with AMC 19.65 was provided with the application.

AMC 19.66 – Fencing, Walls and Hedges & AMC 19.67 Signs. No fencing or signage was proposed with the site plan review. If future fencing or signage is proposed, permitting in accordance with AMC 19.66 and/or AMC 19.67 would be required. Conformance with the standards of the proposed retaining wall along Market Street will be reviewed upon clearing/grading permit or buildn permit application.

AMC 19.69 – Standards, Generally. The proposed devleopment was reviewed for conformance with AMC 19.69 regulating general standards in the City of Anacortes including but not limited to noise, air pollution, glare, exterior lighting, and the vision clearance triangle. The proposed development was determined to meet these requiriements, if rcommended conditions are implemented.

8. **AMC Chapter 17.70, Critical Area Regulations.**

Staff Comments: The portion of the site within shoreline jurisdiction is subject to the shoreline specific critical areas regulations in Appendix A of the SMP. These issues are addressed previously in this report

There are no wetlands or fish and wildlife habitat conservation areas present on the subject property outside of shoreline jurisdiction. A wetland is identified across 6th street to the northwest of the subject site; however, the wetland is functionally separated from the project site by 6th Street improvements.

The preliminary geotechnical report submitted with the application states that the site meets the definitions of an erosion hazard area and a seismic hazard area. For erosion hazard areas, the report states that proper construction practices and monitoring procedures will manage the risks to the standard of practice and meet minimum mitigation requirements.

9. **AMC Chapter 18.04, State Environmental Policy Act.**

Staff Comments: The Port of Anacortes, lead SEPA agency for this proposal, issued a Determination of Nonsignificance on June 19, 2021.

10. **AMC Chapter 18.16, Shoreline Master Program.**

Staff Comments: Conformance with the applicable Shoreline Master Program provisions are discussed above.

11. **AMC Chapter 19.76, Stormwater.**

Staff Comments: Conformance with stormwater regulations is addressed above.

12. **AMC Chapter 19.78, Clearing and Grading.**

Staff Comments: Conformance with this chapter will be reviewed when a clearing and grading permit application and supporting materials are submitted.

CONCLUSIONS OF LAW

1. According to AMC 19.20.030(1) and 18.16.100(B) shoreline substantial development permit applications for projects valued greater than \$1 million or on sites of 3-acres or more are considered a Type 4 type of review. The overall site of the project exceeds 3-acres in size. The extent of proposed improvement requires a Type 2 site plan review type. The two permits applications are being processed concurrently under a Type 4 review process, whereby the Planning Commission makes a recommendation for final decision to City Council regarding the permits.
2. Proper notice for the application and public hearing has been provided.
3. The application was reviewed under the State Environmental Policy Act (SEPA) and the Port of Anacortes issued a Mitigated Determination of Non-Significance was issued on June 17, 2021.
3. The subject application was reviewed for conformance with all applicable Shoreline Master Program policies and regulations, including but not limited to, Section 5.10 Urban, Section 5.12 Shoreline Use and Modification Matrix, Chapter 6 Environmental Protection General Regulations, and Chapter 8 Specific Use Policies and Development Regulations.
4. The subject proposal is consistent with the Washington State's Shoreline Management Act, City of Anacortes' 2010 Shoreline Master Program and development regulations listed therein for developments within the "Urban" shoreline environment designations.

5. Any Finding of Fact that is more correctly a Conclusion of Law is hereby incorporated as such by this reference.

RECOMMENDATION

Based upon the application, Findings of Fact, and Conclusions of the staff report, staff recommends that the Planning Commission recommend approval of the shoreline substantial development permit and site plan with the following conditions of approval:

1. The scope of the project shall not exceed that as set out in the shoreline substantial development permit and site plan application materials (Exhibit B), except as modified by the permit decision or other jurisdictional agencies.
2. All applicable permits and authorizations (local, state, and federal) shall be secured before any construction activities begin onsite and copies provided to the City of Anacortes' PCED Department. This includes civil construction plan approval for public improvements and stormwater site plan approval prior to issuance of a grading permit.
3. Noise levels shall not exceed those standards as established by the state pursuant to Chapter 70.107 RCW and contained in Chapter 173.60 WAC.
4. The applicant/landowner shall comply with federal statutes including but not limited to: Endangered Species Act, Clean Water Act, Marine Mammal Protection Act, and other federal statutes.
5. This project shall comply with all applicable Shoreline Master Program regulations, including but not limited to, Section 5.10 Urban, Chapter 5, Shoreline Environments & Associated Policies and Regulations, Chapter 6 Environmental Protection General Regulations, and Chapter 8 Specific Use Policies and Development Regulations.
6. All exterior lighting shall be installed so that the light is directed downward onto the property upon which it is located. All light sources must be shielded to direct light away from the sky and from residential uses, surrounding areas including the water. It is encouraged to follow the color, temperature, timing, intensity, technology, and other recommendations of the Dark Sky Association and the Illuminating Engineering Society of North America. A lighting plan must be submitted for review prior to civil construction plan approval.
7. All new trash and recycling receptacles, utility boxes, HVAC systems, electrical transformers, fences and other appurtenances shall be located and screened to minimize interference with public views.
8. All utilities shall be placed in an underground location consistent with AMC 15.32 Underground Utilities.
9. The development shall comply with all applicable state law requirements regarding preservation of archaeological and historic resources. Should protected resources be uncovered during excavation activities, all work shall stop, and the contractor shall notify appropriate Tribes and agencies, including WA State Department of Archaeology and Historic Preservation and the City of Anacortes.
10. Development shall comply with AMC 18.16.130 regulating the time limit for shoreline permits as follows:
 - 10.1. *Construction, or substantial progress toward completion, must begin within two (2) years after approval of the permit. Substantial progress toward construction shall include, but not limited to, the letting of bids, making of contracts, purchasing of materials involved in development, but shall not include development or uses which are inconsistent with the Shoreline Management Act or the city's master program. In determining the running two-year period hereof, there shall not be included the time during which development was not actually pursued by construction and the pendency of litigation reasonably related thereto made it reasonable not to so pursue;*

provided, that the city may, in its discretion, extend the two-year time period for a reasonable time based on factors, including the inability to expeditiously obtain other governmental permits which are required prior to the commencement of construction.

10.2. *5-Year Permit Authorization: If construction has not been completed within five years of approval by the City of Anacortes, the city will review the permit, with prior notice to parties of record, and, upon showing of good cause, either extend the permit for one additional year, or terminate the permit. Prior to the city authorizing any permit extensions, it shall notify any parties of record and the Department of Ecology. Note: Only one single extension is permitted.*

11. Construction pursuant to a permit will not begin or be authorized until twenty-one days from the date the permit decision is filed with the Department of Ecology, as provided in RCW 90.58.130.

Staff reserves the right to supplement the record of the case to respond to matters and information raised after the writing of this report.

Exhibits:

Exhibit A – Staff Report
Exhibit B – Application Documents
Exhibit C – Notices
Exhibit D – Comments



PLANNING, COMMUNITY, & ECONOMIC DEVELOPMENT DEPARTMENT

Mailing Address: P.O. Box 547, Anacortes, WA 98221

Office Location: 904 6th Street, Anacortes WA 98221

Phone: (360) 299-1984

City of Anacortes
PCED
Received
12/21/21
SDP-2021-0012

MASTER LAND USE PERMIT APPLICATION

TYPE OF APPLICATION (check all that apply):		
☐ Binding Site Plan (Preliminary)** ☐ Boundary Line Adjustment (BLA)** ☐ BLA: Lot Consolidation** ☐ Conditional Use Permit (CUP) ** ☐ Critical Areas Exemption** ☐ Critical Areas Permitted Alteration** ☐ Critical Areas Reasonable Use Exception/Variance** ☐ Cottage Housing Development**	☐ Eligible Facility Request** ☐ Essential Public Facility ☐ Home Occupation Permit** ☐ Long Subdivision (Preliminary)** ☐ Plat Amendment /Modification ☐ SEPA Environmental Review** ☐ Shoreline Conditional Use Permit** ☐ Shoreline Exemption** ☒ Shoreline Substantial Development Permit**	☐ Shoreline Variance** ☐ Short Plat (Preliminary)** ☒ Site Plan Review ** ☐ Site-Specific Rezone Authorized by the Comprehensive Plan ☐ Stormwater Management Manual Adjustments & Exceptions ☐ Variance ** ☐ Wireless Conditional Use Permit (WCUP)** ☐ Wireless Service Facility (WSF) Permit**
**Permit type has supplemental checklist that must be submitted with Master Land Use Permit Application		
PROJECT & SITE INFORMATION:		
SITE ADDRESS: 600 T Avenue, Anacortes, WA 98221		PROJECT NAME: Prop-20 JKL Lot Improvements
PARCEL NUMBER(S): P53862, P56860, P56861, P32880		SECTION, TOWNSHIP, & RANGE Section 18, Township 35, Range 02
LOT SQUARE FOOTAGE & ACREAGE: 169,247 sf (3.885 ac)		PROJECT VALUATION: \$750,000
LEGAL DESCRIPTION: ANACORTES TIDE LANDS TR 24 & 25 PL 9, SECTION 18, TOWNSHIP 35 NORTH, RANGE 2 EAST, W.M., LESS ST & TR 26 & 27 PL 9 LESS ST &		PRESENT ZONING: Commercial Marine
PRESENT USE OF PROPERTY: Marina (Parking)		CUT & FILL (CY) PROPOSED: Cut 6,100 CY Fill 10,000
PRE-APPLICATION CONFERENCE HELD?: ☒ Yes, the City file # is <u>Pre-2021-0041</u> ☐ No		WATER SOURCE: ☒ City of Anacortes ☐ Private Well ☐ Community Well

SEWAGE DISPOSAL: ☒ City of Anacortes ☐ Septic		ROAD ACCESS: ☐ City Road ☐ State Highway ☐ Private Road	
CRITICAL AREAS OR BUFFERS ON SITE OR WITHIN 300 FEET: ☒ Yes* ☐ No ☐ Unknown <i>*If yes, please complete the Critical Area Identification Form</i>		SHORELINES WITHIN 200 FEET: ☒ Yes / Name: <u>Fidalgo Bay</u> ☐ No	
FLOODPLAIN: Flood Zone: <u>Flood Hazard</u> FIRM Panel # <u>5303170040</u> Date of Panel: <u>2003</u>			
LOT COVERAGE AREA CALCULATIONS: Existing Square Footage: <u>0</u> Proposed Square Footage: <u>0</u>			
IMPERVIOUS SURFACE AREA CALCULATIONS: Existing Impervious Square Footage: <u>114,583 sf</u> New Impervious Surface: <u>106,088 SF total</u>			
DESCRIPTION OF SUBJECT PROPOSAL: ☒ Additional pages attached			
PROPOSED WORK: _____ Improve existing gravel parking lot with landscaping, paving, striping, storm drains and treatment, and lighting. _____ _____ _____			
PROPERTY OWNER INFORMATION: ☐ Multiple owners attached			
NAME: Port of Anacortes		MAILING ADDRESS: 100 Commercial Ave	
CITY, STATE, ZIP: Anacortes, WA 98221		PHONE #: 360-770-5194	
FAX #:		EMAIL ADDRESS:	
APPLICANT INFORMATION: ☒ Same as property owner			
NAME:		MAILING ADDRESS:	
CITY, STATE, ZIP:		PHONE #:	
FAX #:		EMAIL ADDRESS:	
CONTACT PERSON: ☐ Same as property owner ☐ Same as applicant			
NAME: Kevin Anderson		MAILING ADDRESS: 100 Commercial Ave	
CITY, STATE, ZIP: Anacortes, WA 98221		PHONE #: 360-770-5194	
FAX #:		EMAIL ADDRESS: kevin.anderson@portofanacortes.com	

ACKNOWLEDGEMENTS & SIGNATURE	
Read and initial each of the following statements prior to signing this application:	
KDA	I understand that land use and/or planning permits do not authorize earth disturbing activities, the removal of vegetation, or the construction of buildings. I understand that additional permits will be required after my land use and/or planning permitting process is completed. I understand that no earth disturbing activities (including the removal of vegetation) may take place until after my land use and/or planning process is complete, and only after I have received additional permits such as Fill & Grade, Building Permit, or Right-of-Way permit(s).
KDA	I understand that if critical areas (wetlands, streams, steep slopes, etc.) are found on or near my property I am not authorized to impact these areas in any way and will be required to leave an undisturbed buffer area around the critical area, as determined according to the City's critical areas regulations.
KDA	I understand that depending on the size and scope of my project, I may be required to provide maintenance and/or performance bonds for items such as landscaping, critical areas, public roads and/or public utilities that I construct or install.
KDA	I understand that I am solely responsible for providing complete and accurate information to the City. I understand that if my application is missing information or if inaccurate materials are submitted, my permits will be delayed. I understand that depending on how inaccurate and how incomplete my application is or becomes, the Department may require an entirely new application be submitted. I understand that when and if conditions change from that which my application originally represented, I am responsible for letting the City staff person assigned to my project know.
KDA	I understand that I am applying for permits from the City of Anacortes only; and that additional permits from other Federal, State, and Local agencies could be required. I understand that the City of Anacortes cannot advise me of permits that are required from other agencies, and that I must contact these agencies to make sure I comply with their requirements. These agencies include (but are not limited to): Corps of Engineers, Department of Natural Resources, Department of Fish & Wildlife, Department of Ecology, and Northwest Clean Air Agency.
KDA	I understand that I will be responsible for paying consultants that the City may deem necessary to review certain aspects of my application. I understand that these consultant reviews could include special inspections, traffic concurrency, critical areas, landscaping, stormwater, etc.

Signature required on next page.

By affixing my signature hereto, I certify that I am the owner, or am acting as the Owner's authorized agent*, and that the application and documents contained with this submittal are complete and accurate to the best of my knowledge and abilities.

If your title report lists a company, partnership or other owners, you must submit evidence that you are authorized to sign on behalf of the entity or others that are listed.

Please attach additional signature sheets if there is more than one owner.

Under penalty of perjury, I certify that the information, statements, answers above regarding the subject application(s) are true and correct to the best of my knowledge and belief.

Property Owner Signature:

Printed Name:

Date:

Kevin Anderson

12/14/2021

Authorized Agent Signature*:

Printed Name:

Date:

***If you are an authorized agent (and not the property owner) you must submit a signed, notarized [Agent Authorization Form](#).**



Libby Grage, Planning Manager
Planning, Community, and Economic Development Department
PO BOX 547
Anacortes, WA
98221
12/14/2021

City of Anacortes
*Planning, Community &
Economic Development*

Date Received:
12/21/21
COA File #
SDP-2021-0012

Dear Ms. Grage,

The Port of Anacortes (Port) submits this project narrative as part of our Shoreline Substantial Development Permit Application.

Narrative Introduction:

Cap Sante Marina is a large public recreational and commercial marina on Fidalgo Bay that was established in 1927. The marina has undergone many modifications since that date and is still operated, updated, and maintained by the Port. The current marina configuration provides 1,007 boat moorage slips which supports local tourism, fishing, and other commercial marine activities. The Port proposes improvements to the parking lot serving J, K, and L docks (JKL) at Cap Sante Marina. Improvements to the approximately 1.5-acre JKL parking lot would include regrading, paving, landscaping, stormwater improvements, and pedestrian pathways. The project would reconfigure the lot from the current 90 unmarked spaces to 136 defined parking spaces with 4 spaces reserved as ADA accessible. Parking lot internal landscaping and screening will be provided, in addition to two green spaces totaling 0.7 acres reserved for informal recreation. Lighting for safety will be provided in the lot. Updated stormwater handling and treatment facilities are proposed to meet applicable stormwater requirements. The improvements will aim to improve user safety, provide ADA access, increase and formalize parking spaces, handle and treat stormwater, and provide public-use green spaces for marina users and the public.

Project construction will commence once permits and approvals are issued and weather is suitable for ground preparation activities. Best estimates for construction commencement are late winter/early spring 2022. Construction of the project will utilize equipment and methods typical for clearing, grading, and paving including, but not limited to, bulldozers, compactors, excavators, dump trucks, and similar earth moving equipment. The project will comprise approximately 6,137 cubic yards (CY) of cut and 9,975 CY of fill. Fill material will be clean and procured from an engineer approved source. The project will install the following utilities: stormwater, electrical, and water (for irrigation). The proposed locations of these utilities are shown on Sheet 03 in the attached site plan.

Shoreline Jurisdiction:

The proposed improvements will occur partially within shoreline zone. The site is zoned commercial marine (CM) and within the Urban shoreline environmental designation. Cap Sante Marina is a public commercial marina and caters to commercial and recreational water dependent uses. The parking lot serves the water dependent uses of tenants and guests with vessels at the marina. The proposed improvements will comply with applicable sections of the Shoreline Master Program (SMP). Table 1 below articulates how the project satisfies the SMP.

The JKL improvements will improve connectivity by providing better access to waterfront amenities, accessible connection to the esplanade, and nearby shoreline points of interest. Provision of a sidewalk along Market Street, internal pathways, and an ADA accessible ramp from the lot to the esplanade are updates that improve

pedestrian flow between the site and nearby amenities, attractions, and shoreline recreation opportunities. To improve the amount and quality of vegetation within the site (6.5), the project will install landscaping along the perimeter of the lot and between internal lot boundaries and street trees will be planted along Market Street. The project will also set aside two informal green spaces totaling 0.7 acres of vegetated area. Where landscaping is installed, native vegetation will be preferred. The project's scope does not extend to the verge of vegetation along the esplanade or riparian areas near the marina basin. As such, the Port has no plans at present to install native vegetation along the esplanade or rip-rap of the marina basin.

The improved parking lot will be compatible with development regulations for parking facilities including surpassing required coverage for in-lot landscaping by nearly double. The paved lot is located more than 50 feet from OHW, separated from adjacent uses by a landscaped screen, and lighting shielded to prevent nuisance glare. The lot will salvage and reuse existing signs. Any new signage will meet requirements in AMC 19.67 and be sited to avoid visual impacts while still providing functional wayfinding. Initially onsite stormwater treatment and dispersion were considered for the JKL Improvements with a rain garden; however, the soils on site are not suitable for this approach. Stormwater generated at the site will be treated with a hydrodynamic separator and modular wetlands to remove trash, turbidity, and hydrocarbons prior to discharge.

Critical Areas:

No critical areas or environmentally sensitive areas are within the project footprint. A low-quality wetland, hydraulically and functionally separated from the project area by Market Street and a change in elevation is located to the northwest of the project site. Cap Sante Marina and Fidalgo Bay are immediately south of the JKL parking lot. A fringe of salt marsh estuarine vegetation is located outside the project footprint in the northwest portion of the Cap Sante Marina Basin separated from the project area by the roadway, esplanade, and shoreline armoring. Neither of these two sites will be impacted by the project and are outside of the footprint of proposed improvements. The site is a FEMA mapped flood hazard zone; however, the area is above the flood elevation of +7 feet the floodplain. See the attached memo from Pacific Survey and Engineering regarding the surveyed elevations of the site and the inaccuracies with the FEMA map. Though the site is within a seismic hazard zone the proposed improvements (parking and pavement) are appropriate with suitable ground preparation.

Chapter 4	MASTER PROGRAM ELEMENTS	RESPONSE
4.7.1	Preserve, protect, enhance and restore critical areas and shoreline ecological processes and functions through regulatory and non-regulatory means that may include required vegetated shoreline setbacks, acquisition of key properties, regulation of development, and incentives to encourage ecologically sound design and maintenance.	<i>The project site is a gravel parking areas serving tenants and guest of Cap Sante Marina and has limited habitat value. See included critical areas reconnaissance letter. Additional shoreline enhancements and protections are beyond the scope of the project.</i>
4.7.2	Locate, design, construct, and operate development so as not to degrade water quality as measured by state water quality standards.	<i>Stormwater handling and treatment will be provided for improvements to the site. These will meet the requirements of the Stormwater Management Manual for Western Washington (2014). Temporary Erosion and Sediment Control (TESC) measures will be used to prevent sedimentation of the construction runoff. The site will also operate under source control BMPS to prevent releases to the water.</i>
4.7.3	Achieve no net loss of shoreline ecological functions. This shall be accomplished by the use of Mitigation Sequencing, as defined in this master program, and as provided by WAC 173-26-201(2)(e).	<i>The project will not result in the loss of shoreline ecological functions. The project does not have a mechanism to impact shoreline ecological function.</i>
4.7.4	Identify unique and sensitive shoreline areas for permanent protection.	<i>No known unique or sensitive areas will be impacted.</i>
4.7.7	Develop and design performance standards which will minimize detrimental impacts of development upon the shoreline.	<i>Applicable performance standards will be followed.</i>
4.7.8	Encourage study and monitoring of waters and shoreline habitats; maintain awareness of existing conditions and future alterations.	<i>Beyond the scope of this project. The Port has documentation of habitats within the Cap Sante Marina basin and maintains awareness of these as future improvements and developments are considered, planned, and executed.</i>
4.7.11	All soils disturbed by use activities, and which are potentially erodible or unstable should be stabilized through seeding, mulching, terracing or other effective means.	<i>TESC measures will be used to prevent sedimentation of the construction runoff. The project will provide approximately 0.70 acre of vegetated and landscaped pervious surfaces and eliminate the current 1.5 acre gravel erodible parking lot.</i>
4.7.12	Development on unique or fragile shoreline areas should be avoided unless it can be shown in the proposal that development will not degrade the shoreline, or that the development will enhance public use of shoreline resources while fully mitigating for impacts to fragile areas.	<i>The scope of the work does not extend to the shoreline. The site clearing limits are more separated from OHW and will not degrade unique or fragile shoreline areas.</i>
4.7.13	Shorelines are to be kept free of discarded waste materials.	<i>Contractors will practice good housekeeping BMPs and keep the project area clean and prevent waste from reaching the shoreline. The marina provides receptacles for garbage disposal.</i>
4.7.14	Existing street rights-of-way or utility easements which offer physical or visual access to the shorelines or water body should be maintained in public ownership for resource conservation and as a recreational and public view resource.	<i>The site is publicly owned and accessible. Easements will be preserved where applicable.</i>

4.7.17	Protect existing shoreline trees and other shade vegetation, especially in areas where surf smelt and/or sand lance spawning has been documented.	<i>No trees or shade vegetation exist on site nor is the site a documented forage fish spawning area.</i>
4.7.18	The maximum width for either the wetland buffer or the shoreline setback must be applied for the portion of the wetland that lies within the shoreline setback.	<i>The project area, including the shoreline, does not contain any wetlands or wetland buffers.</i>

CHAPTER 5	URBAN SHORELINE ENVIRONMENT DESIGNATION	RESPONSE
5.10.1	Give priority to water-oriented uses over non-water-oriented uses. First priority should be given to water-dependent uses. Second priority should be given to water-related uses and third priority to water-enjoyment uses. Non-water-oriented uses shall only be allowed if they are part of mixed used developments where the primary use is (1) water-dependent or (2) water-related, or (3) in conjunction with a water-enjoyment use on sites where there is no access to water.	The project supports water dependent uses of Cap Sante Marina (water dependent recreation and moorage).
5.10.2	Encourage uses that enhance ecological functions and/or enhance opportunities for the public use and enjoyment of the shoreline; new development shall not cause a net loss of shoreline ecological functions.	<i>The project will enhance access to the shoreline esplanade at Cap Sante Marina and public use.</i>
5.10.3	Ensure that, where applicable, improvements within this district are reviewed for compatibility and consistency with the Design Standards codified in the zoning code.	<i>The design of the improved parking lot is consistent with relevant regulations including landscape requirements for the lot and surrounding areas, number of parking stalls, provision of ADA accessible parking, and lighting.</i>
5.10.4	Encourage designs that incorporate conservation and restoration elements, such as restoration of intertidal habitat, shoreline vegetation, and enhancement of public access.	<i>Public access will be enhanced by provision of an ADA accessible ramp from the improved parking lot to the esplanade.</i>
5.10.5	Require, where applicable, new development and/or redevelopment to include environmental cleanup (e.g., removal of contaminated soils) and restoration of the shoreline in accordance with state and federal requirements.	<i>Project site is not a cleanup site.</i>
5.10.6	Plan for a public pedestrian walkway system along the Urban waterfront utilizing a combination of natural beaches, pathways, piers, wharves, street-ends, sidewalks, stairways, or other improvements. Although it may not be feasible for the walkway system to be continuous throughout the entire area, it should promote quality pedestrian access to and along major portions of the waterfront. Street-ends should, at a minimum, become developed access points to the shoreline. Linkage between these street-ends should be determined by the physical characteristics of the shorelines, existing development patterns, potential for structural improvements, and other factors relevant to developing a continuous pedestrian system. Port of Anacortes' Integrated Approach to Marine Public Access, Final Report (October,	<i>The project will provide accessible connectivity to the Cap Sante Marina esplanade, beaches at Cap Sante Marina, Rotary Park, Jim Rice Park, the Depot, and if pedestrians are willing to walk a few blocks, Seafarers Memorial Park and the Tommy Thompson Trail.</i>

5.10.7	Encourage designs that enhance pedestrian traffic without impeding vehicular traffic through the use of paving textures, fencing, landscaping, and signage that make a greater distinction between automobile traffic and pedestrian circulation systems.	<i>The project will provide internal dedicated pedestrian pathways for connection to the Cap Sante RV Park, the Depot, the esplanade, and marina facilities with designated pedestrian crossings to avoid conflict with vehicles.</i>
DR-5.10.7	New, permanent buildings and structures shall be set back a minimum of twenty-five (25) feet from the ordinary high water mark. Setbacks are measured landward, on a horizontal plane, perpendicular to the shoreline. Shoreline setback requirements shall apply to non-water- dependent	No structures proposed.

CHAPTER 6	ENVIRONMENTAL PROTECTION IMPACTS, MITIGATION, BONDING	RESPONSE
6.3.1	Protect the environment through implementation of this Master Program including the use of the AMRRCM mitigation sequence.	<i>Acknowledged</i>
6.3.2	Minimize the adverse impacts of shoreline developments and activities on the shoreline environment during all phases of development (e.g., design, construction, operation, and management).	<i>TESC measures will be implemented during construction. The project will provide updated stormwater treatment to improve water quality. The site will have operations source control BMPs in place to prevent ongoing impacts.</i>
6.3.3	Assure, at a minimum, that development and use within shoreline jurisdiction results in no net loss of ecological functions necessary to sustain shoreline natural resources. Development activities shall protect existing ecological functions and ecosystem-wide processes.	<i>The site has limited ecological value and the scope of the work will not result in a net loss of ecological function.</i>
6.3.6	Shoreline-specific critical area provisions promote human uses and values, such as public access and aesthetic values, provided they do not significantly adversely impact ecological functions.	<i>The project will enhance public access and use of the shoreline.</i>
DR - 6.3.1	All shoreline development and activity shall be located, designed, constructed, and managed in a manner that avoids, minimizes and/or mitigates adverse impacts to the environment. The preferred mitigation sequence (avoid, minimize, rectify, reduce, or compensate for the environmental impact) shall follow that listed in WAC 173-26-201((2) (e), see also definition of "Mitigation" listed in this Master Program, Chapter 12).	<i>Acknowledged. The project is sited to avoid impacts to critical areas and sensitive habitats.</i>
DR - 6.3.2	In approving shoreline developments, the City of Anacortes shall ensure that shoreline development, use, and/or activities will result in no net loss of ecological functions necessary to sustain shoreline resources, including loss that may result from the cumulative impacts of similar developments over time to the extent consistent with constitutional and statutory limitations on the regulation of private property. To this end, the City may require modifications to the site plan and/or adjust or prescribe project dimensions, intensity of use, and screening as deemed appropriate. If impacts cannot be avoided through design modifications, the City shall require mitigation commensurate with the project's adverse impacts.	<i>Acknowledged, the improvements are not a new use or development and are a continuation of the existing use of the area as a parking lot and will not engender a net loss of ecological function. The site is already highly modified from the natural state and the improvements will be entirely within the footprint of the existing parking lot.</i>

6.4.1	Protect against adverse impacts to the public health, to the land and its vegetation and wildlife, and to waters of the state and their aquatic life. In-stream structures that protect and preserve ecosystem-wide processes, ecological functions, and cultural resources, including, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas are of particular importance.	<i>Acknowledged.</i>
DR-6.4.2	All shoreline permits shall contain provisions that require developers to comply with all applicable state law requirements regarding preservation of archaeological and historic resources, including provisions to stop work and notify the appropriate agencies should protected resources be uncovered during excavation.	<i>The site is not of known cultural resource or historic value. Additional cultural resources investigations will guide final siting of utilities. An inadvertent discovery plan will be implemented for the construction phase of the project.</i>
DR-6.4.3	Archaeological sites located both in and outside shoreline jurisdiction are potentially subject to chapter 27.44 RCW (Indian graves and records) and chapter 27.53 (Archaeological sites and records) and chapter 25.48 WAC (Archaeological excavation and removal permits) as well as the provisions of this section.	<i>The site is not of known cultural resource or historic value.</i>
DR-6.4.4	Where archaeological or historic sites have been identified, the City may require public access consistent with constitutional and statutory limitations, provided the development is consistent with the provisions for public access and provided further it is determined that public access to the site will not damage or reduce the cultural value of the site.	<i>The site is not of known cultural resource or historic value.</i>
DR-6.4.5	All shoreline uses and activities shall be located, designed, constructed and managed to minimize interference with beneficial natural shoreline processes such as littoral drift, sand and gravel movement, erosion, and accretion. For projects proposing clearing and grading see Section 6.5 Vegetation Conservation, Chapter 9 Specific Modification Policies and Development Regulations.	<i>This project's construction and operation will not affect shoreline processes as designed.</i>
DR-6.4.6	Gravel and sand bars and other accretion shore forms are naturally unstable environments. They are valued for recreation and in some cases may provide habitat. Therefore, new development on these shore forms is prohibited and modification shall be allowed only to protect existing occupied structures. Furthermore, developments that could disrupt the processes benefiting these shore forms shall be carefully evaluated and allowed only when the impacts of such disruption can be adequately mitigated, and where there is a demonstrated public benefit.	<i>Project will not extend to or below the OHW mark.</i>
DR-6.4.7	An erosion and sedimentation control plan shall be submitted with a permit application for activities that involve the removal of vegetation, stockpiling of earth or other materials, or any activity that could result in shoreline erosion or siltation. Said program shall conform to the City of Anacortes' Engineering Design Standards and shall at minimum, utilize Best Management Practices (BMPs) to prevent shoreline erosion and siltation.	<i>A detailed TESC plan will be submitted with the clear and grade permit application and be subject to approval from the City.</i>

DR-6.4.8	Noise emanating from a shoreline use/activity shall be muffled so as to not to interfere with the designated use of adjoining properties. This determination shall take into consideration ambient noise levels, intermittent beat, frequency, and shrillness. Shoreline developments/activities shall comply with the maximum permissible noise levels and time limits set forth in Anacortes Municipal Code Chapter 17.54. Exception: This regulation does not apply to fog horns, tsunami warning or other emergency warning systems	<i>Construction noise associated with a variety of construction equipment would occur for the duration of the project. This could include truck engines, generators and other small engines, excavators, backhoes, and other equipment. Construction noise would occur during daylight hours as permitted by City of Anacortes noise ordinances. Over the long-term, the parking lot sound levels are anticipated to remain unchanged.</i>
DR-6.4.10, 6.4.11, 6.4.12 & 6.4.13	Regulations regarding chemical fertilizer and pesticide use within the shoreline jurisdiction.	<i>Pesticides will be handled, applied, stored and disposed of according applicable regulations by licensed personnel. If newly installed landscaping requires application of fertilizers or pesticides, they will follow applicable guidelines.</i>
DR-6.4.15	All shoreline developments shall be located, designed, constructed, and operated so as not to be a hazard to public health and safety.	<i>The project as designed is unlikely to be a public health hazard.</i>
DR-6.4.19	Where lighted signs and illuminated areas are permitted, such illuminating devices shall be shaded and directed so as to minimize, to the extent practicable, light and glare from negatively impacting neighboring properties, streets, public areas or water bodies.	<i>No lighted signs are proposed.</i>
DR-6.4.20	New development, uses and activities shall locate and screen trash and recycling receptacles, utility boxes, HVAC systems, electrical transformers, fences and other appurtenances to minimize interference with public views.	<i>Acknowledged. Project will retain and use existing screening for these appurtenances.</i>
DR-6.4.22	All development activities approved under this Shoreline Master Program shall be designed and maintained consistent with the City's Stormwater Management Plan and Engineering Design Standards.	<i>Acknowledged. Stormwater facilities will be designed and constructed to meet the requirements of the adopted stormwater manual for the City of Anacortes. Proposed treatment BMPs include modular wetlands and hydrodynamic separation.</i>
DR-6.4.23	As a condition of approval of a permit issued in accordance with this Master Program, the Shoreline Administrator may apply the following conditions to protect water quality: a. The development, use or activity shall utilize Best Management Practices (BMPs) to minimize any increase in surface runoff and to control, treat and release surface water runoff to protect the quality and quantity of surface and ground water. Such measures may include, but are not limited to, catch basins or settling ponds, installation and required maintenance of oil/water separators, biofiltration swales, interceptor drains and landscaped shoreline setbacks. b. The release of oil, chemicals (including pesticides and herbicides), fertilizer or hazardous materials onto land or into the water is prohibited within the shoreline jurisdiction. c. Equipment for the transportation, storage, handling, or application of such materials shall be maintained in a safe and leak-proof condition. If there is evidence of	<i>Acknowledged. Best Management Practices (BMPs) will be used as applicable. TESC measures will be implemented during construction. All equipment will be properly maintained to avoid leaks and spills. Infiltration will not be appropriate at the project site because of the high groundwater table (2.8 to 3.2 feet bgs), and variable fill consisting of mixed fine-grained soils. The project will install a hydrodynamic separator and modular wetlands as basic stormwater treatment devices to remove turbidity and hydrocarbons from stormwater. Operations of the stormwater BMPs will occur according to appropriate O&M BMPs.</i>

	leakage, the further use of such equipment shall be suspended until the deficiency has been satisfactorily corrected.	
6.5.2	Limit alteration of the natural landscape to the minimum necessary to accommodate the shoreline development or a landscape plan developed in conjunction with the shoreline development, or to remove invasive vegetation.	<i>The site is highly modified and far removed from its natural state; there is minimal natural vegetation on site presently. Vegetation will be added with the landscaping installations.</i>
6.5.3	Restrict clearing and grading within shoreline jurisdiction in order to maintain the functions and values of the shoreline environment, including protection of habitat and shoreline bluffs.	<i>Clearing and grading for the project will not impact the values of the shoreline environment.</i>
6.5.4	Tree removal is to be minimized on City shorelines. Place priority on retention of snags and live trees that provide nesting or perching for eagles, other raptors, or priority species.	<i>No trees at the site.</i>
6.5.5	Use best management practices (BMPs) during clearing and grading to control erosion.	<i>TESC BMPs will be used during construction per the TESC plan. A Construction Stormwater General Permit (CSGP) is anticipated for the construction phase of the project.</i>
DR-6.5.2	Alteration of the natural landscape shall only be allowed as set forth below: a. Landscaping or maintenance associated with an existing legal use or new permitted shoreline use or development. b. Removal of noxious weeds, as listed by the state in Chapter 16-750 WAC, provided such activity shall be conducted in a manner consistent with best management practices and the City's engineering design standards and native vegetation is promptly reestablished in the disturbed area. c. Modification of vegetation in association with a legal, non-conforming use provided that said modification is conducted in a manner consistent with this Master Program and results in no net loss to ecological functions or critical fish and wildlife conservation areas.	<i>Acknowledged. The site is already highly developed with minimal natural landscapes.</i>
DR-6.5.3	All clearing and grading activities shall be limited to the minimum necessary for the intended development.	<i>Acknowledged. Clearing and grading are expensive enterprises and we will limit these activities to the largest degree possible.</i>
DR-6.5.4	Exposed soils shall be immediately developed or revegetated to prevent erosion.	<i>Acknowledged. Nobody likes a mud pit. TESC BMPs will be used during construction per the TESC plan. Scheduling will avoid exposure of bare soils to rainfall to prevent erosion to the largest degree possible.</i>
DR-6.5.5	Exposed soils must be replanted such that complete coverage of exposed soils is attained within one growing season, or otherwise stabilized using mulch or other similar BMPs.	<i>The project will vegetate or pave the site such that there are not exposed soils. Landscaping will be installed as soon as possible after ground disturbing activities are complete.</i>

DR-6.5.6	In all cases where clearing is followed by revegetation, native plants shall be preferred. Lawns are discouraged due to their limited erosion control value, limited water retention capacity, and associated chemical and fertilizer applications.	<i>Acknowledged. Native plants will be preferred to the largest possible extent.</i>
DR-6.5.7	Clearing and grading within shoreline jurisdiction shall only be permitted upon approval of a detailed landscape plan for revegetation. Any restrictions or conditions which are tied to the parcel through the development of a landscape plan shall be recorded on a revised Notice on Title.	<i>The site will have a landscape plan approved prior to construction. The landscape design is being developed by a licensed landscape architect to meet City requirements. Landscaping will be maintained and any dead or damaged plants will be replaced within the first two years.</i>
DR-6.5.8	As part of meeting project site area landscaping requirements, and in coordination with any buffer requirements, the applicant for a proposed new development, expansion, or redevelopment project of a non-water-dependent use other than public shoreline access trails that will abut the City's marine shorelines must submit a landscaping plan for approval specifying protection of existing native riparian vegetation within fifteen feet of the OHWM. If native vegetation within fifteen feet of the OHWM has been destroyed or significantly degraded, the landscaping plan shall specify replacement by installation of dense native riparian vegetation consisting of trees, shrubs, and groundcovers within and along portions of the fifteen-foot wide strip of land lying immediately landward of the line of ordinary high water (OHW) for currently unarmored shorelines, or the landward edge of existing shoreline armoring for currently armored shorelines. Water-dependent uses and public access trails that will abut the City's marine shorelines are exempt from the locational requirements of planted areas but must provide a landscaping/mitigation plan that provides equal to or greater environment function than already exists. Riparian vegetation should be encouraged, but not required, elsewhere on the site for aesthetic continuity with the riparian vegetation required along the shoreline.	<i>No vegetation within 15 feet of OHWM will be altered by the project. To improve the amount and quality of vegetation within the site, the project will install landscaping along the perimeter of the lot and between internal lot boundaries and street trees will be planted along Market Street. The project will also set aside two informal green spaces totaling 0.7 acres of vegetated area. Where landscaping is installed, native vegetation will be preferred. The project's scope does not extend to the esplanade or riparian areas abutting the marina basin. As such, the Port has no plans at present to install native vegetation along the esplanade or rip-rap of the marina basin.</i>
DR-6.5.11	All shoreline development and activity shall use effective measures to minimize increases in surface water runoff that may result from clearing and grading activity. The applicant must implement best management practices in compliance with Chapter 5, Clearing, Grading, and Erosion Control under the City's Engineering Design Standards. Submittal requirements may include a plan addressing species removal, revegetation, irrigation, erosion and sedimentation control, and other methods of nearshore/riparian corridor protection in accordance with the City's Engineering Design Standards.	<i>Construction of the project will follow a TESC plan that meets all applicable requirements. The initial TESC Plan is on Sheet 06 of the plans submitted with this application.</i>

6.6.1	Protect unique, rare, and fragile environments, including wetlands and fish and wildlife habitat conservation areas, from impacts associated with development.	<i>The project will not impact any unique, rare, or fragile environments. None of these are within the project footprint.</i>
6.6.2	Locate and design development to minimize risks to people, property and other critical areas associated with geologically hazardous areas, frequently flooded areas, and tsunamis.	<i>The project is located outside of frequently flooded areas (see attached memo on the floodplain mapping) and proposed use is appropriate for the degree of geological hazard. Market Street is mapped within the tsunami hazard zone. Market Street serves as an escape route to higher elevations at the base of Cap Sante.</i>

Chapter 8	SPECIFIC USES & DEVELOPMENT REGULATIONS	RESPONSE
8.2	Advertising & Signs	<i>The project will salvage and reuse existing signs. Any new signage will meet requirements in AMC 19.67 and be sited to avoid visual impacts while still providing functional wayfinding</i>
8.9	Parking Facilities	<i>The improved parking lot will be compatible with development regulations for parking facilities. The paved lot is, separated from adjacent uses by a landscaped screen, meets set back standards, and lighting shielded to prevent glare.</i>

Chapter 9	FILL	RESPONSE
9.7.1	Fill should be located, designed, and constructed to protect shoreline ecological processes and functions.	<i>Structural fill will be imported as needed to support on-site use and will not interrupt shoreline processes.</i>
9.7.2	Fill landward of the ordinary high water mark should be permitted when necessary to support permitted uses, and when significant impacts can be avoided or mitigated.	<i>Fill is needed to support the improvements to the lot.</i>
9.7.3	Fill waterward of the ordinary high water mark should be permitted only by Shoreline Conditional Use Permit when necessary to accommodate water-dependent uses; public access; expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible; a transportation facility, utility, or navigational structure with no feasible alternative; cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan; disposal of dredged material considered suitable under and conducted in accordance with the Dredged Material Management Program of the Department of Natural Resources, Department of Ecology and U.S. Army Corps of Engineers; and public access.	<i>No fill waterward of OWH is proposed.</i>
DR-9.7.1	Fill for water-dependent uses and for public use shall be given priority.	<i>Acknowledged. Public marinas are generally considered both water dependent and public.</i>
DR-9.7.2	Fill shall be permitted only when in conjunction with a proposal or activity otherwise permitted under the SMP.	<i>Fill is required to make a suitable grade and support the proposed improvements to the parking lot. The lot is an allowable supporting water dependent uses within the commercial marine zone and urban SED.</i>
DR-	Fill waterward of the ordinary high water mark is permitted by Shoreline Conditional Use Permit only when necessary	<i>No fill waterward of OHWM is proposed.</i>

9.7.3	to accommodate water-dependent uses, and for maintenance and repair of existing structures; expansion or alternation of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible; a transportation facility, utility, or navigational structure with no feasible alternative; cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan; disposal of dredged material considered suitable under and conducted in accordance with the Dredged Material Management Program of the Department of Natural Resources; mitigation or compensation actions and ecological restoration including beach nourishment or enhancement projects when significant impacts can be mitigated; and public access.	
DR-9.7.4	Projects shall be located and designed to minimize the area of fill necessary to accommodate the use.	<i>Fill for the project is minimal and limited to required amounts for to ensure stability of site improvements.</i>
DR-9.7.5	Applications for fill shall address impacts to wetlands and streams; aquatic habitats; flooding; sediment transport; navigation, and public access. The following information may be required: physical and biological characteristics of the fill site, source and quality of fill material, grading plan showing the site, adjacent properties and waters, method of placement and compaction, type of proposed surfacing and runoff control, method of erosion control and stabilization, and proposed use of the fill area. Fill that will result in significant adverse impacts that cannot be mitigated is prohibited.	<i>No adverse impacts will result from fill placement. Structural fill will be placed as needed to support improvements to JKL lot.</i>
DR-9.7.6	Fill shall be provided with some means for erosion control and/or shoreline stabilization consistent with the policies and regulations of Section 9.11, Shoreline Stabilization Measures and Flood Protection Works.	<i>Soil stabilization will be provided as needed. TESC measures will be in place during construction to prevent erosion on site.</i>



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City of Anacortes
Planning, Community &
Economic Development

Date Received:
12/21/21
COA File #
SDP-2021-0012

November 23, 2021

Libby Grage

City of Anacortes Planning, Community & Economic Development Department

904 6th Street

Anacortes, WA 98221

RE: PRE_2021_0041: Cap Sante JKL Parking Lot Improvements- FEMA Boundary

Dear Libby,

On behalf of our client, the Port of Anacortes, I have attached for City of Anacortes review and approval an exhibit map depicting the difference between FEMA and surveyed floodplain boundaries in the vicinity of our proposed JKL Parking Lot project. Based on correspondence with the City Floodplain Manager, Rob Frisinger, and pursuant to the provisions of City of Anacortes Municipal Code 19.74.040(C)(5) we are requesting a formal determination from the City that the proposed Parking Lot project is not actually located in the floodplain (despite current FIRM map designations) and may continue without the need for a Flood Development Permit.

The attached map depicts the following features for your review:

- ... Proposed JKL Parking Lot and southerly access road
- ... FEMA FIRM Map Floodplain Boundary intended to represent the Base Flood Elevation of 7' (NGVD 29 vertical datum). This line is shown as a blue dashed line.
- ... Ground Survey determined Floodplain Boundary representing the true location of the 7' NGVD 29 contour. This line is shown as a solid green line near the Cap Sante Marina shoreline

As can plainly be seen on the attached exhibit map and based on the results of an actual ground survey using the methods prescribed in WAC 332-130-145, it has become evident that the FEMA FIRM Maps for this area are inaccurate and not based on reliable topographic data.

Please take note that our JKL Parking Lot project datum is MLLW (Tidal). A conversion factor of -4.3 feet was used to convert project datum to FEMA datum (NGVD 29) for this exercise. The translated Base Flood Elevation would represent the 11' contour (rounded) on our JKL Parking Lot existing conditions map, which actually lands near the top of slope of the existing Cap Sante Marina revetment rock wall (see map). Vertical Datum conversions were determined using a published elevation benchmark records and verified using NOAA's VDatum conversion tool. A copy of these results are attached for your records.

Please let us know if you have any questions or need additional information to support this request for determination.

Sincerely,
Pacific Surveying and Engineering

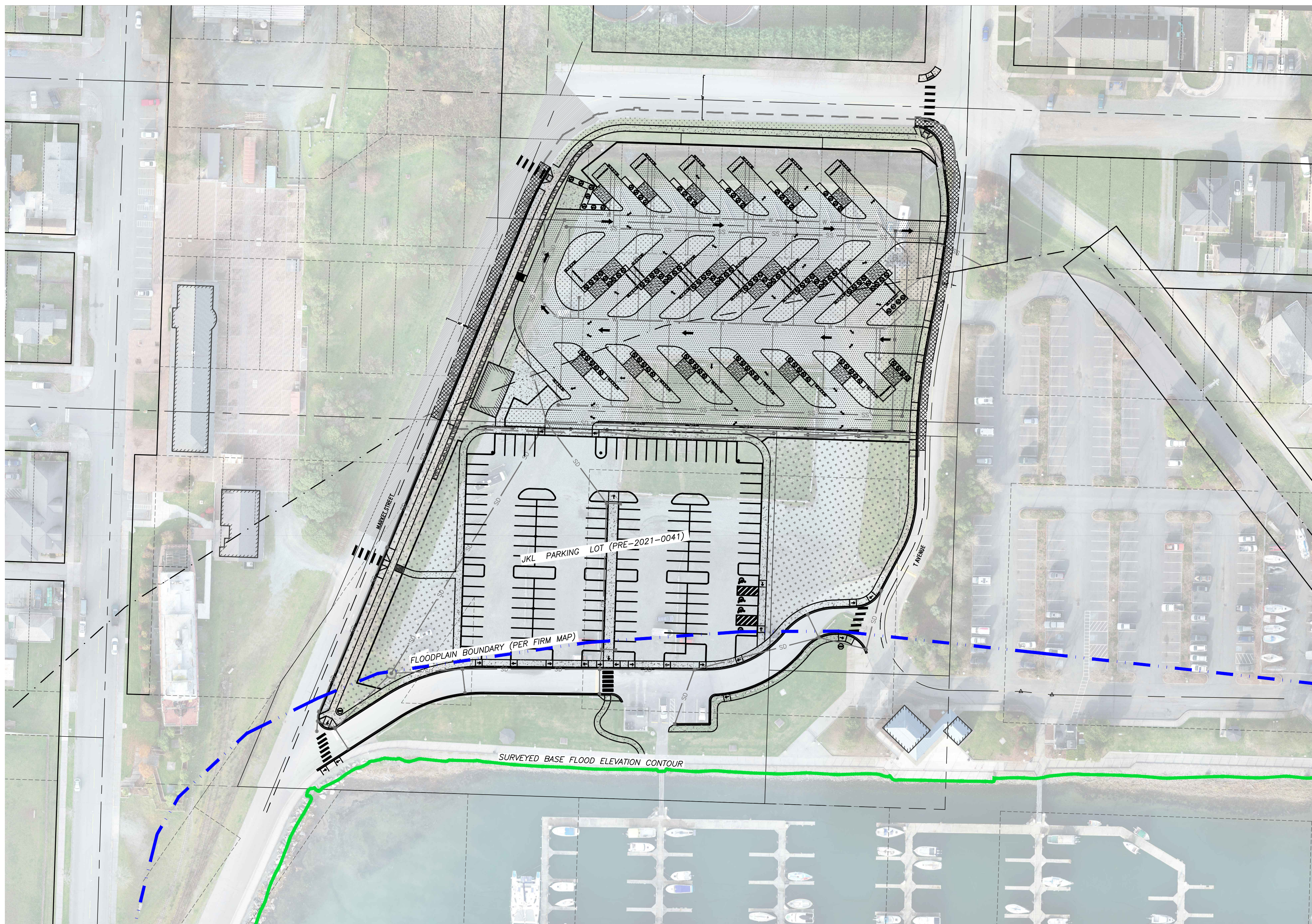
A handwritten signature in blue ink, appearing to read "Adam Morrow", with a stylized flourish at the end.

Adam Morrow, PLS
Survey Project Manager
Principal

Enclosures

cc: Rob Frisinger, City of Anacortes Deputy Building Official
Steve Lange, City of Anacortes Department of Public Works
Brenda Treadwell, Port of Anacortes
Brad Tesch, Port of Anacortes
Kevin Anderson, Port of Anacortes

CAP SANTE MARINA - FEMA EXHIBIT



PSE

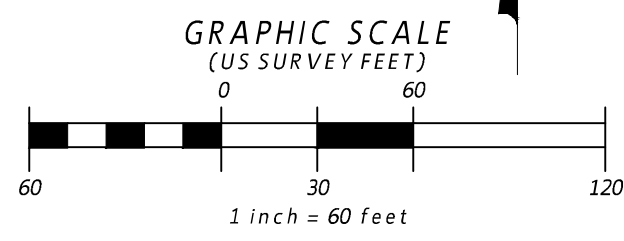
DATA		
DRAWN:	TJM	
CHECKED:	ASM	
DATE:	11/16/21	
DWG:	2020064_svE_FEMA.dwg	
SCALE:	1" = 60'	
JOB#:	2020064	
FIELD BOOK:	N/A	
SHEET	1	OF 1

CAP SANTE MARINA
FEMA EXHIBIT

PORT OF ANACORTES
100 COMMERCIAL AVENUE
ANACORTES, WA 98221



PACIFIC SURVEYING
& ENGINEERING, INC.
909 Squallum Way, Suite 111 | BELLINGHAM, WA 98225
T: 360.671.7387 | F: 360.671.4685
WWW.PSESURVEY.COM | INFO@PSESURVEY.COM



National Flood Hazard Layer FIRMette



122°36'40"W 48°31'5"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
OTHER FEATURES		Hydrographic Feature
		Digital Data Available
MAP PANELS		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **10/19/2021 at 5:15 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spacial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the City of Anacortes, Washington.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

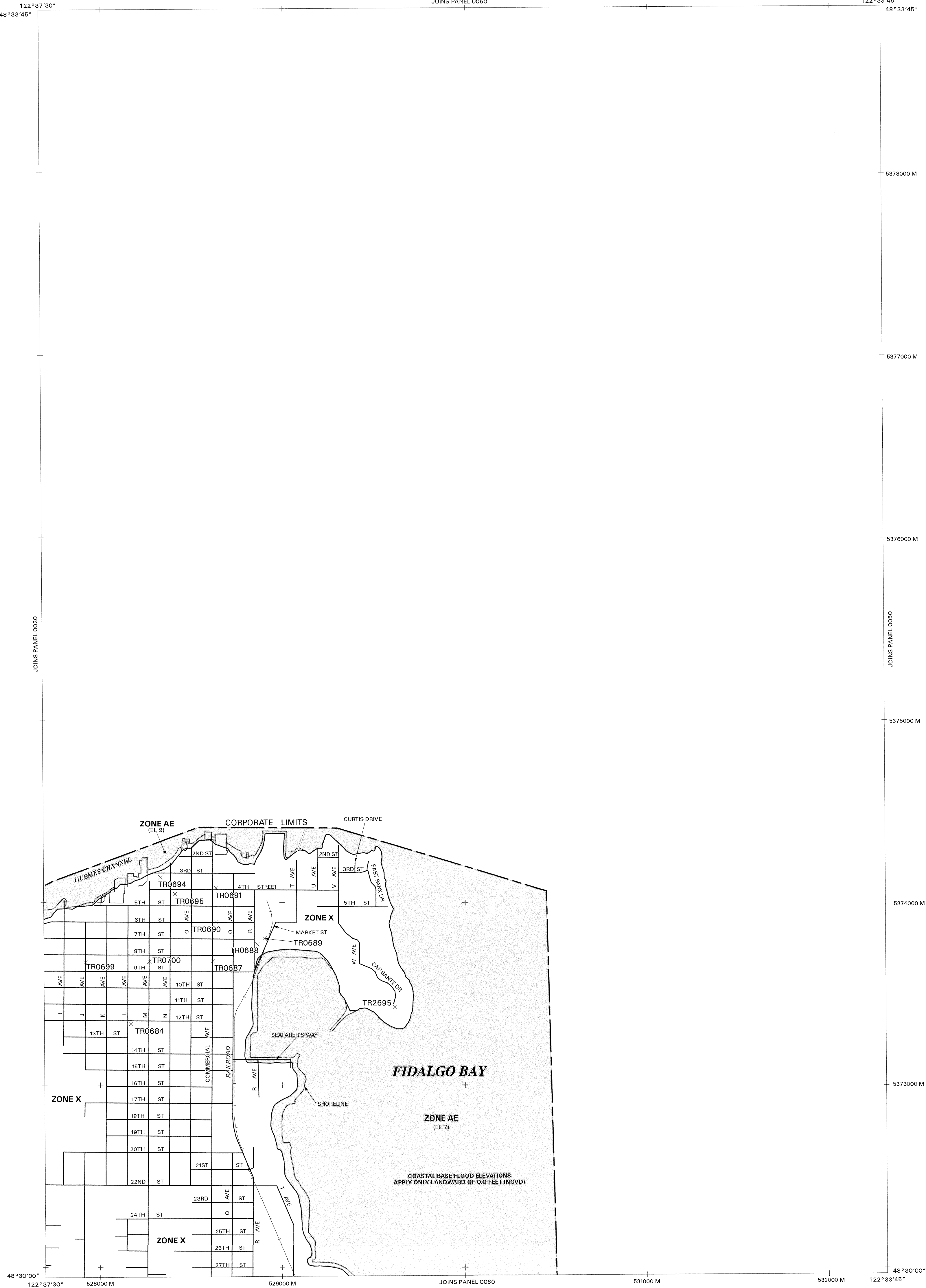
An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2927) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

All Special Flood Hazard Areas shown within the City of Anacortes were previously published for the Unincorporated Areas of Skagit County, Washington. Dates shown below are from the Effective FIRM for Skagit County: Initial Identification - October 25, 1974; Flood Hazard Boundary Map Revisional - September 13, 1977 & April 1, 1980; Flood Insurance Rate Map Effective - January 3, 1985



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.

Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Cross Section Line

Transect Line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4276000M 1000-meter Universal Transverse Mercator grid values, zone 10

600000 FT 5000-foot grid ticks

Bench mark (see explanation in Notes to Users section of this FIRM panel).

River Mile

MAP REPOSITORY
City of Anacortes City Hall 804 6th Street Anacortes, WA 98221
(Maps available for reference only, not for distribution.)

INITIAL IDENTIFICATION
See Notes to Users Area

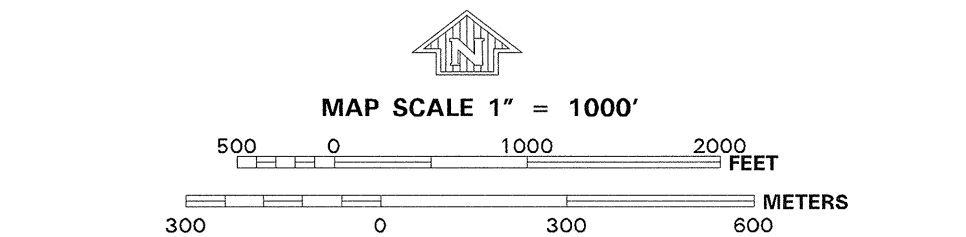
FLOOD HAZARD BOUNDARY MAP REVISIONS
See Notes to Users Area

FLOOD INSURANCE RATE MAP EFFECTIVE
See Notes to Users Area

FLOOD INSURANCE RATE MAP REVISIONS

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANEL 0040A

FIRM

FLOOD INSURANCE RATE MAP

CITY OF ANACORTES, WASHINGTON

SKAGIT COUNTY

PANEL 40 OF 100

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANACORTES, CITY OF	530317	0040	A

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

FEDERAL EMERGENCY MANAGEMENT AGENCY

MAP NUMBER
5303170040A

EFFECTIVE DATE:
SEPTEMBER 17, 2003

Federal Emergency Management Agency

Page 31 of 591

BENCHMARK	TIDAL MLLW (US Survey Ft)	NAVD88 (US Survey Ft)	NGVD29 (US Survey Feet)	MLLW-NGVD 29 Difference
Q 329	17.005	16.457	12.674	4.331
P 329	31.394	30.846	27.060	4.334
Cap Sante	201.059	200.511	196.752	4.308
Tidal 14	27.290	26.742	22.976	4.314
S 329	70.912	70.364	66.588	4.324
R 329	159.193	158.645	154.859	4.334

Regional Information

* Region : Contiguous United States

Horizontal Information

	Source	Target
Reference Frame:	NAD 1927	NAD83(2011)
Coord. System:	Geographic (Longitude, Latitude)	Geographic (Longitude, Latitude)
Unit:	meter (m)	meter (m)
Zone:	AL E - 0101	AL E - 0101

Vertical Information

	Source	Target
Reference Frame:	NGVD 1929	NAVD83
Unit:	foot (U.S. Survey) (US_ft)	foot (U.S. Survey) (US_ft)
	☒ Height ☐ Sounding	☒ Height ☐ Sounding
	☐ GEOID model:	☐ GEOID model:

Point Conversion ASCII File Conversion

Input

Latitude: 48.516156
e.g. 33.7586 or 33 45 30.9600

Longitude: -122.606811
e.g. -118.7691 or -118 46 8.7600

Height: 7
e.g. 3.037

[Drive to on map](#)

[Reset Map](#)

☐ to DMS

Output

Latitude: 48.5159840554

Longitude: -122.6080893779

Height: 11.285

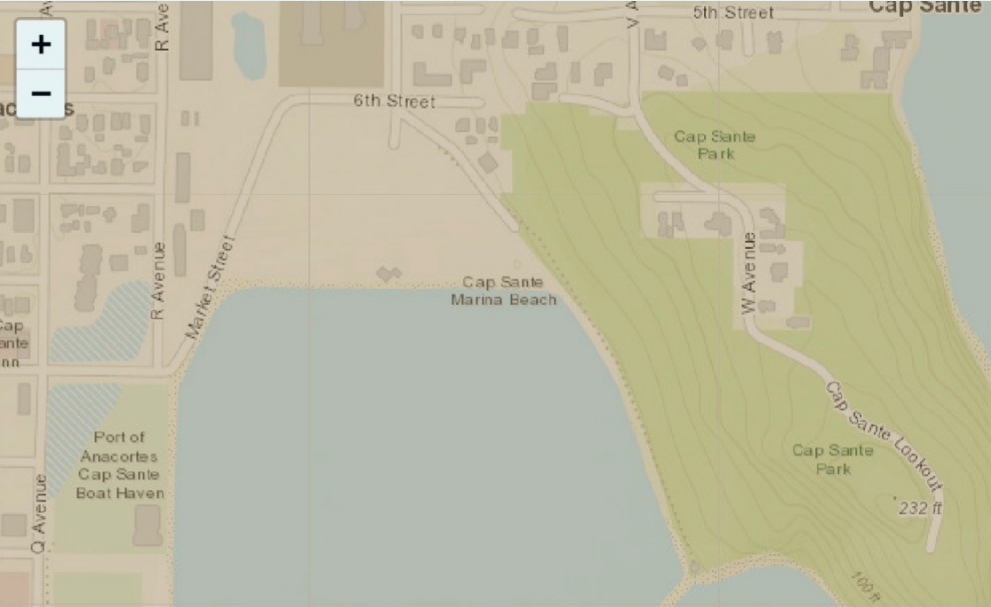
[Drive to on map](#)

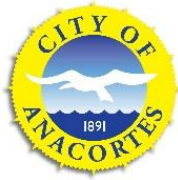
[Reset Map](#)

Vertical Uncertainty (+/-): 0.3985678 US_ft

Vertical_Area: WAjdfuca03_8301:3:0

- ☒ Valid Tidal area
- ☒ Non-Tidal area
- ☒ Non-Valid area
- ☒ IGLD85
- ☒ SVU area





PLANNING, COMMUNITY, & ECONOMIC DEVELOPMENT DEPARTMENT

Mailing Address: P.O. Box 547, Anacortes, WA 98221

Office Location: 904 6th Street, Anacortes WA 98221

Phone: (360) 299-1984

City of Anacortes
Planning, Community &
Economic Development

Date Received:

~~12/21/21~~ 12/29/21

COA File #

SDP-2021-0012

Design Review – Departure Application

The Unified Development Code provides for a number of specific departure opportunities to development standards. The purpose is to provide applicants with the option of proposing alternative design treatments provided such departures meet the “purpose” of the particular standard and any additional departure criteria established for the particular departure opportunity.

Departure opportunities are only available only where specifically noted for specific standards within AMC Title 19 *Unified Development Code*.

An applicant must complete this form and submit it as part of any development application where a “departure” is proposed.

Associated Project Information	
Project File Number	PRE_2021_0041
Project Name	JKL Lot Improvements
Project Location	600 T Street Anacortes, WA 98221
Applicant Name	Port of Anacortes

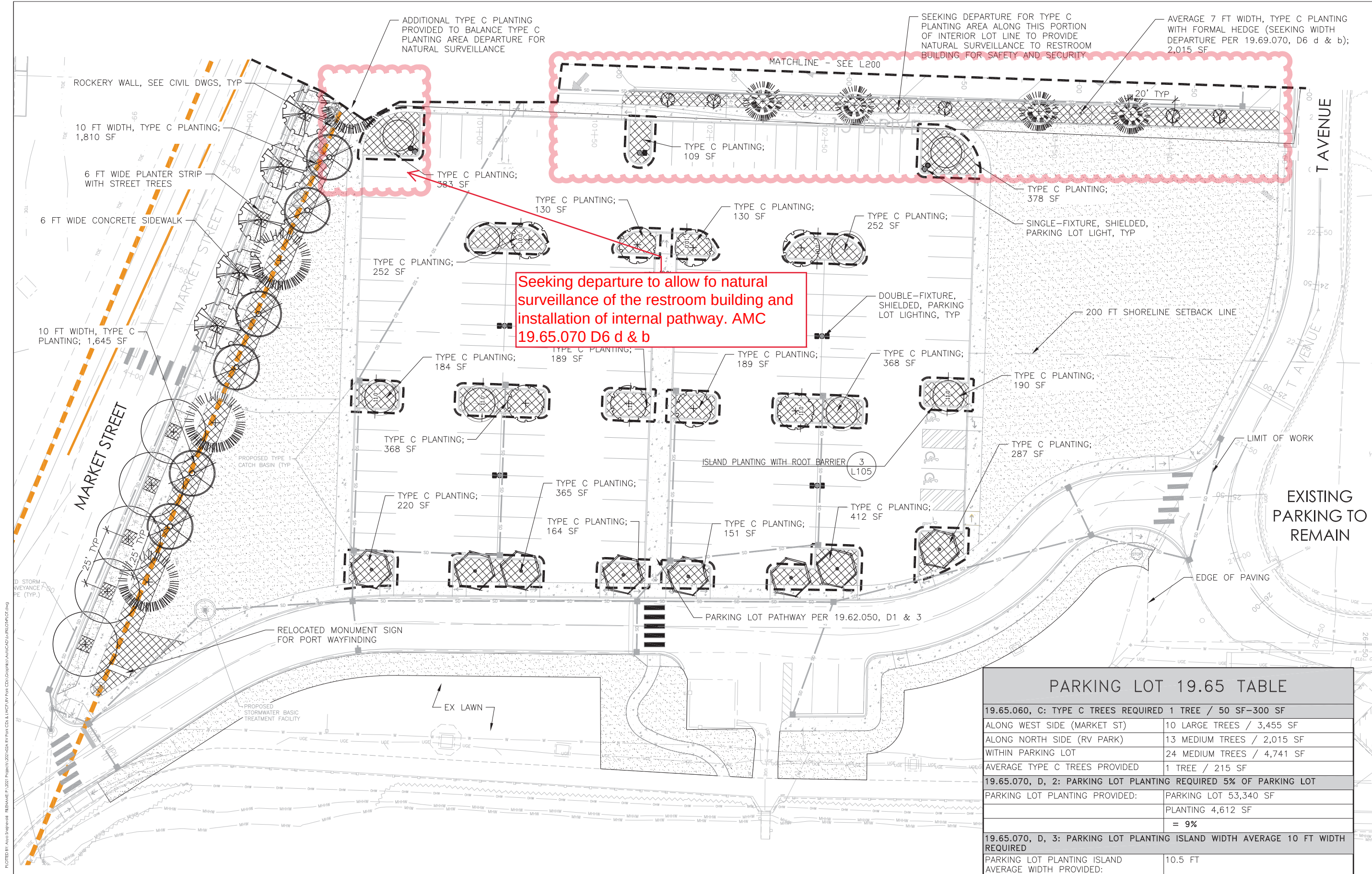
Complete the form(s) on the other side of this sheet.

Departure #1
Code citation: AMC 19.65.070, D6 d & b
Code requirement: 10ft type C landscape buffer between lots
Proposed design departure: Average width of planting 7ft with formal hedge
Rationale explaining how the proposed departure meets the purpose(s) of the standard and other applicable departure criteria. The reduced buffer width in places will allow for natural surveillance to the restroom building for safety and security and installation of an internal ADA accessible pathway bordering the improved parking lot. The buffer
Cut/Paste or attach graphics as needed to specifically identify the area of the departure(s) showing code compliant and requested departure dimensions. See attached plan sheet with red outlined areas.

Departure #2
Code citation:
Code requirement:
Proposed design departure:
Rationale explaining how the proposed departure meets the purpose(s) of the standard and other applicable departure criteria.
Cut/Paste or attach graphics as needed to specifically identify the area of the departure(s) showing code compliant and requested departure dimensions.

Add more sheets for additional departure requests, if applicable.

PLOTTED ON: 2023-12-14 12:30 PM
PLOT BY: AutoCAD
RENAME: P:\2023\Projects\2023-02-04 RV Park CDB & LNC\RV Park CDB\Graphics\AutoCAD\L101-DRAFT.dwg



PARKING LOT 19.65 TABLE	
19.65.060, C: TYPE C TREES REQUIRED 1 TREE / 50 SF-300 SF	
ALONG WEST SIDE (MARKET ST)	10 LARGE TREES / 3,455 SF
ALONG NORTH SIDE (RV PARK)	13 MEDIUM TREES / 2,015 SF
WITHIN PARKING LOT	24 MEDIUM TREES / 4,741 SF
AVERAGE TYPE C TREES PROVIDED	1 TREE / 215 SF
19.65.070, D, 2: PARKING LOT PLANTING REQUIRED 5% OF PARKING LOT	
PARKING LOT PLANTING PROVIDED:	PARKING LOT 53,340 SF
	PLANTING 4,612 SF
	= 9%
19.65.070, D, 3: PARKING LOT PLANTING ISLAND WIDTH AVERAGE 10 FT WIDTH REQUIRED	
PARKING LOT PLANTING ISLAND AVERAGE WIDTH PROVIDED:	10.5 FT



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

DRAFT	
ISSUE	DATE

PROJECT: 0436.05
DESIGNED: D. KOONTZ
DRAWN: A. SNEJNEVSKI
CHECKED: D. KOONTZ
SCALE
0 20' 40'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.
SHEET TITLE

JKL PARKING LOT
PLANTING PLAN
SHEET
L101



September 10, 2021

Don Measamer, Director
Planning, Community, and Economic Development
City of Anacortes,
904 6th Street
Anacortes, WA

Dear Mr. Measamer,

The Port of Anacortes is planning improvements to the parking lot that serves J, K, and L docks in the North Basin of Cap Sante Marina (JKL Lot). We have a preliminary layout of the proposed improvements. However, the final configuration is still in design. In order to finalize the parking lot layout and the required number of parking stalls provided, the Port seeks a determination of the number of stalls required from your office.

Per AMC 19.64.040, the number of required parking spaces at Cap Sante Marina is a director's decision. In the past we have used a ratio of parking stalls to boat slips of 1:2 to provide adequate parking within Cap Sante Marina¹. This was a municipal code requirement until the 2019 development regulation updates were adopted. Presently, the layout of the JKL parking lot improvements will provide 136 parking stalls. J, K, and L docks provide moorage for 220 vessels.

Parking Capacity Sufficiency:

Existing preliminary analysis indicates that the proposed 136 stalls at the JKL lot are sufficient for current and future marina uses. To assess actual current parking use, the Port took aerial photographs from a drone on June 20th, July 3rd, July 13th, July 20th, and August 3rd during the summer of 2019 (Figure 1). In addition, Port staff manually counted cars in the parking lot on 32 days in June, July and August in 2019 (Table 1). These counts included the RV Park portion of the lot as well as the JKL lot. Planned improvements to the RV Park will formalize RV spots and prevent automotive spillover parking into the JKL lot. RVs will be limited to parking in the northern section of the lot, which will be formalized in as Lot A of the proposed BLA and segregated from parking that serves JKL docks.

Table 1: Parked Vehicle Count Summary (June-August 2019)

	Number of Stalls	Max # of Vehicles	Min # of Vehicles	Average Count
JKL Lot & RV Park	120	171	26	77

The current undeveloped gravel parking lot has no defined number of spaces or striped stalls. Parking capacity varies in proportion to lot user's parking skills. As an example of JKL parking usage during a high volume event, we counted the number of cars using the JKL lot from aerial photos taken during the 2019 Shipwreck Fest held on July 20th, 2019. JKL lot provided approximately 98 parking spaces² on this date

¹ Cap Sante Marina North and West Basins Uplands Redevelopment and Parking Memo, Maul, Foster, and Alongi, 9/11/2019

² Number of vehicles within the footprint of the JKL lot improvements excluding RV stalls.

(Figure 2). Much of the vehicle traffic was not generated by the marina users, but rather the larger public. The preliminary layout for JKL lot improvements will provide 39% (136 spaces total) more parking than provided at present. This additional capacity will improve parking at Cap Sante Marina for marina guests and tenants as well as for the public.

Marinas have no predetermined city requirements for the number of parking spaces required per slip. Research suggests that boats in slips tend to have limited use during normal weekdays during the boating season (possibly 10 to 15 percent), and almost none (less than one percent) during the off-season. On normal weekends, marinas see a higher use, possibly in the 20 to 30 percent range, depending on the weather. On extended holiday weekends, traffic is higher (40 to 60 percent)³. In California, an area with better boating weather and climate than the Puget Sound region, a ratio of 0.6 to 0.8 parking spaces per slip has been recommended for average peak marina use.⁴ The preliminary layout of the improved JKL lot will provide 0.6 parking stalls per slip, more than was previously required by City code and is adequate for predicted use at the marina.

The planned JKL lot improvements are designed to improve parking, make a safer facility for users, and update landscaping and stormwater handling at JKL lot. Can you confirm that the 136 parking stalls proposed at for the JKL improvements are adequate? If not, how many stalls should the lot provide for marina users?

If you need any follow up or have any questions regarding this topic, please let us know.

Best regards,

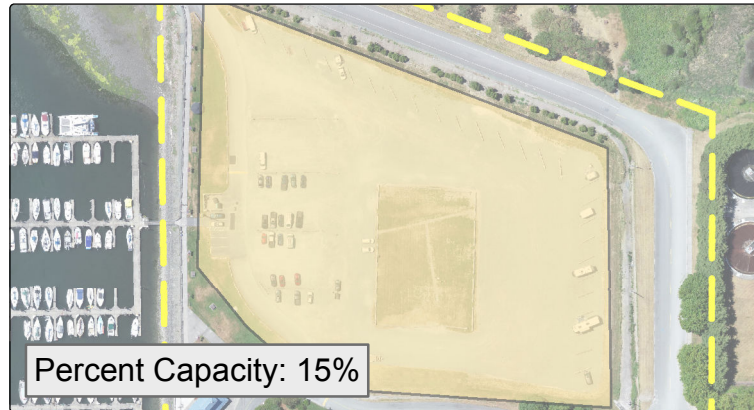
Kevin Anderson
Environmental Specialist

CC: Brenda Treadwell
Brad Tesch
Libby Grage

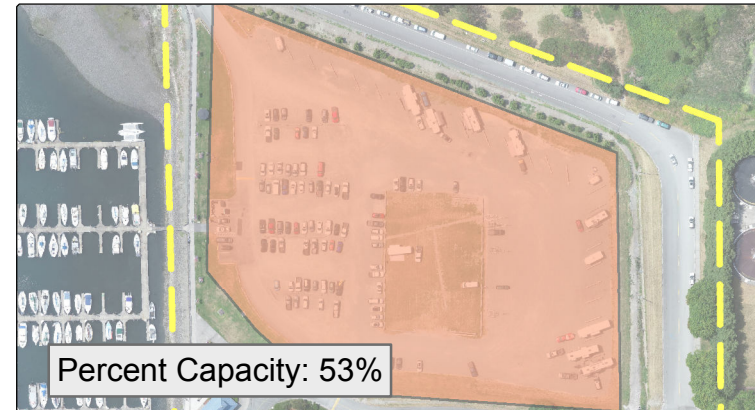
³ "Where there are boats there must be cars, but how many" Ron Stone, Marina Dock Age, September 2002

⁴ Guidelines for Marina Boating Facilities. California Department of Boating and Waterways, July 2005.

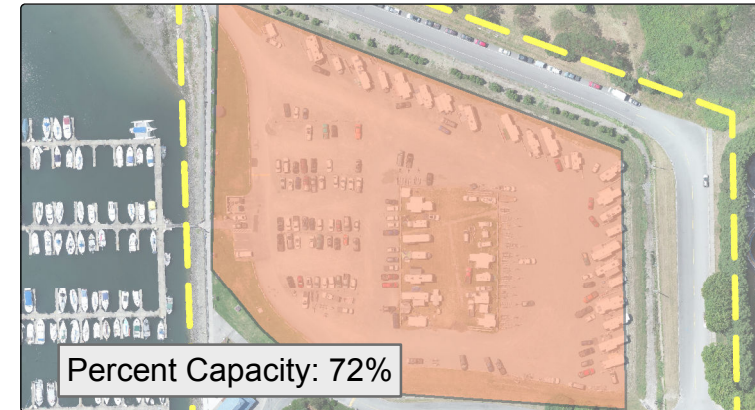
June 20th



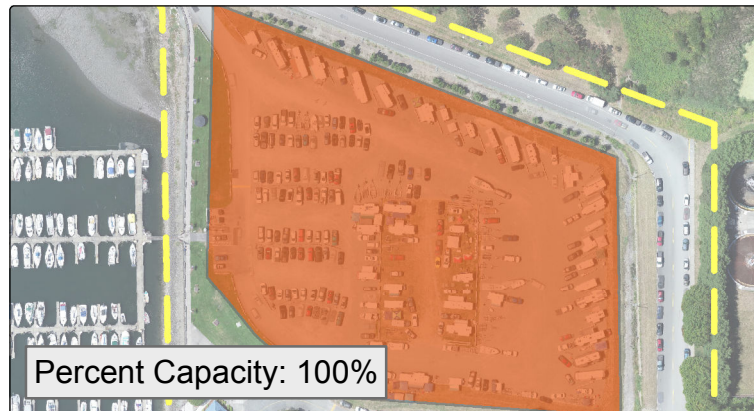
July 6th



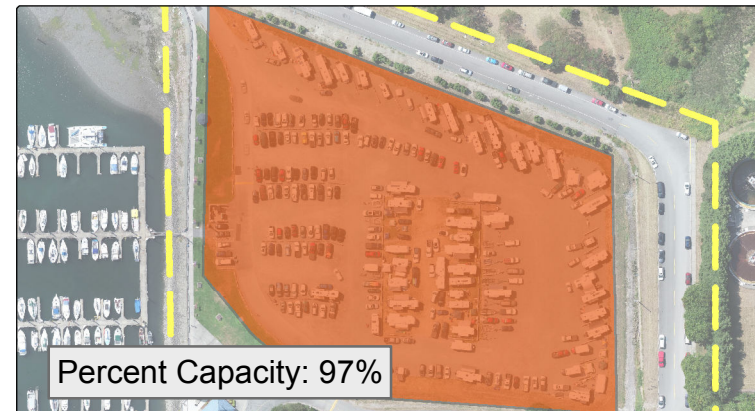
July 13th



July 20th (Shipwreck Fest)



August 3rd



August 17th

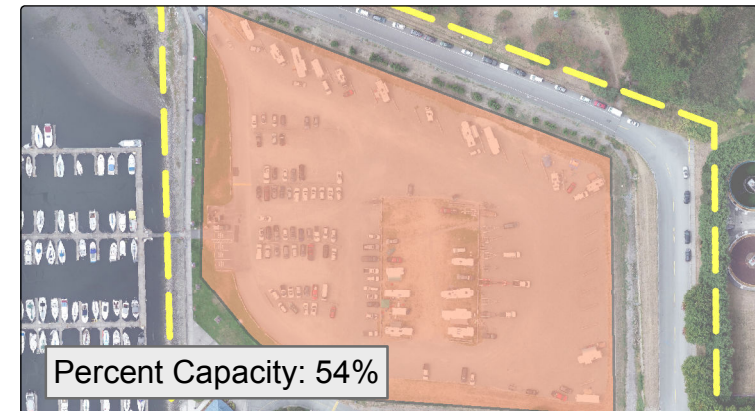


Figure 1 JKL Lot Capacity Analysis

Port of Anacortes
Anacortes, Washington

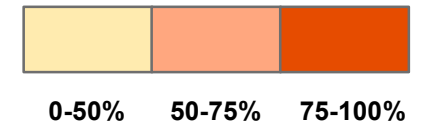
Legend

Date of Car Count

- 6/20/2019
- 7/13/2019
- 7/20/2019
- 7/6/2019
- 8/17/2019
- 8/3/2019

Parking Lot H

Parking Lot Capacity Index:



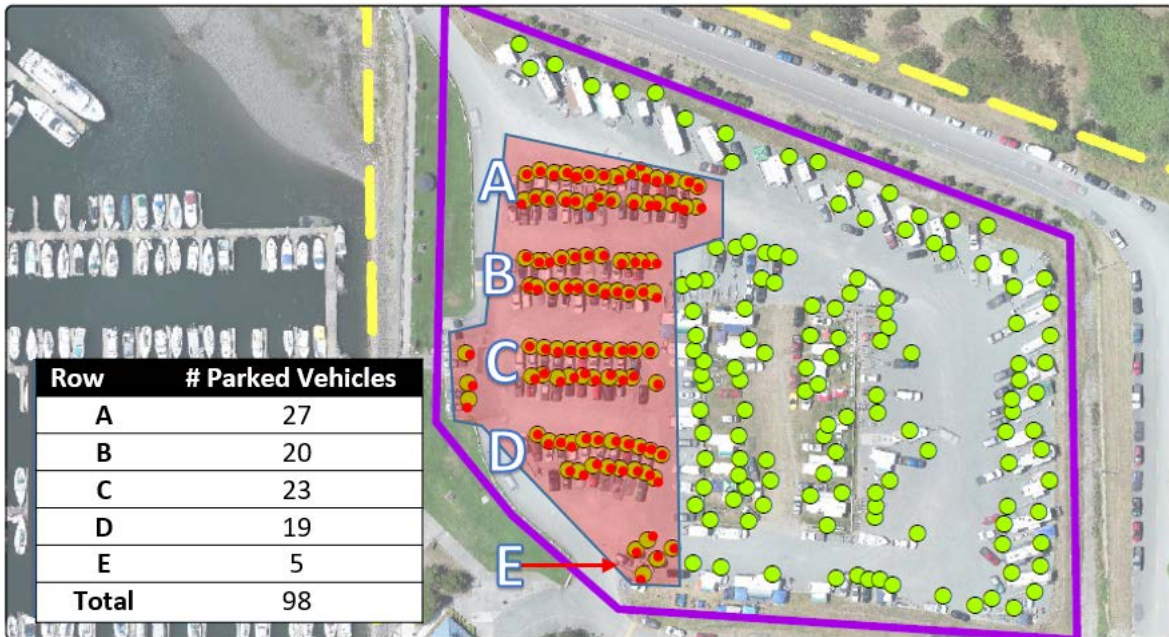
Staff Counts of Parking
Number of Days Counted: 32
Maximum Number of Cars/Trailers: 171
Average Number of Cars/Trailers: 77
Maximum Number of RVs: 34
Average Number of RVs: 12
Maximum Combined Number: 205
Average Combined Number: 89

Note:
Aerial photos obtained from drone flights by Pacific
Surveying & Engineering, Inc.
Capacity based on highest combined count of cars/trailers
and RVs of 227 observed on July 20th, 2019.

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for legal, engineering, or surveying purposes. Users of this information should review or
consult the primary data and information sources to ascertain the usability of the information.

July 20th (Shipwreck Fest)



Vehicles were counted in the red shaded area which approximates the area of the proposed JKL lot improvements.

Figure 2: Peak capacity at JKL Lot on July 20th, 2019 during Shipwreck Fest.



STATE ENVIRONMENTAL POLICY ACT NOTICE OF DETERMINATION OF NON-SIGNIFICANCE (DNS)

Project Name: Cap Sante RV Park and JKL Parking Lot Improvements

Location: Cap Sante Marina-North Basin 600 T Street, Anacortes, Washington, 98221

Proponent: Port of Anacortes

Description of Proposal: The Port of Anacortes (Port) proposes to redevelop an existing 26 space RV Park and adjacent gravel parking lot at Cap Sante Marina. Improvements would modernize the RV Park with updated facilities for RV Park guests and pave and install stormwater facilities and landscaping at the JKL parking lot. There would be no change in use at the current site and there would be a reduction of one RV space in the redevelopment. The existing site is currently an unimproved gravel RV Park and parking area without amenities, utilities, or appropriate stormwater handling facilities. The project would include the following individual components:

- Paving of the interior RV Park driveways and the JKL parking lot to reduce erodible and dust producing surfaces.
- Modification of RV parking to 25 pull-through spaces and installation of two Americans with Disabilities Act (ADA) accessible spaces with suitable slopes to facilitate access. Grading and paving of the adjacent existing parking lot would increase parking spaces from about 90 to 130.
- Grading and leveling of approximately 4 acres of the existing gravel RV Park and parking lot to establish a grade for improved stormwater management. Approximately 2,500 cubic yards (CY) of cut and 7,880 CY of fill would be graded.
- Installation of updated stormwater infrastructure, including catch basins, conveyances, and treatment facilities would be completed to meet Washington State Department of Ecology (Ecology) stormwater management standards.
- Provision of utilities including water, electricity, cable, and sanitary sewer to each pull through RV space. Installation of fire hydrants for emergency fire suppression within the RV park and JKL parking lot.
- Construction of a 1,100 square foot (sf) single story utility/restroom/shower/laundry building with keyed access
- Installation of landscaping to provide privacy to RV Park guests and limit visual impacts to the surrounding neighborhood. Lawn and landscaping open space would prevent sediment runoff and improve aesthetics. Approximately 40% (about 1-acre) of the existing RV Park would be open space. Further landscaping at the JKL parking lot within the traffic islands would be completed along with the provision of two green spaces totaling 0.7 acres of public use green space.
- Installation of a sidewalk, crosswalks, pedestrian access, and a rockery retaining wall along Market Street. A planting strip with street trees planted every 25 feet on-center would be installed along Market Street and 6th Street.

During construction, contractors would be required to implement Best Management Practices (BMPs) for erosion control consistent with Ecology's Stormwater Management Manual for Western Washington. BMPs such as construction fencing, silt fence, covered stockpiles, and inlet protection

would contain sediment and prevent stormwater discharge off site. The project is subject to permits and approvals from the City of Anacortes, including a boundary line adjustment (BLA), conditional use permit, shoreline substantial development permit, a clear and grade permit, and a building permit.

Lead Agency: The lead agency under the State Environmental Policy Act is the Port of Anacortes.

Determination: As a lead agency, the Port of Anacortes has determined that this proposal will not have a probable significant adverse impact on the environment; a determination of non-significance (DNS) does not require an environmental impact statement (EIS) under RCW 43.21C.030(2)(c). This determination assumes compliance with federal and state law as well as City of Anacortes ordinances related to general environmental protection. This decision was made after review of a completed SEPA environmental checklist and other supporting documents on file with the lead agency. This information is available to the public on request (call 360-299-1810 to request a copy by mail or email) or at the Port's administrative offices at 100 Commercial Avenue, Anacortes, WA 98221 (pick up by appointment only to comply with Port COVID-19 Policies and Procedures; <https://www.portofanacortes.com/covid>). The SEPA Checklist and complete DNS can also be reviewed on the Port's website: www.portofanacortes.com.

Note: Issuance of this threshold determination does not constitute approval of permits. This proposal will be reviewed for compliance with all applicable Federal, State and City of Anacortes regulations.

Comment Period:

Kevin Anderson, Environmental Specialist
Port of Anacortes
100 Commercial Avenue
Anacortes, WA 98221

Comments may also be submitted to the Port via (a) e-mail to kevin.anderson@portofanacortes.com or (b) fax to (360) 293-9608. Comments will not otherwise be accepted by telephone or personal conversation.

Publication Date: June 19, 2021

Signed and dated this 17th day of June, 2021:



Daniel C. Worra
Port of Anacortes SEPA Responsible Official



STATE ENVIRONMENTAL POLICY ACT (SEPA) CHECKLIST

City of Anacortes
*Planning, Community &
Economic Development*

Date Received:

12/21/21

COA File #

SDP-2021-0012

A. BACKGROUND

1. Name of proposed project, if applicable:

Cap Sante RV Park and JKL Parking Lot Improvements (the "Project")

2. Name of applicant:

Port of Anacortes

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

Applicant:
Kevin Anderson
Environmental Specialist
Port of Anacortes
100 Commercial Ave
Anacortes, WA 98221
360.299.1827
Kevin.anderson@portofanacortes.com

4. Date checklist prepared:

June 17th, 2021

5. Agency requesting checklist:

City of Anacortes

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

Construction is dependent on grant funding availability, but is currently planned for fall 2021 with project completion expected in 2022.

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

No. The existing RV Park and adjacent JKL parking lot, located within the north end of the Cap Sante Marina's North Basin, requires modernization and upgrades to existing amenities and utilities. Future additions or expansions to the RV Park and JKL parking lot are not anticipated or proposed at this time.



Future North and West Basin improvements of separate utility are undergoing preliminary planning and concept development at this time and would undergo SEPA review and permitting at that time (two to four years out).

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

A traffic study has been prepared directly for the RV Park (attached). Additional studies prepared for other North and West Basin development projects are also referenced (Preliminary Geotechnical Evaluation, Preliminary Habitat Evaluation, and Cultural Resources Report). These reports were prepared in part to support planning efforts for future projects, some of which are no longer under consideration, but include information germane to the existing RV Park and parking lot site. They are available for review on request.

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.

Yes. Existing platting and subsequent right of way vacations are confusing. A boundary line adjustment (BLA) request to the City of Anacortes is being prepared to simplify the existing lot lines.

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

The proposed RV Park and parking lot improvements are anticipated to require the following permits in addition to SEPA review:

- City of Anacortes Conditional Use Permit for the RV Park
- City of Anacortes Shoreline Substantial Development Permit (JKL parking lot lies within 200 feet of the shoreline)
- City of Anacortes Building and Construction permits, along with a Utility Extension approval
- Washington State Department of Ecology (Ecology) Construction Stormwater General Permit (CSWGP)

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 Port of Anacortes (Port) proposes to improve an existing 26 space RV Park and adjacent gravel parking lot at Cap Sante Marina. Improvements would modernize the RV Park with updated facilities for RV Park guests and pave, install stormwater facilities and landscaping at the JKL parking lot.



Proposed improvements at the existing RV Park would provide full utility service to the existing RV Park campsite spaces. Improvements would provide the park with appropriate paved access and spacing, one RV space would be eliminated. An 1,100 square foot (sf) single story utility/restroom /shower and laundry facility would be constructed for exclusive use by RV Park guests. The existing gravel and barren site would be landscaped and vegetated, and updated utilities including stormwater would be installed. The total footprint of the RV Park would remain the same (approximately 2.5 acres) with about 1-acre of open space. Improvements to the adjacent 1.5-acre JKL parking lot would include regrading, paving, and reconfiguration of the existing gravel lot. The project would reconfigure the lot to provide from the current total of about 90 unmarked spaces to approximately 130 defined parking spaces. Landscaped islands would be installed between parking rows and two green spaces constructed for public use (total area of green space of about 0.7 acres).

Installation of updated stormwater infrastructure, including catch basins, conveyances, and treatment facilities would be completed to meet Ecology stormwater management standards.

- 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.**

The proposed project is located on Port owned property at the southeast corner of 6th and Market Streets, in Anacortes Washington (Section 18, Township 35, Range 02). The RV Park and JKL parking lot area encompass approximately 4 acres (RV Park is about 2.5 acres and the parking lot is about 1.5 acres). Vicinity and site plans are attached.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

The project site is a flat 4-acre site with no amenities and fringing grasses.

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

Less than 2%.



- 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.**

Most of the area surrounding area was formerly mudflats of Fidalgo Bay. The upper surface of the site consists of sand and silt deposits from the nearby Cap Sante Marina, originally placed at the site when the marina was developed in the 1950's.

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

No.

- 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 2,500 cubic yards (CY) of cut and 7,880 CY of fill would be graded. The fill material (7,880 CY) would be imported for the main access road and other areas where needed. Penetration of native surface area is unlikely. Fill materials would be clean and be obtained from an engineer-approved source.

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

Erosion is unlikely, given the relatively flat site and the incorporation of state-mandated Best Management Practices (BMPs) during construction as part of the CSWGP approval process that would minimize the potential for stormwater runoff to nearby surface waters.

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

The proposed project would modify an existing gravel RV Park and parking lot. Following construction, about 65% of the existing gravel surface would be paved.

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

The Port would institute a site sediment and erosion control plan for construction as mandated by the state and the anticipated CSWGP. Post construction landscaping and improved stormwater facilities would reduce site erosion over



the long-term. Open space areas would be vegetated, with both lawns and landscaping installed to protect erodible surfaces.

2. Air

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

It is anticipated that during construction, there would be emissions from internal combustion engines associated with construction vehicles and other construction equipment. These short-term air emissions are expected to be limited to diesel and gasoline engine emissions from trucks and other heavy equipment being used for excavation, backfilling, and grading. These emissions would be temporary in duration and not expected to differ substantially from other commercial waterfront vehicular activities.

Over the long-term, one less RV space is proposed than existing and the provision of utilities would reduce how frequently RV park guests use internal combustion generators for electricity. The JKL parking lot would increase the number of parking spaces by approximately 40 to 130 total spaces through reconfiguration of the lot. This increase in parking spaces could result in a slight increase in air emissions from combustion engines at the lot.

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

The City of Anacortes Wastewater Treatment Plant is immediately north of the site. No apparent odor emissions have been identified.

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

Construction activities would use the proper precautions to minimize dust emissions. Potential minimization actions include, the use of water, reducing vehicle speeds, vehicle cleaning prior to exiting the site to prevent track-out of mud or dirt onto paved public roadways, and sweeping/vacuuming.

The provision of electricity at the RV park would reduce how frequently RV park guests use internal combustion generators for electricity.

3. Water

- a. Surface:**



- 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.**

A low-quality wetland, hydraulically and functionally separated from the project area by Market Street and a change in elevation is located to the northwest of the project site. Cap Sante Marina and Fidalgo Bay lie more than 200 feet south of the RV project site. Cap Sante Marina and Fidalgo Bay are immediately south of the JKL parking lot.

- 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.**

None is anticipated for the RV Park improvements. A portion of the JKL parking lot is located within 200 ft of the shoreline zone, but landward of the ordinary high water mark, and would require a Substantial Shoreline Development Permit from the City of Anacortes (see attached site plans).

- 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.**

None.

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

No.

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

Yes. The southern edge of the JKL parking lot lies within a 1% annual chance flood hazard area.

- 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. Construction could increase the risk of erosional runoff and construction debris entering surface waters. However, during construction contractors would be required to implement Best Management Practices (BMPs) for erosion control during active construction consistent with the project CSWGP and Ecology's Stormwater Management Manual for Western Washington. BMPs such as construction fencing, silt fence, covered stockpiles, and inlet protection



would be implemented as applicable to contain sediment and prevent stormwater discharge off site into surface waters.

b. Ground Water:

- 1) **Will ground water be withdrawn, or will water be discharged to ground water? 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 would be discharged. Improvements to the RV Park include hook up of the existing spaces to the City of Anacortes Sanitary Sewer system for RV blackwater.

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.**

Water runoff during construction or over the long-term could enter nearby marina surface waters.

Short-term impacts to water quality would be avoided and minimized by the implementation of construction BMPs and compliance with CSWGP conditions. BMPs such as construction fencing, silt fence, covered stockpiles, and inlet protection would be implemented as applicable to contain sediment and prevent stormwater discharge off site.

The project would result in long-term improvements to stormwater flow. Installation of updated stormwater infrastructure, including catch basins, conveyances, and treatment facilities would be completed to meet Ecology stormwater management standards. Stormwater collection would be directed (with grading and curbing) to this updated system in compliance with local and state standards.

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



Construction BMPs are proposed to avoid construction-related spills and discharges, and the contractor would abide by CSWGP conditions and a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The site is presently gravel, affording an opportunity for pollutants in stormwater to enter ground or surface water. Once the project site is redeveloped, stormwater would be collected into an improved system which would treat stormwater and limit pollutants from entering storm or surface waters.

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

During construction, contractors would be required to have a SPCC plan spill response plans and spill kits, absorbent pads and other appropriate materials necessary to contain and clean up an accidental spill at the site. BMPs would be implemented consistent with federal, state, and local requirements.

A City approved stormwater plan, vegetated landscaping, and stormwater BMP facilities (catch basins, treatment vaults, swales, etc.) are proposed for the redeveloped site. Installation of updated stormwater infrastructure, including catch basins, conveyances, and treatment facilities would be completed to meet Ecology stormwater management standards. Stormwater collection would be directed (with grading and curbing) to this updated system in compliance with local and state standards.

4. Plants

a. Check types of vegetation found on the site:

_____ deciduous tree (alder, maple, aspen, other):

_____ evergreen tree (shore pine):

_____ shrubs:

☒ grass: small grassed areas in the infield and around the margin of the RV park and JKL parking lot

_____ pasture:

_____ crop or grain:

_____ wet soil plants (cattail, buttercup, bullrush, skunk cabbage, other):

_____ water plants (water lily, eelgrass, milfoil, other):

☒ other types of vegetation: Class B Noxious Weeds (Poison Hemlock) around the margin of the RV park

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



The existing gravel RV Park and parking lot are heavily developed, and vegetation is scarce and limited to fringe grasses along the site borders. Limited grassy areas can also be observed around a small infield area of the RV Park.

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

A Habitat Assessment was conducted for the North and West Basin areas adjacent to Cap Sante Marina. This report was developed to support larger future redevelopment efforts (in two to four years) but contains relevant information for the site. The report is available on request.

No known threatened or endangered plant species are on or near the project site.

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

Project landscaping would include street trees and site landscaping, public lawns, and other green space. The landscaping plan is in development and would be required to meet applicable local code requirements.

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

Class B Noxious weeds (Poison Hemlock) grow in the grassed margins of the site.

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:

Several osprey nesting territories occur in the Anacortes area, but these are located inland. Numerous waterfowl and shorebirds also use the vicinity, primarily in the winter and during migration.

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

A Habitat Assessment was conducted for the North and West Basin areas adjacent to Cap Sante Marina. This report was developed to support larger future redevelopment efforts (in two to four years) but contains relevant information for the site. The report is available on request.

Protected species that could be located near the project site include marbled murrelet (*Brachyramphus marmoratus*), streaked horned lark (*Eremophila alpestris strigata*), and yellow-billed cuckoo (*Coccyzus americanus*). None of these species, or their critical habitat, are located at the immediate project site.

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



The Puget Sound area is part of the Pacific flyway. Birds that inhabit the area vary seasonally due to migration. Fidalgo Bay, east of the project area, also provides over-wintering areas for migratory waterfowl.

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

No wildlife habitat would be disturbed as part of this project. Site landscaping may improve habitat to a small degree.

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 service would be extended to the site for lighting, the utility/restroom /shower and laundry facility, and guest use.

**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:

None are proposed.

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.

Potential discharges to stormwater and surface waters during construction include accidental spills or leakage of petroleum products from construction equipment. The likelihood of a spill is low given the proposed BMPs and compliance with the project CSWGP. In the event of a potential spill the effects would be minimized and mitigated through implementation of an on-site SPCC plan and response strategy that has been prepared by the construction Contractor. These spill response materials would be available for use during site construction. The contractor would be required to prepare a health and safety plan for work in areas where it is expected that contaminated soils may be encountered.



RVs frequently house propane tanks heating, cooking, and refrigeration, which may increase fire risk if used improperly. Parked cars may leak fluids if not properly maintained.

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

No known contaminants are present.

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.

None known.

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.

Potential discharges to stormwater and surface waters during construction include accidental spills or leakage of petroleum products from construction equipment. The likelihood of a spill is low given the proposed BMPs and compliance with the project CSWGP. In the event of a potential spill the effects would be minimized and mitigated through implementation of an on-site SPCC plan and response strategy that has been prepared by the construction Contractor. These spill response materials would be available for use during site construction. The contractor would be required to prepare a health and safety plan for work in areas where it is expected that contaminated soils may be encountered.

RVs frequently house propane tanks heating, cooking, and refrigeration. Parked cars may leak fluids if not properly maintained.

4) Describe special emergency services that might be required.

No special emergency service requirements are anticipated other than typical police, fire, and EMS.

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

Implementation of a contractor SPCC plan and BMPs would minimize risks of accidental spills during construction.

Over the long-term, proposed site improvements would reduce the risk of leaks spills from RVs and parked cars from entering nearby surface waters.



b. Noise

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

Traffic noise is present. The site lies adjacent to two designated minor arterial streets. To the north lies the City of Anacortes Wastewater Treatment Plant and to the east and south are parking areas and the marina.

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.

Construction noise associated with a variety of construction equipment would occur for the duration of the project. This could include truck engines, generators and other small engines, excavators, backhoes, and other equipment. Construction noise would occur during daylight hours as permitted by City of Anacortes noise ordinances.

Over the long-term, RV noise from guests arriving and leaving the RV Park and the parking lot are anticipated to remain unchanged. Guests typically arrive and depart in mid-day hours.

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

Construction would occur during normal working hours (Monday through Friday, 7 AM to 10 PM). The project would comply with environmental noise standards set by the State of Washington, WAC 173-60, which establishes limits on the level and duration of noise crossing property boundaries. Temporary construction noise is exempt from state noise limits during daytime hours, per WAC 173-60-050(3)(a). Construction activities would be carried out in a manner consistent with the City Municipal Code and State environmental noise standards.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

The current and proposed use is as an RV park and parking lot. The use of the site does not change. The adjacent properties are Port or City owned (Cap Sante Marina, Depot Park, and City of Anacortes Wastewater Treatment Plant).

b. Has the site been used for agriculture? If so, describe.



No, the site has never been used for working farmlands or working forest lands nor are there any working forest or farms in the surrounding area.

c. Describe any structures on the site.

None.

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

No structures would be demolished.

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

City of Anacortes Zoning Map classifies the area as Commercial Marine.

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

The City of Anacortes Comprehensive Plan designates the site as Commercial Marine.

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

Urban SED.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No.

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

Not applicable.

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

Not applicable.

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

Not applicable.

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



None.

9. Housing

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

The project does not include provision of housing units.

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

The project does not eliminate any existing housing units.

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

Not applicable.

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 only structure proposed is a single story utility/restroom /shower and laundry facility with a pitched roof not expected to exceed 18 feet to the peak of the roof.

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

Views in the immediate vicinity would not be altered or obstructed by the completed project.

- c. **Proposed measures to reduce or control aesthetic impacts, if any:**

None are proposed.

11. Light and glare

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

No internal street lighting is proposed in the RV Park. The only exterior lighting would be attached to the exterior of the single story utility/restroom /shower and laundry facility and light would be directed toward the RV spaces. Any other lights would result from RVs parked at the RV Park, not an anticipated change from existing conditions. JKL Park will have lot lighting sufficient to provide safety and security for lot users similar to other lot lighting within the marina basin.



- 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:**
Nothing beyond landscaping and the location of the single story utility/restroom /shower and laundry facility. The small building would be located toward the interior of the site and would necessitate additional lighting.

12. Recreation

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

Cap Sante Marine, the adjacent esplanade, the City Maritime Heritage Museum, Depot Plaza, and Rotary Park are adjacent to the project site.

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

Construction would temporarily displace RVs and vehicles from using the RV Park and JKL parking lot.

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

The location of the existing RV Park is ideal to provide guests opportunities to explore downtown Anacortes, including trails, bike paths, parks, and local businesses. The existing parking lot serves tenants of JKL docks at Cap Sante Marina and facilitates easier access to vessels for marina users. The location and uses of these sites would not change with the project.

13. Historic and cultural preservation

- a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

There are no known historic places or objects located on or next to the site. The W.T Preston is located nearby at the Anacortes Maritime Heritage Museum.



- b. **Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

None known. Most of the surrounding area was formerly mudflats of Fidalgo Bay. The area received dredge material from Cap Sante Marina in the 1950s and is highly disturbed.

- c. **Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site:**

A cultural resources study was conducted for the North and West Basin areas adjacent to Cap Sante Marina. This report was developed to support larger future redevelopment efforts (in two to four years) but contains relevant information for the site. Based on this broader study, an Unanticipated Discoveries Protocol (UDP) training would be provided to Port staff and a copy of a UDP would be kept in Port vehicles in case they encounter cultural resources during this project.

- d. **Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources:**

As noted above, an Unanticipated Discoveries Protocol (UDP) training would be provided to Port staff and a copy of a UDP would be kept in Port vehicles in case they encounter cultural resources during this project.

14. Transportation

- a. **Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.**

It is expected that most guests would arrive at the site via the highway to R / Q Avenue, turn east onto 9th, and then turn right onto Market Street. From Market Street, RVs turn directly into Port property or continue along Market Street to 6th Street. All are designated as "minor arterial" streets by the City of Anacortes. At the intersection of 6th Street and T Ave, RVs turn right into Port property.

- b. **Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

Skagit County Transit serves the commercial areas of Anacortes and the Guemes Ferry. The closest stop to the site is at 8th St and Q Avenue.

- c. **How many parking spaces would the completed project have? How many would the project eliminate?**



The completed project would have 25 RV parking spots, reducing the number of RV spots by one stall. The JKL parking lot would have approximately 40 additional parking stalls (approximately 130 total).

- d. **Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

6th St and Market Streets are both classified by the City of Anacortes as minor arterial streets. The majority of Market Street however is within a utility easement located on Port property. Both 6th and Market Street would have minor street widening, ADA sidewalks and crosswalks constructed adjacent to the site.

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

The Cap Sante Marina is located south of the project site and will be served by the parking lot.

- f. **How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

The Transpo Group, transportation specialists, evaluated the project and found there would be no change from existing traffic conditions. Peak hour AM traffic would remain at five trips (three in and two out). Peak average daily trips would be seven. The report is attached as Exhibit 2.

- g. **Proposed measures to reduce or control transportation impacts, if any:**

None.

15. Public services

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

No.

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

The project includes the placement of fire hydrants within the RV Park and parking lot pursuant to recommendation of the Anacortes Fire Department.

16. Utilities



- a. Underline utilities currently available at the site: *electricity, natural gas, water, refuse service, telephone, sanitary sewer*, septic system, other.
- 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.

Electrical, sewer, and water utilities adjacent to the site would be extended into the site.

Utilities and providers at the site are as follows:

Electricity	Puget Sound Energy
Natural gas	Cascade Natural Gas
City of Anacortes	Water, Sewer, Refuse Service

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:

Daniel C. Worra

Name of Signee:

Daniel C. Worra

Position and Agency/Organization:

Executive Director, Port of Anacortes

Date Submitted:

June 17, 2021

EXHIBIT 1: Site layout of Cap Sante RV Park and JKL Parking Lot

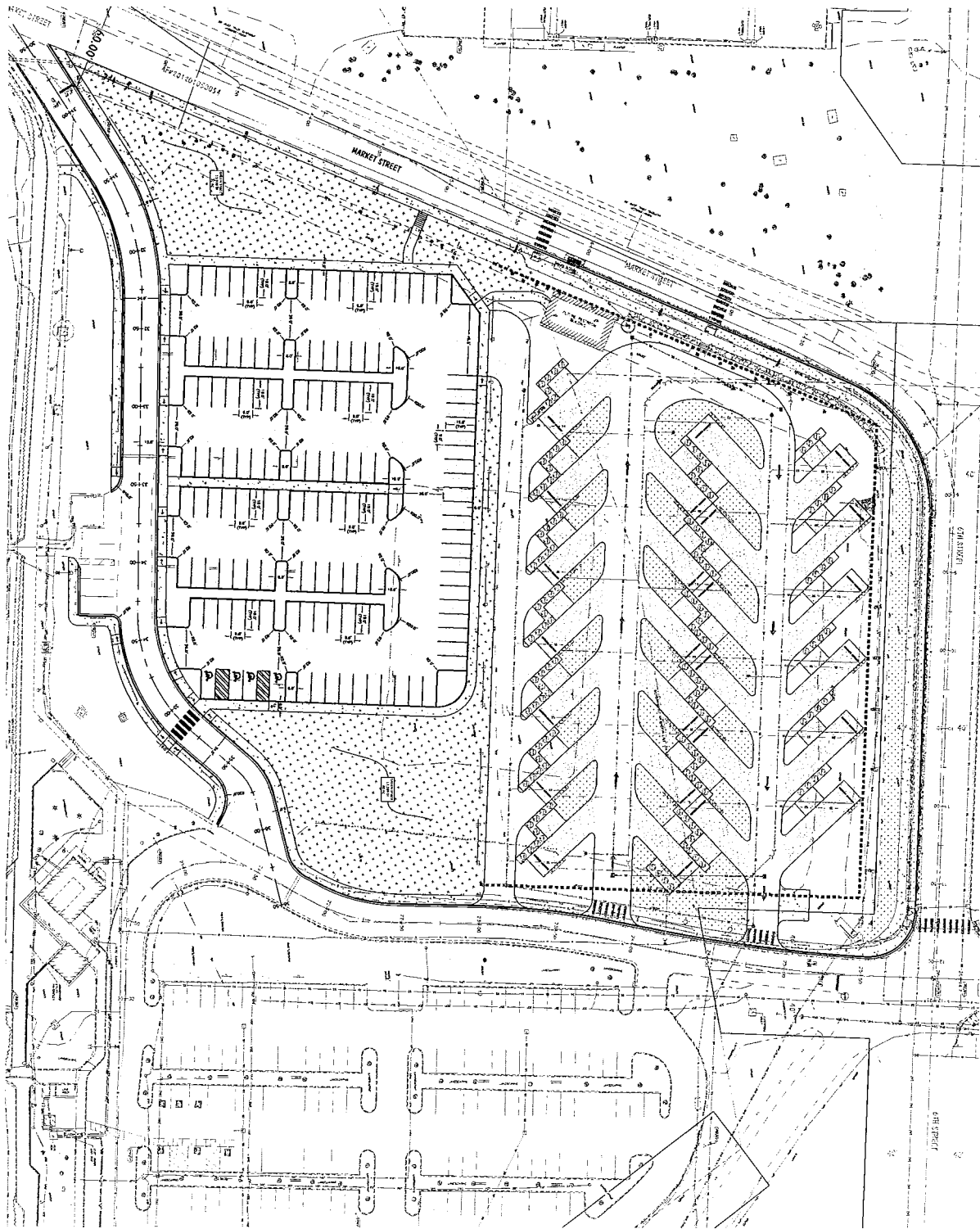


EXHIBIT 2: Traffic study for Cap Sante RV Park

MEMORANDUM

Date:	January 27, 2021	TG:	1.19259.00
To:	Eric Shjarback, PE – City of Anacortes		
From:	Stef Herzstein, PE, PTOE – Transpo Group Jessica Lambert, PE – Transpo Group		
CC:	Brenda Treadwell – Port of Anacortes Bill Hager – Maul Foster & Alongi, Inc.		
Subject:	Cap Sante Marina North Basin RV Park – Level 1 Traffic Impact Study		

The Port of Anacortes is proposing to renovate the existing RV Park located at the North Basin in the Cap Sante Marina. The proposal requires a Level 1 Traffic Impact Study based on the City of Anacortes Engineering Department *Chapter 3 Streets Standards*, November 2018. The purpose of this memorandum is to identify potential transportation-related impacts associated with the proposed RV Park. Project information, existing conditions, future conditions and proposed mitigation are documented.

Project Information

The proposed project would renovate the existing RV Park at the Cap Sante Marina North Basin in Anacortes, WA. The existing RV Park has 26 campsites and the project would decrease the RV Park to 25 campsites. The North Basin is located east of Market Street and south of 6th Street. Figure 1 shows the site vicinity and the preliminary site plan is shown on Figure 2. It is anticipated that the RV park renovation would be completed by 2022.



Figure 1 - Site Vicinity

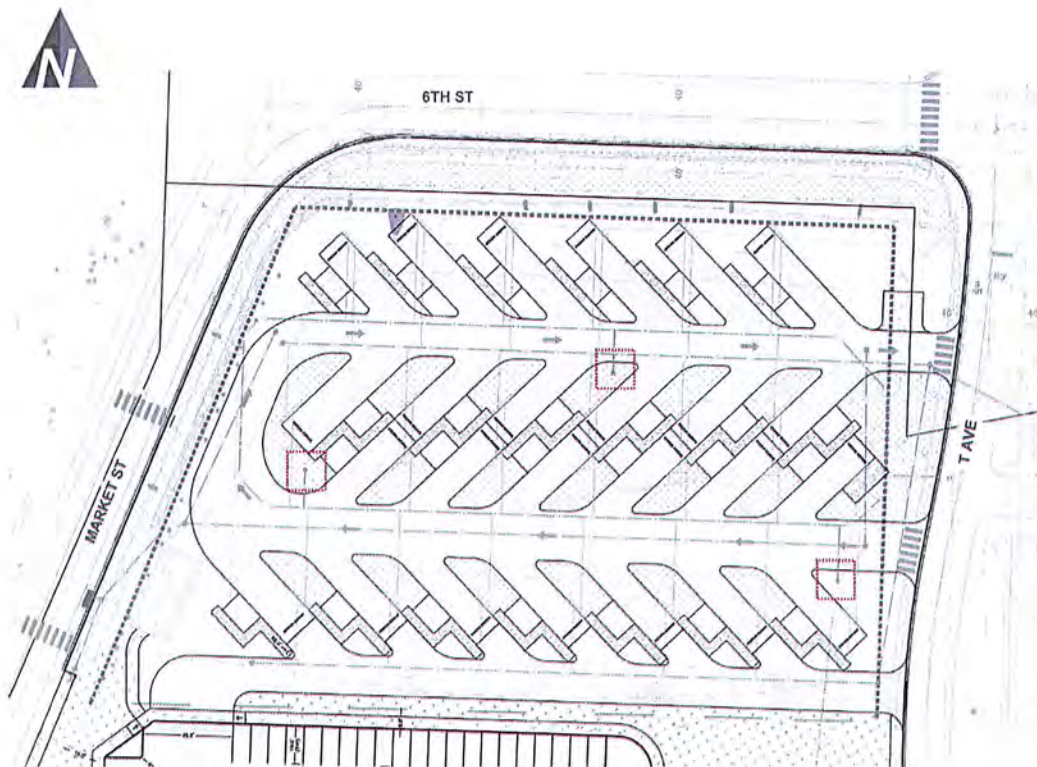


Figure 2 - Site Plan

As described above, one less campsite is being proposed with the RV Park renovation, so no additional trips are anticipated to be generated. Table 1 summarizes the estimated trip generation for the site. Trip generation for the proposed project was calculated based on the Campground/RV Park (LU #416) trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017).

Table 1. Estimated Weekday Project Trip Generation

Land Use ¹	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Proposed Use	25 Occupied Campsites	70	2	3	5	5	2	7
Existing Use	26 Occupied Campsites	70	2	3	5	5	2	7
Net New Trips²		0	0	0	0	0	0	0

Note: sf = square feet

1. Trip generation based on Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017) Campground/RV Park (LU #416). No daily data available for occupied campsites. Daily trip generation was assumed to be 10 times the weekday PM peak hour trip generation

2. Trips are the same for the existing and proposed RV Park due to rounding to the nearest whole number.

Existing Transportation Conditions

The site is roughly bound by Market Street to the west, 6th Street to the north, and the Cap Sante Marina parking to the south. The existing RV Park is primarily accessed via Market Street and T Avenue. Internal to Cap Sante Marina there is a driveway near Rotary Park that provides access to both the RV Park and Marina parking.

Bike lanes are currently provided along Market Street with limited pedestrian facilities along the adjacent streets. The nearest transit stops to the RV park are along Q Avenue between 8th Street and 9th Street approximately 1,200-feet the site. Transit service is provided by Skagit Transit Route 410 with service between March's Point Park & Ride to the Washington State Ferry and Old Salts. Service is provided along SR 20, R Avenue, Q Avenue, 12th Street, and Oaks Avenue. Service is provided on weekdays from approximately 7 a.m. to 8 p.m. and Saturdays from approximately 8 a.m. to 5 p.m. Headways are one-hour on both weekdays and Saturdays.

Future Transportation Conditions

The proposed project would renovate the existing RV Park and no additional campsites would be added. No new trips would be generated by the project since the number of campsites remains the same. Therefore, the proposed project would not result in new off-site transportation impacts.

The primary access to the RV Park would remain the 6th Street/T Avenue intersection. Sidewalks would be constructed along the project frontage including the south side of 6th Street and the east side of Market Street as shown on Figure 2. Regrading would occur on the southwest corner of the 6th Street/T Avenue intersection making the slope in this area more gradual as it transitions to the sidewalk. A new internal driveway to the RV Park south of the 6th/T Avenue intersection aligning with the driveway to parking on the east side and internal sidewalks are proposed with the project.

Per the City's Level 1 traffic study guidelines, stopping and entering sight distance was calculated at the 6th Street/T Avenue intersection based on AASHTO's *A Policy on Geometric Design of Highways and Streets*. The stopping sight distance is the distance needed for a vehicle to safely stop before hitting an object in the roadway. The entering sight distance is the distance needed for vehicles to not disrupt¹ the traffic flow of the main roadway.

For the proposed project, Attachment A shows the stopping and entering sight distances for the west, east, and southeast approaches of the 6th Street/T Avenue intersection. Table 2 provides a summary of the stopping and entering sight distance analysis for both passenger cars and RVs.

Table 2. Summary of Stopping and Entering Sight Distance

Vehicle Type	Location	Stopping Sight Distance (feet)		Entering Sight Distance (feet)		
		Recommended ¹	Met?	Recommended ¹	Available ²	Met?
Passenger Car ³	West of T Avenue	200	Yes	335	247	No
	East of T Avenue	80	Yes	170	170	Yes
	Southwest of T Avenue	80	Yes	170	97	No
RV ⁴	West of T Avenue	200	Yes	420	372	No
	East of T Avenue	80	Yes	210	210	Yes
	Southwest of T Avenue	80	Yes	210	97	No

Note: ft = feet, mph = miles per hour

1. Recommended sight distance based on AASHTO's *A Policy on Geometric Design of Highways and Streets*, 7th Edition. The recommended distance assumes vehicle type as noted and design speed is 5 mph higher than the posted speed. The posted speed on 6th Street west of the intersection was taken from Anacortes Municipal Code and increased by 5 mph (i.e., a design speed of 30 mph). Design 6th Street to the east of the intersection and T Avenue southeast of the intersection are gravel roadways, and a maximum design speed of 15 mph was assumed.
2. Available sight distance was measured in the field or based on the proposed project site plan with regrading at the southwest corner of the 6th Street/T Avenue Intersection.
3. Assumes driver eye height of 3.5 feet in accordance with AASHTO.
4. Assumes driver eye height of 7.6 feet in accordance with AASHTO based on single unit trucks.

¹ "Disrupt" as defined per AASHTO means that "most major-road drivers should not need to reduce speed to less than 70 percent of their initial speed." (*A Policy on Geometric Design of Highways and Streets*, 6th Edition)

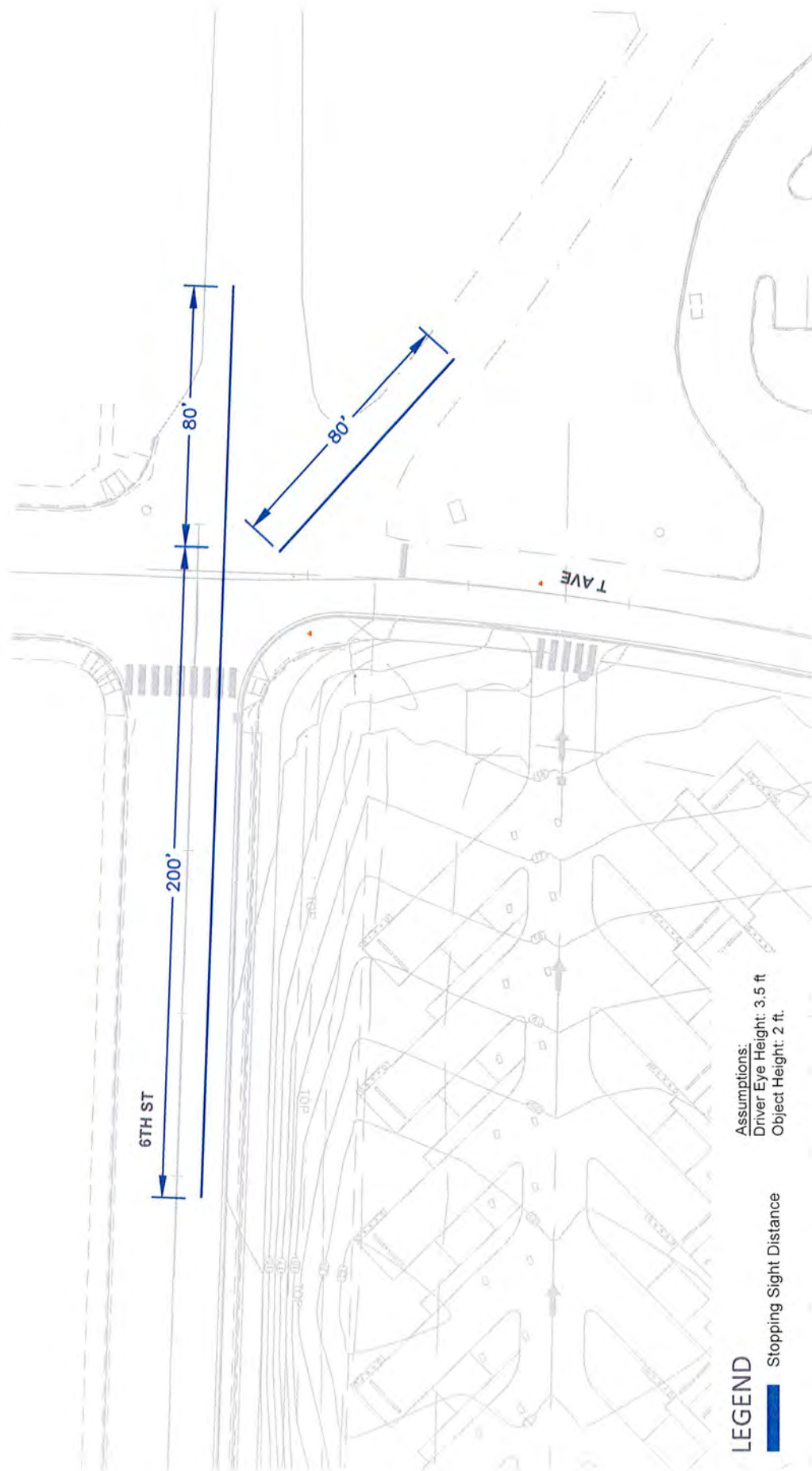
Table 2 shows the entering sight distance would not be met for cars and RVs looking west and southeast but is met looking east. The sight distance analysis considers the proposed slope of the hillside on the southwest corner of the intersection and the geometrics of the five-legged intersection with the stop bar setback on T Avenue. The proposal does not change the location of the stop bar or the geometrics of the five-legged intersection. Entering sight distance to the west of T Avenue is improved over the existing condition since the proposed project would cutback the hillside on the southwest corner. Since entering sight distance is less than recommended due to the configuration of the intersection and slope on the southwest corner, vehicles along 6th Street may need to slow as vehicles from the south T Avenue approach enter the traffic stream. The slowing of vehicles could result in some delay for the through traffic along 6th Street as vehicles from T Avenue enter the traffic stream. Entering sight distance is not currently met to the west so the potential slowing of vehicles along 6th Street with T Avenue vehicle entering the traffic stream is an existing condition. Traffic volumes along 6th Street are low and the impact to operations on 6th Street due to T Avenue vehicles entering the traffic stream would be minimal.

There is sufficient stopping sight distance for vehicles along on the west, east, and southeast intersection approaches. In addition, 6th Street curves as it approaches T Avenue so speeds may be slower resulting in a shorter AASHTO recommended entering sight distance than evaluated in this study. The proposed project represents an improved condition over the current entering sight distance since the southwest corner of the 6th Street/T Avenue intersection would be regraded reducing the slope and improving sight lines. A review of WSDOT reported collision data at the 6th Street/T Avenue intersection shows zero collisions between 2017 and 2019; therefore, there are no existing safety issues that have resulted in reported collisions.

Conclusion and Proposed Mitigation

The RV Park renovation would provide 25 campsites. The proposed project is not anticipated to result in new trips to the site. Stopping sight distance would be met and entering sight distance would be improved at the 6th Street/T Avenue intersection. The proposed project would construct sidewalk facilities along the project frontage. No off-site transportation impacts are anticipated as a result of the proposed project and no mitigation measures are required.

Attachment A: Sight Distance



ATTACHMENT

transpogroup 77

A-1



LEGEND

Required Entering Sight Distance

Available Entering Sight Distance*

*Note:
Available entering sight distance is only shown for approaches that do not meet the required sight distance.

Assumptions:

Driver Eye Height: 3.5 ft
Approaching Vehicle Height: 4.25 ft.
Setback from Stop Bar: 14 ft.

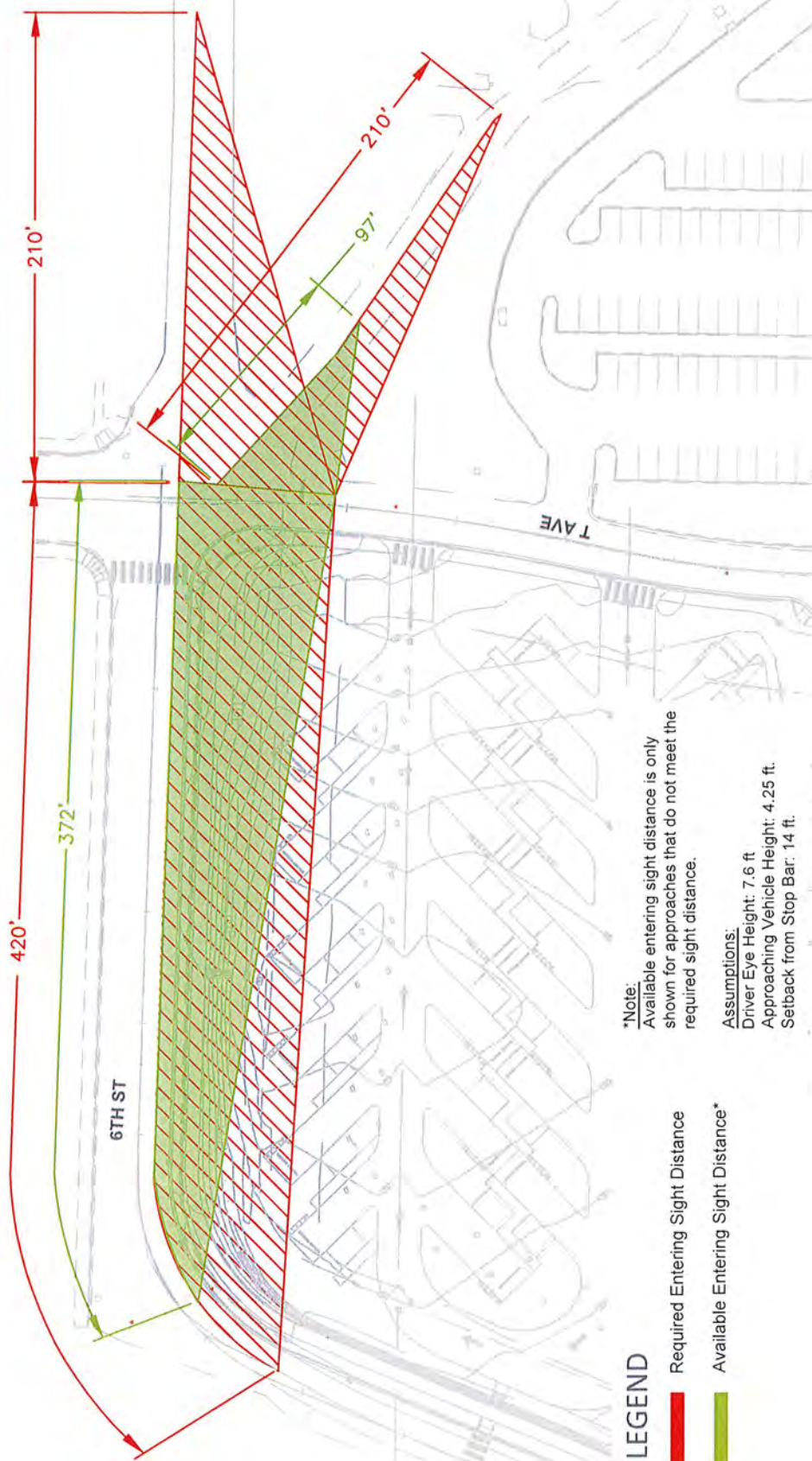
Entering Sight Distance - Passenger Cars

Cap Sante Marina North Basin Redevelopment

ATTACHMENT

transpogroup **7f**

A-2



ATTACHMENT

Cap Sante Marina North Basin Redevelopment

transpo group 77

November 20, 2018

Port of Anacortes
100 Commercial Avenue
Anacortes, Washington 98221

City of Anacortes
*Planning, Community &
Economic Development*

Date Received:

12/21/21

COA File #

SDP-2021-0012

Attention: Brenda Treadwell, Director of Planning, Properties and Environmental

Subject: Letter Report
Preliminary Habitat Evaluation
North and West Basin Upland Redevelopment
Anacortes, Washington
File No. 5147-029-00

This letter summarizes the results of a preliminary habitat evaluation completed by GeoEngineers, Inc. (GeoEngineers) for the Port of Anacortes' (Port's) proposed North and West Basin Upland Redevelopment project (project) in Anacortes, Washington as shown in the Vicinity Map, Figure 1. The proposed project includes a new restaurant, Port offices, events center, hotel, recreational vehicle (RV) park, public plaza and an extension of the waterfront esplanade. Realignment of 9th Street is also a consideration.

GeoEngineers' biologists conducted a site reconnaissance on November 13, 2018 at the project site, within the assessment area shown in Appendix A. Prior to the site reconnaissance, a file review of publicly available data and maps identifying critical area features and relevant sections of the City of Anacortes (City) code was completed. This letter summarizes information from the file review and site reconnaissance.

SUMMARY AND RECOMMENDED NEXT STEPS

Review of publicly available information and a site reconnaissance identified a marine shoreline and saltmarsh habitat within the marina basin and a freshwater emergent and scrub-shrub wetland in the northwest corner of the proposed project area. In addition, a mature forest habitat (Cap Sante Park) was identified east of the project area, where no development is proposed. The majority of the project area is already developed with multiple parking lots and commercial and residential buildings. Trees, shrubs and grasses are present, but they are mostly ornamental species located within isolated landscaped areas. The project will be subject to the City of Anacortes Shoreline Master Plan (SMP) (Anacortes Municipal Code [AMC] 18.16) and Critical Areas Code (AMC 17.70) including AMC requirements for riparian vegetation in areas abutting the marine shoreline (AMC 17.70.580). Portions of the proposed project located within 200 feet of the OHWM of the marine shoreline, are within shoreline jurisdiction and are subject to review under the City SMP and development within areas abutting the marine shoreline are subject to a shoreline setback of 25 feet.

We recommend that a formal ordinary high water mark (OHWM) determination be completed within the project area to establish jurisdiction for the City's SMP (for any proposed work above the OHWM) and to establish Washington Department of Fish and Wildlife's (WDFW's) jurisdiction (for any potential proposed work below the OHWM). If the proposed RV park improvements are the closest proposed action to the wetland, this may trigger the need for a formal wetland delineation because those improvements are within 300 feet of the emergent and scrub-shrub wetland (AMC 17.70.330(B)). However, the City may consider the proposed RV improvement area as functionally separated from the wetland by Market Street and not require a formal wetland delineation. We recommend reviewing proposed improvements adjacent to the wetland with City Planning to confirm the need for a wetland delineation report before proceeding. In addition, we recommend that the Port schedule a pre-application meeting with City Planning to confirm the required reviews, assessments and development standards within shoreline jurisdiction and adjacent to wetlands.

FILE REVIEW

Maps and data reports from the file review are included in Appendix B, Background Maps and Data.

The US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map depicts estuarine and marine, freshwater emergent, and freshwater forested/scrub-shrub wetlands within the assessment area (USFWS, 2018). We observed estuarine salt marsh and freshwater scrub-shrub wetlands during the site reconnaissance (see below). FPARS, SalmonScape and City of Anacortes critical areas maps do not map streams within the assessment area (WDFW, 2018a; FPARS, 2018).

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey maps the majority of the project area as Xerorthents, 0 to 5 percent slopes (NRCS, 2018), which is a soil on the national hydric soils list (NRCS, 2015). A small section in the northeastern part of the project area is mapped as Fidalgo-Lithic Xerochrepts – rock outcrop complex, 3 to 30 percent slopes (NRCS, 2018), a soil that is not on the national hydric soils list (NRCS, 2015). Within the assessment area, the Federal Emergency Management Agency (FEMA) National Flood Hazard Mapper depicts areas within approximately 150 feet of the marine shoreline OHMW as within a special flood hazard area, Zone AE¹ (100-year floodplain) (FEMA, 2018). The remaining assessment area is mapped as an area of minimal flood hazard (Zone X) (FEMA, 2018). The base flood elevation (BFE) within the Zone AE area is mapped as +7 feet (NAVD88) (FEMA, 2018). The OHWM in the Anacortes area is approximately 9½ to 10 feet (NAVD88), and therefore the areas immediately adjacent to the OHWM, which are generally above the OHWM and flat and paved, are likely above the BFE.

The WDFW Priority Habitat and Species (PHS) mapping tool depicts the same wetlands as shown by NWI within the assessment area (WDFW, 2018b). PHS does not map priority species within the project area (WDFW, 2018b). Within a mile of the assessment area, PHS reports documented surf smelt and Pacific herring breeding areas, Dungeness crab presence, cliffs/bluffs and a biodiversity area/corridor (Cap Sante Park) (WDFW, 2018b).

¹ Defined by FEMA as areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods.

The USFWS Information for Planning and Consultation (IPaC) report (USFWS, 2018) includes a total of seven threatened, endangered, or candidate species and one critical habitat on the species list (potential to occur at the project site) including:

- North American Wolverine (*Gulo gulo luscus*) - Proposed Threatened
- Marbled Murrelet (*Brachyramphus marmoratus*) – Threatened
- Streaked Horned Lark (*Eremophila alpestris strigata*) – Threatened
- Yellow-billed Cuckoo (*Coccyzus americanus*) - Threatened
- Bull trout (*Salvelinus confluentus*) - Threatened
- Dolly Varden (*Salvelinus malma*) - Proposed Similarity of Appearance (Threatened)
- Golden paintbrush (*Castilleja levisecta*) – Threatened
- Bull trout (*Salvelinus confluentus*) - Critical Habitat

The National Oceanic and Atmospheric Administration (NOAA) Fisheries *Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead* report (NOAA, 2018) includes a total of two threatened salmon and steelhead species and their critical habitat with potential to occur at the project site including:

- Puget Sound Steelhead (*Oncorhynchus mykiss*) – Threatened & Critical Habitat
- Puget Sound Chinook Salmon (*Oncorhynchus tshawytscha*) – Threatened & Critical Habitat

SITE RECONNAISSANCE

Two GeoEngineers biologists visited the project area at the Port of Anacortes on November 13, 2018 to identify potential wetland, stream or other fish and wildlife habitat conservation areas including salt marsh, eelgrass and/or mature forest habitats. A freshwater wetland and areas of shoreline salt marsh were identified within the assessment area.

Cap Sante Park abuts the eastern border of the assessment area. Vegetation observed in the forested park included Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), western red cedar (*Thuja plicata*), oceanspray (*Holodiscus discolor*), nootka rose (*Rosa nutkana*), Himalayan blackberry (*Rubus armeniacus*), and Oregon grape (*Mahonia aquifolium*).

The majority of the shoreline within the Cap Sante Marina was covered in quarry spall/riprap armoring with scattered weedy species. Salt marsh habitats were observed at the northeast and northwest corners of the marina basin within the assessment area. Vegetation observed within these salt marsh habitats included salt grass (*Distichlis spicata*), pickleweed (*Salicornia sp.*), Puget Sound gumweed (*Grindelia squarrosa*) and some patches of dunegrass (*Elymus mollis*), common threesquare (*Schoenoplectus pungens*) and silver burweed (*Ambrosia chamissonis*). Eelgrass (*Zostera marina*) fronds were observed floating at the water's edge, but no rooted plants were observed (it was close to high tide during the site reconnaissance).

The terrestrial portion of the assessment area (above the OHWM) was observed to be mostly developed; paved and gravel parking lots, a dog park, and some residential areas are contained within the assessment

area. Vegetation in the developed areas was patchy (landscaped “islands”) and consisted of Mountain ash (*Fraxinus latifolia*), strawberry bush (*Euonymus americanus*), reed canary grass (*Phalaris arundinacea*), nootka rose, Himalayan blackberry, Douglass fir, and Pacific madrone.

A small area in the northwestern section of the assessment area is a sculpture park with Pacific madrone and a mowed lawn understory. This area is located at the Depot Arts and Community Center and contains the Madrona Grove Sculpture Exhibition. The NWI mapper depicts part of the mowed lawn within the sculpture park as a freshwater emergent wetland that extends north of the proposed project area into an inundated wetland area west of the City’s Wastewater Treatment Plant (Appendix B). No soil pits were dug within the sculpture park to observe soils and hydrology below the ground surface. Within the sculpture park, no surface indicators of wetland hydrology were observed (no saturation to the ground surface or standing water) and no hydrophytic vegetation was observed within the lawn area. Within the thick patch of Nootka rose and Himalayan blackberry north of the park, standing water was observed indicating a high likelihood of wetland conditions. North of 6th Street and west of the City’s Wastewater Treatment Plant, the Nootka rose and Himalayan blackberry transitioned to an area of open water mixed with vegetated areas consisting of reed canary grass and cattails (*Typha* sp).

A ditch drains from east to west along the southern side of 6th Street and then drains from northeast to southwest along the eastern edge of Market Street until it empties into a stormwater pipe connected to an outfall on the marina basin embankment. The ditch is approximately 3 feet wide (at the top of bank), 2 feet deep and well maintained.

RELEVANT MUNICIPAL CODE

Portions of the proposed project located within 200 feet of the OHWM of the marine shoreline, are within shoreline jurisdiction and are subject to review under the City SMP (AMC 18.16). Per AMC 18.16.010, “All proposed uses and development occurring within shoreline jurisdiction must conform to Chapter 90.58 RCW, the Shoreline Management Act and this master program whether or not a permit is required.” All new structures or additions to structures on any lot shall meet all buffer, setback, height and other construction requirements of the Master Program and the Shoreline Management Act. The project area is located within an Urban shoreline environmental designation. Per Table 5.2 (Shoreline Development Standards Matrix) of the SMP, projects within an Urban environmental designation outside of Burrows Bay are subject to a shoreline setback² of 25 feet (for non-water-dependent uses), a maximum structure height of 50 feet and a lot coverage maximum³ of 50 percent. According to Chapter 12 of the SMP, a water-dependent use is defined as, “A use or a portion of a use, which, as its primary characteristic, cannot exist in any other location than on the water because it is dependent on the water by the intrinsic nature of its operations.”

For redevelopment along the marine shoreline, the City critical areas code provides requirements for riparian vegetation in connection with new development and redevelopment projects of non-water dependent uses that abut the city’s marine shorelines (AMC 17.70.580).

The City critical areas code provides requirements for assessment and reporting of all shoreline areas, floodplains, wetlands, streams, other critical areas, and related buffers within 300 feet of a proposed

² Setback shall be the minimum distance measured in feet from the ordinary high water mark on a horizontal plane perpendicular to the shoreline.

³ Buildings or structures in the Shoreline Area shall not occupy a greater percentage of a lot than indicated.

project area and provides requirements for proposed mitigation of any impacts to critical areas or their buffers (AMC 17.70.330 and 17.70.550).

The potential wetland area identified in the northwest corner of the proposed project area was not formally rated as part of this preliminary habitat assessment. It appeared to be a depressional wetland with moderate habitat functions and a highly disturbed buffer, so we estimate the wetland is most likely not Category I or Category II (this cannot be confirmed without a formal wetland rating). The required wetland buffers for Category IV wetlands is 40 feet and for Category III wetlands ranges from 60 to 110 feet (AMC 17.70.340(F)(1)).

CONCLUSIONS

Based on the review of existing information and the site visit, GeoEngineers identified saltmarsh habitat and one freshwater emergent wetland within the proposed project boundary. The assessment area is mostly already developed with multiple parking lots and commercial and residential buildings. Trees, shrubs, and grasses are present, but within isolated, landscaped areas; therefore, potential critical areas are likely limited to the wetlands and marine shoreline. The project will be subject to the City SMP (AMC 18.16) and Critical Areas Code (AMC 17.70) including AMC requirements for riparian vegetation in areas abutting the marine shoreline (AMC 17.70.580). Portions of the proposed project located within 200 feet of the OHWM of the marine shoreline, are within shoreline jurisdiction and are subject to review under the City SMP and development within areas abutting the marine shoreline are subject to a shoreline setback⁴ of 25 feet. The preliminary habitat evaluation and this letter are not intended to serve as a formal critical areas assessment and report.

LIMITATIONS

GeoEngineers has prepared this critical areas reconnaissance letter in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for critical areas reconnaissance assessments in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This letter has been prepared for the exclusive use of the Port of Anacortes, authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

⁴ Setback shall be the minimum distance measured in feet from the ordinary high water mark on a horizontal plane perpendicular to the shoreline.

REFERENCES

- Federal Emergency Management Agency National Flood Hazard Layer (2018). Available at: <https://www.fema.gov/national-flood-hazard-layer-nfhl>
- The National Oceanic and Atmospheric Administration (2018). Fisheries *Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead*. Available at: https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/wcr_salmonid_ch_esa_july2016.pdf
- United States Department of Agriculture-Natural Resources Conservation Service (2018) Web Soil Survey. Available at: <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- United States Department of Agriculture-Natural Resources Conservation Service (2015) National Hydric Soils List. Updated December 2015. Available at: http://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download?cid=stelprdb1248596&ext=xlsx
- United States Fish and Wildlife Service (2018). Wetlands Mapper. Available at: <http://www.fws.gov/wetlands/Data/mapper.html>
- United States Fish and Wildlife Service (2018). Information for Planning and Consultation. Available at: <https://ecos.fws.gov/ipac/>
- Washington State Department of Fish and Wildlife (2018a). SalmonScape Application. <http://wdfw.wa.gov/mapping/salmonscape/>
- Washington State Department of Fish and Wildlife (2018b). Priority Habitat and Species Interactive Map Viewer. Available at: <http://wdfw.wa.gov/mapping/phs/>
- Washington State Department of Natural Resources (2018). Forest Practices Activity Mapping Tool. Available at: <https://fpamt.dnr.wa.gov/default.aspx>

Sincerely,
GeoEngineers, Inc.

Lydia Baldwin
Staff Environmental Scientist

Fiona McNair, PWS
Biologist and Wetland Scientist

LRB:FMM:JOC:JH:tlr

List of Figures:

Figure 1. Vicinity Map

Appendices

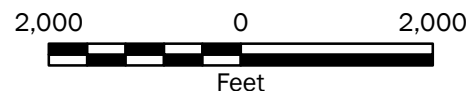
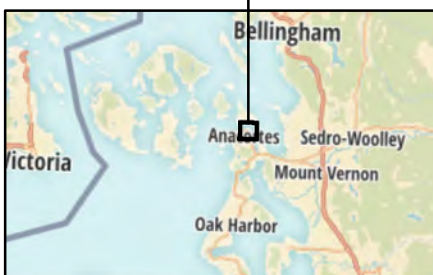
Appendix A. Assessment Area

Appendix B. Background Maps and Data

Appendix C. Site Photographs

One copy submitted electronically

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



Vicinity Map

Preliminary Geotechnical and Habitat Evaluation Anacortes, Washington



Figure 1

Notes:

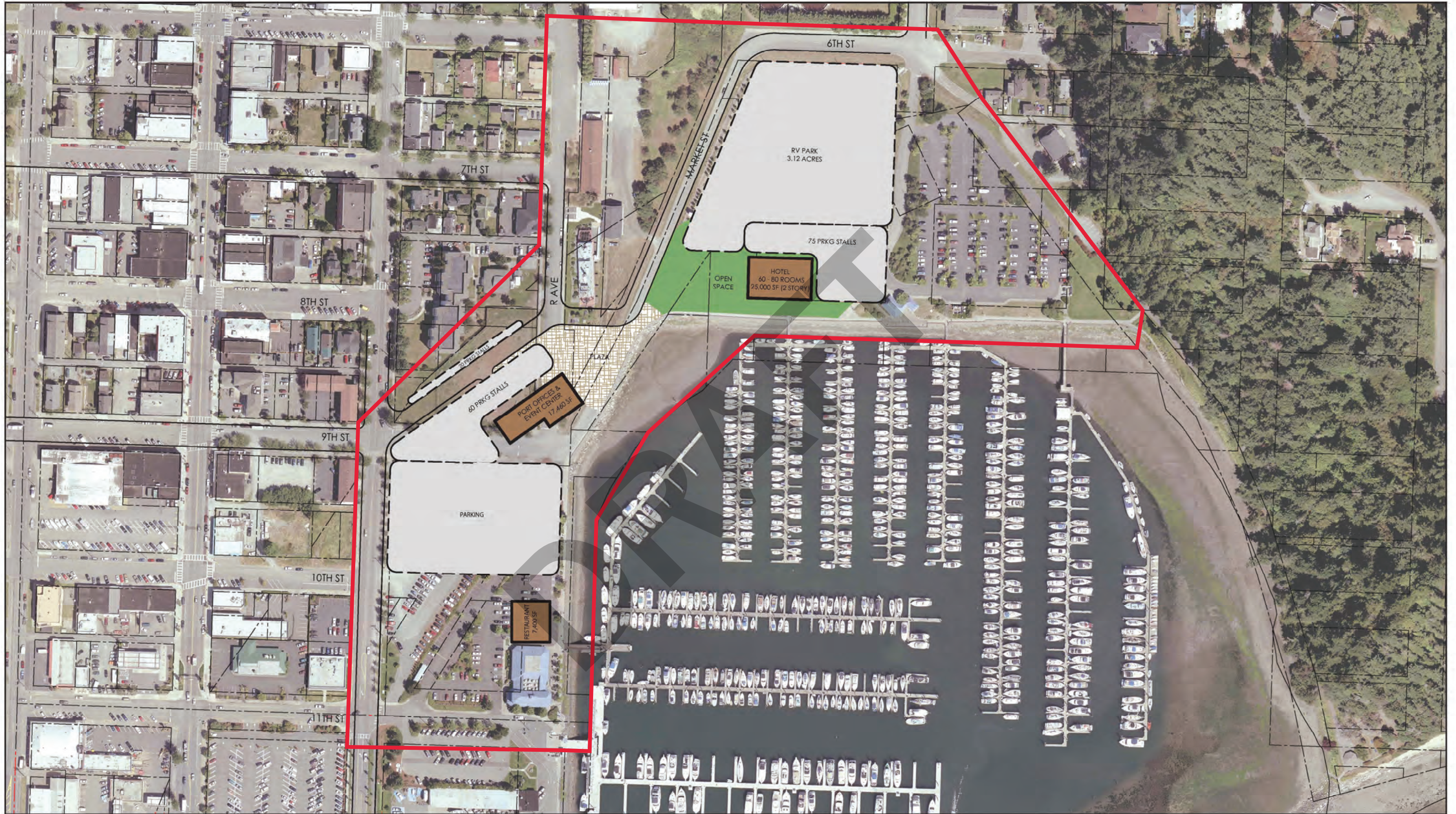
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

APPENDIX A
Assessment Area

DRAFT

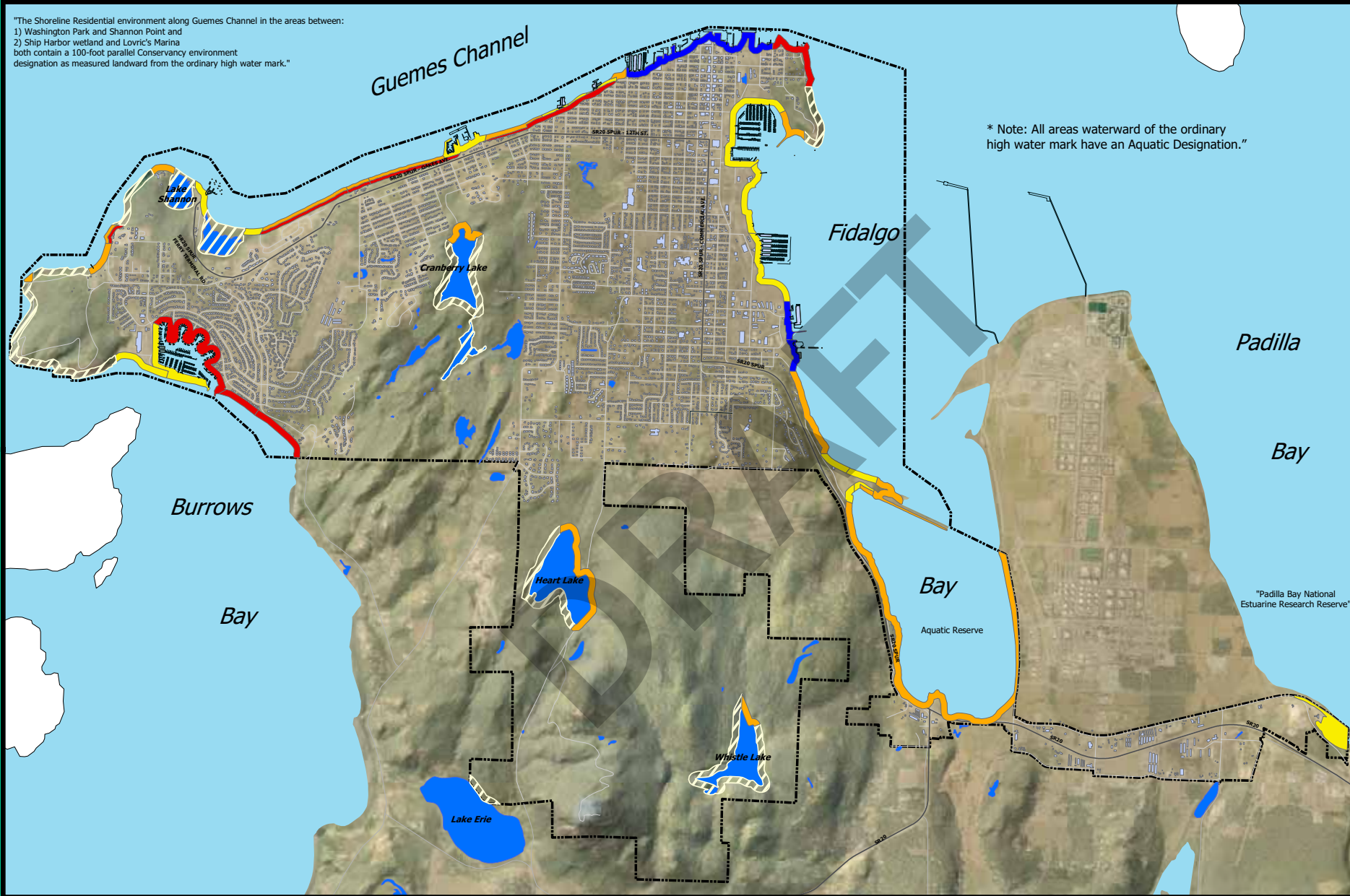


APPENDIX B

Background Maps and Data

DRAFT

"The Shoreline Residential environment along Guemes Channel in the areas between:
 1) Washington Park and Shannon Point and
 2) Ship Harbor wetland and Lovric's Marina
 both contain a 100-foot parallel Conservancy environment
 designation as measured landward from the ordinary high water mark."



City of Anacortes Shoreline Master Program

Environment Designation

	Conservancy
	Natural
	Shoreline Residential
	Urban
	Urban Maritime
	Buildings-2010
	Lakes & Ponds
	Major Streets
	Minor Streets
	City Limits

0 0.25 0.5
Miles

February 2010

This map was created from available public records and existing map sources, not from field surveys. Map features from all sources have been adjusted to achieve a "best fit" registration to the ownership parcels map. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field "ground truthing".

Official Shoreline Environment Designation Map

Figure 5.1



P:\0_0382030\GIS\MXD\0382030001_F02_Streams and Wetlands.mxd Date Exported: 12/15/17 by mtrrost

Notes:

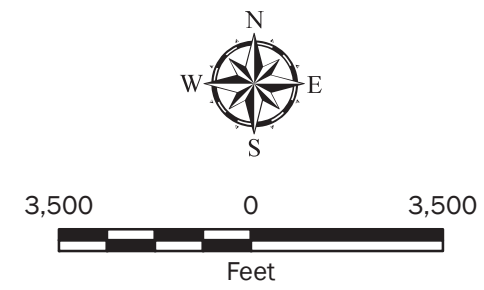
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI Data and Maps

Projection: NAD 1983 UTM Zone 10N

Legend

- City Limits
- Wetlands
- Streams
- ACFL Anacortes Community Forest Lands
- Project Location



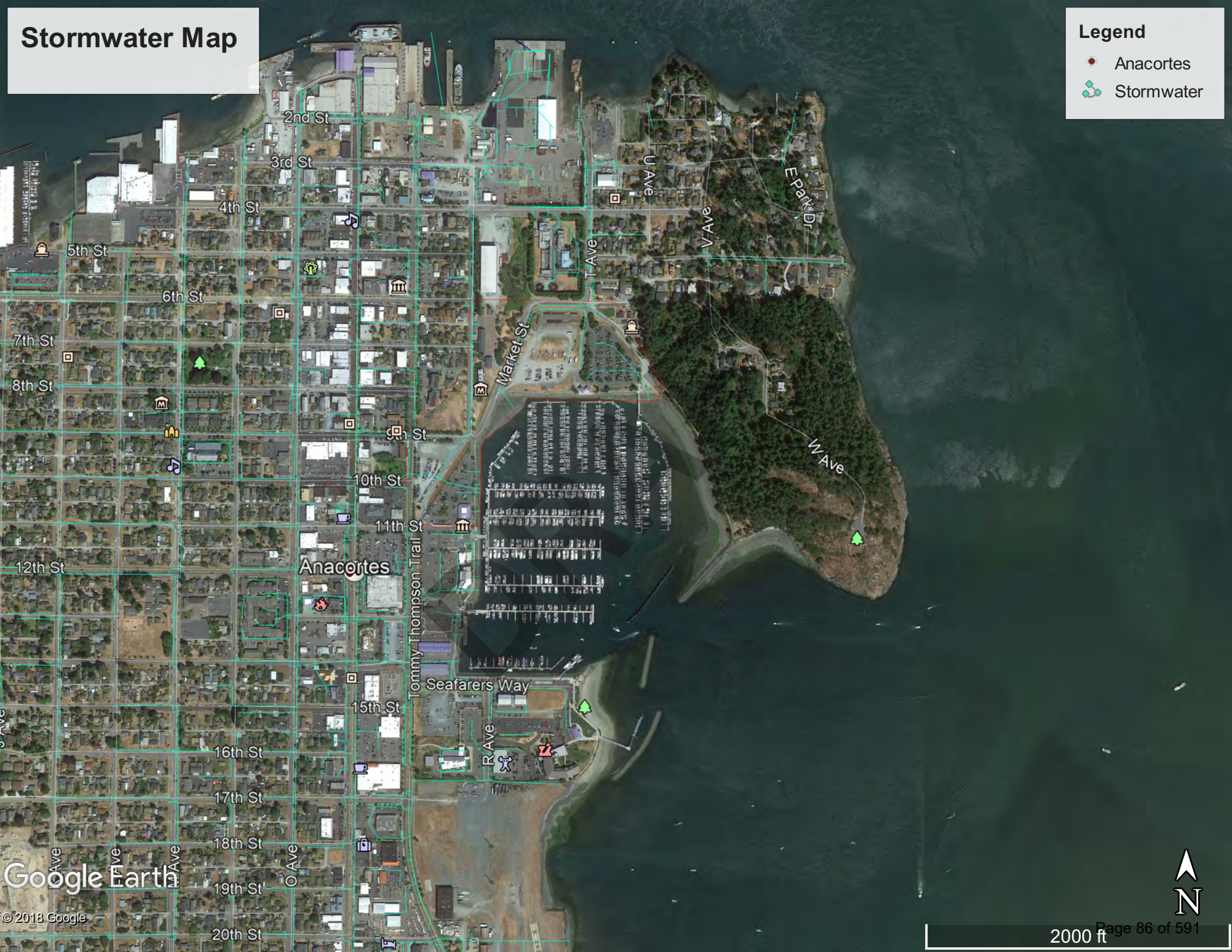
Streams and Wetlands	
North & West Basin Upland Redevelopment Anacortes, Washington	
	Figure 2

Stormwater Map

Legend

Anacortes

Stormwater



National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



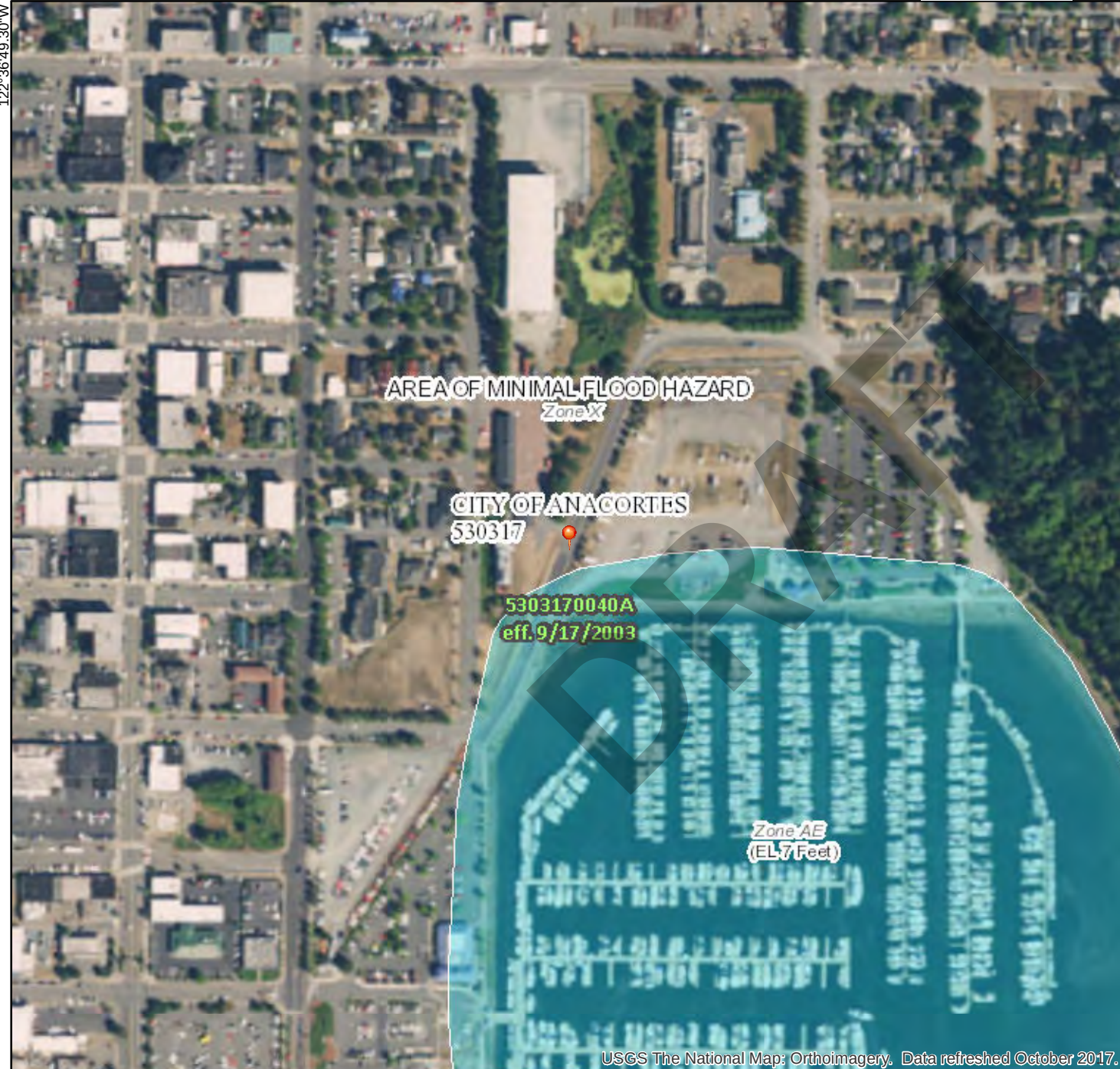
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **10/4/2018 at 12:58:19 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

48°31'10.25"N



USGS The National Map: Orthoimagery. Data refreshed October 2017.

0 250 500 1,000 1,500 2,000 Feet

1:6,000

48°30'46.42"N

122°36'11.85"W



Anacortes Wetlands



November 7, 2018

Wetlands

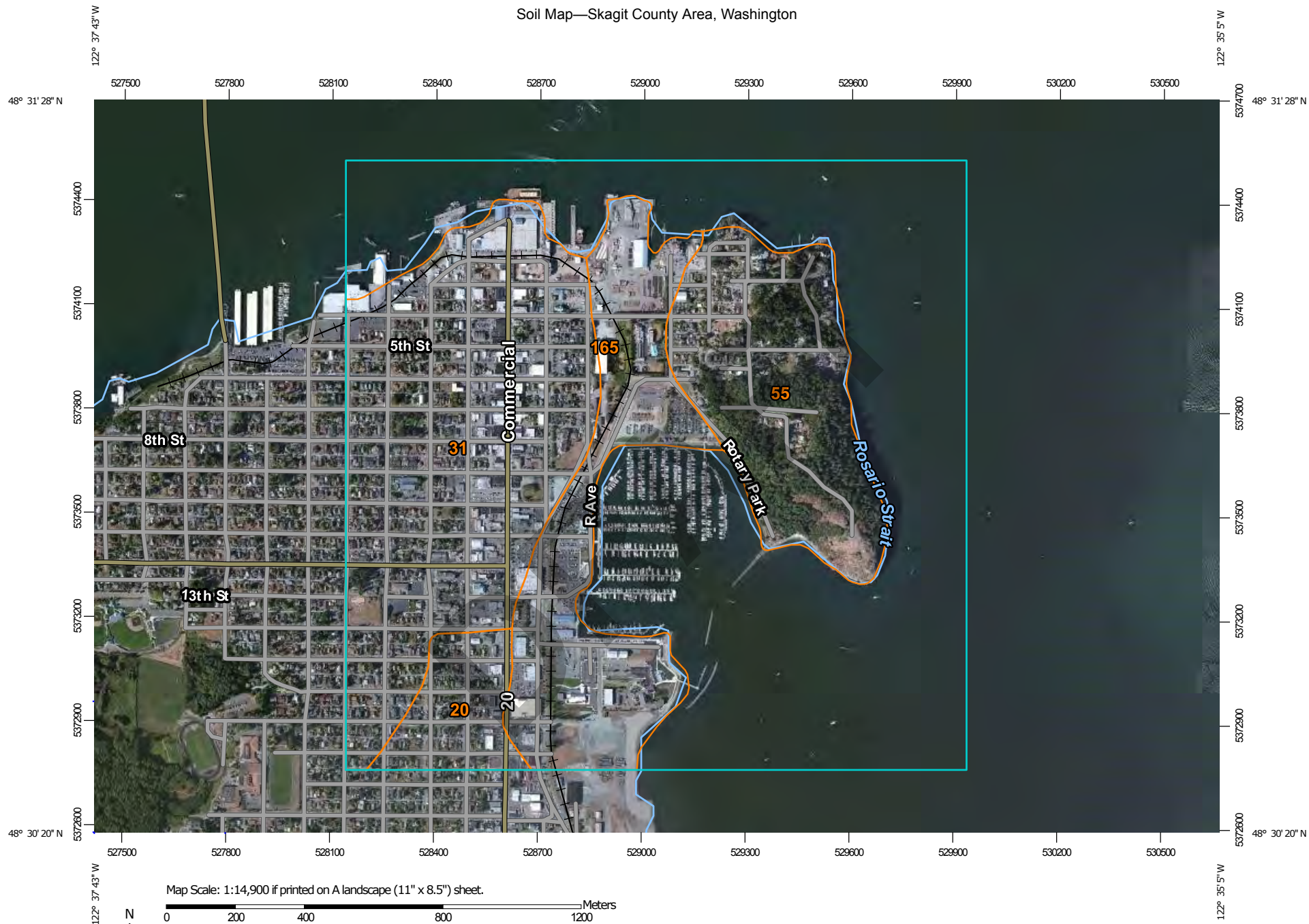
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Soil Map—Skagit County Area, Washington



Map Scale: 1:14,900 if printed on A landscape (11" x 8.5") sheet.

0 200 400 800 1200 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

11/7/2018
Page 1 of 3
Page 89 of 591

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Skagit County Area, Washington

Survey Area Data: Version 18, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 9, 2010—Aug 28, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
20	Bow-Urban land complex, 0 to 8 percent slopes	29.3	3.7%
31	Clallam-Urban land complex, 0 to 8 percent slopes	196.5	25.2%
55	Fidalgo-Lithic Xerochrepts-Rock outcrop complex, 3 to 30 percent slopes	99.1	12.7%
165	Xerorthents, 0 to 5 percent slopes	104.1	13.3%
Totals for Area of Interest		780.4	100.0%

DRAFT



WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPublic
REPORT DATE: 11/07/2018 10.53

Query ID: P181107105320

Common Name	Site Name	Priority Area	Accuracy	Federal Status	Sensitive Data	Source Entity
Scientific Name	Source Dataset	Occurrence Type		State Status	Resolution	Geometry Type
Notes	Source Record	More Information (URL)		PHS Listing Status		
Source Date		Mgmt Recommendations				
Biodiversity Areas And	CAP SANTE PARK.	Terrestrial Habitat	1/4 mile (Quarter	N/A	N	WA Dept. of Fish and Wildlife
	PHSREGION	N/A		N/A	AS MAPPED	Polygons
	902834	http://wdfw.wa.gov/publications/pub.php?		PHS LISTED		
Cliffs/bluffs	PHSREGION	Habitat Feature	1/4 mile (Quarter	N/A	N	WA Dept. of Fish and Wildlife
	904714	N/A		N/A	AS MAPPED	Polygons
		N/A		PHS LISTED		
Dungeness Crab	Not Given	Presence	NA	N/A	N	WDFW
	Shellfish_Summary	Presence		N/A	AS MAPPED	Polygons
		N/A		PHS Listed		
Estuarine and Marine	N/A	Aquatic Habitat	NA	N/A	N	US Fish and Wildlife Service
	NWIIWetlands	Aquatic habitat		N/A	AS MAPPED	Polygons
		http://www.ecy.wa.		PHS Listed		
Freshwater Emergent	N/A	Aquatic Habitat	NA	N/A	N	US Fish and Wildlife Service
	NWIIWetlands	Aquatic habitat		N/A	AS MAPPED	Polygons
		http://www.ecy.wa.		PHS Listed		
Freshwater Forested/Shrub	N/A	Aquatic Habitat	NA	N/A	N	US Fish and Wildlife Service
	NWIIWetlands	Aquatic habitat		N/A	AS MAPPED	Polygons
		http://www.ecy.wa.		PHS Listed		
Freshwater Pond	N/A	Aquatic Habitat	NA	N/A	N	US Fish and Wildlife Service
	NWIIWetlands	Aquatic habitat		N/A	AS MAPPED	Polygons
		http://www.ecy.wa.		PHS Listed		

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Pacific Herring (Georgia) Clupea pallasii	Fidalgo Bay-* HerrSpwn	Breeding Area Breeding area http://wdfw.wa.gov/publications/pub.php?	NA	N/A Candidate PHS Listed	N AS MAPPED	WDFW Fish Program Polygons
Pinto abalone Haliotis kamtschatkana	Shellfish_Summary	Presence Presence http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS Listed	Y TOWNSHIP	WDFW Polygons
Pinto abalone Haliotis kamtschatkana	Shellfish_Summary	Presence Presence http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS Listed	Y TOWNSHIP	WDFW Polygons
Pinto abalone Haliotis kamtschatkana	Shellfish_Summary	Presence Presence http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS Listed	Y TOWNSHIP	WDFW Polygons
Pinto abalone Haliotis kamtschatkana	Shellfish_Summary	Presence Presence http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS Listed	Y TOWNSHIP	WDFW Polygons
Surf Smelt Hypomesus pretiosus	Station Number: 16 Forage_Fish_Survey 9044 December 16, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 5745 July 16, 1999	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 8147 September 18, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 9261 July 22, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 6297 July 14, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 16 Forage_Fish_Survey 9462 September 19, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 5821 August 20, 1999	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 6284 June 15, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 8007 June 11, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 8061 August 10, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 8034 July 14, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 8149 September 18, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 8060 August 10, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 8266 October 15, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 8033 July 14, 1998	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 6298 July 14, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 6285 June 15, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 9286 August 20, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 9070 January 22, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 9218 June 26, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 12593 October 29, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 22 Forage_Fish_Survey 12400 August 25, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 15 Forage_Fish_Survey 9043 December 16, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 23 Forage_Fish_Survey 12401 August 25, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 6342 August 17, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 9373 September 24, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 9194 September 27, 1999	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 13 Forage_Fish_Survey 12594 October 29, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 12 Forage_Fish_Survey 6533 September 15, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 2 Forage_Fish_Survey 6344 August 17, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 9 Forage_Fish_Survey 12933 May 25, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 9 Forage_Fish_Survey 12501 September 21, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 11 Forage_Fish_Survey 6532 September 15, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 2 Forage_Fish_Survey 9046 January 06, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 15 Forage_Fish_Survey 9461 September 19, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 5 Forage_Fish_Survey 12365 September 10, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 12330 October 13, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 14 Forage_Fish_Survey 9460 September 19, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 12327 October 13, 2000	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 14 Forage_Fish_Survey 9103 February 26, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 880 July 01, 2003	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 9196 September 27, 1999	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 9045 January 06, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 9374 September 24, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 8 Forage_Fish_Survey 12499 September 21, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 18 Forage_Fish_Survey 12378 September 10, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 3 Forage_Fish_Survey 9262 July 22, 1997	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 7 Forage_Fish_Survey 11792 June 14, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 8 Forage_Fish_Survey 11793 June 14, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 12 Forage_Fish_Survey 11741 July 15, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 7 Forage_Fish_Survey 11694 August 14, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

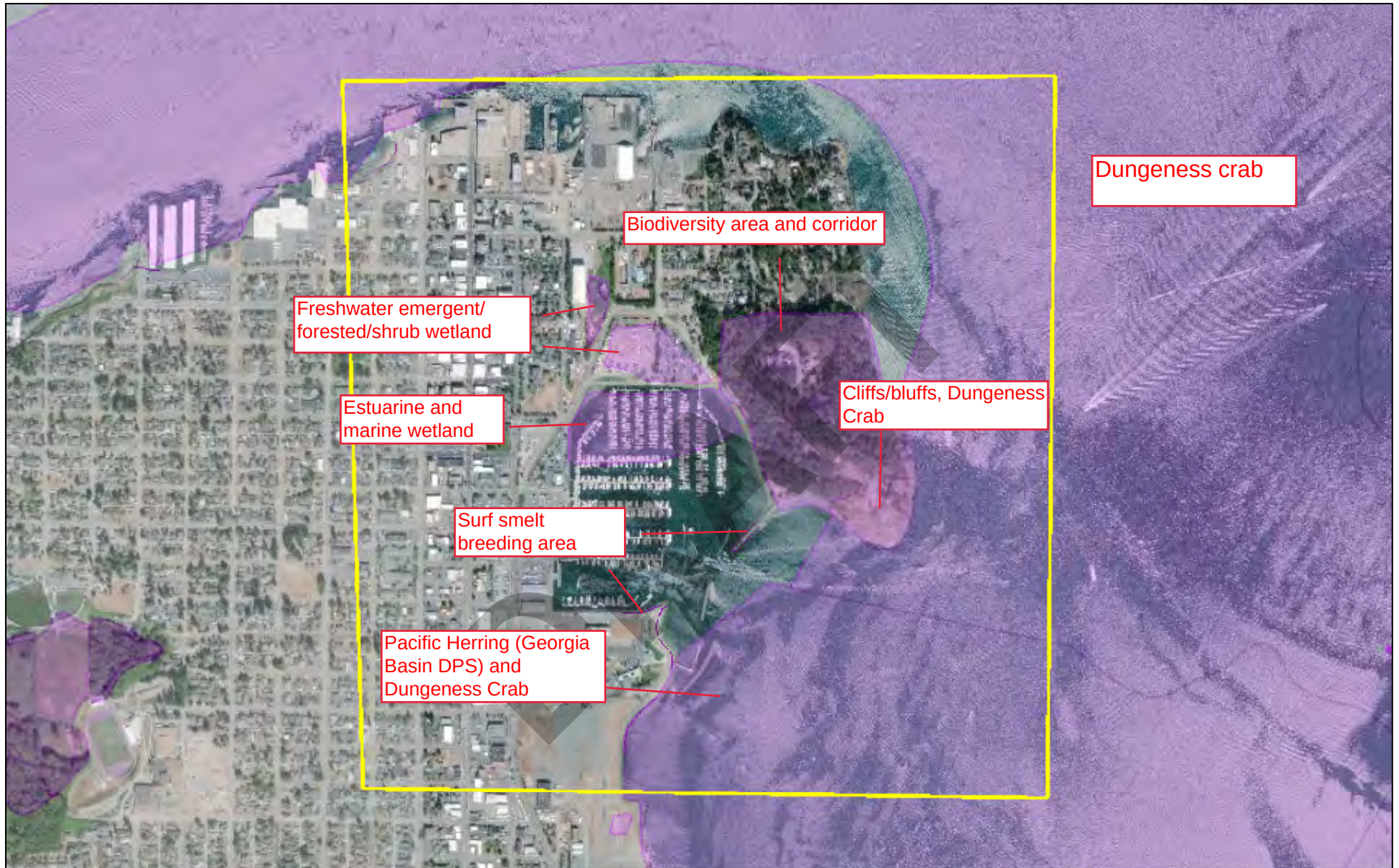
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 5 Forage_Fish_Survey 11489 July 12, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 16 Forage_Fish_Survey 15285 August 31, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 6 Forage_Fish_Survey 13502 October 13, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 14 Forage_Fish_Survey 15184 June 30, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 18 Forage_Fish_Survey 12130 July 21, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 1 Forage_Fish_Survey 12136 August 15, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 11743 July 15, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 15 Forage_Fish_Survey 15282 August 31, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 17 Forage_Fish_Survey 15291 July 27, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 7 Forage_Fish_Survey 13503 October 13, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 8 Forage_Fish_Survey 11695 August 14, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 6 Forage_Fish_Survey 11475 June 14, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 5 Forage_Fish_Survey 11474 June 14, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 6 Forage_Fish_Survey 11490 July 12, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 15 Forage_Fish_Survey 15185 June 30, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt <i>Hypomesus pretiosus</i>	Station Number: 6 Forage_Fish_Survey 13977 May 25, 1995	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Surf Smelt Hypomesus pretiosus	Station Number: 18 Forage_Fish_Survey 15303 August 31, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 18 Forage_Fish_Survey 15293 July 27, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 2 Forage_Fish_Survey 12139 August 15, 1996	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 17 Forage_Fish_Survey 12129 July 21, 1994	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 13 Forage_Fish_Survey 15252 September 29, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Surf Smelt Hypomesus pretiosus	Station Number: 14 Forage_Fish_Survey 15253 September 29, 1993	Breeding Area Breeding area	NA	N/A N/A PHS Listed Species	N AS MAPPED	WDFW Lines
Yuma myotis Myotis yumanensis	WS_OccurPoint 144042 August 25, 2017	Communal Roost Biotic detection http://wdfw.wa.gov/publications/pub.php?	GPS	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points

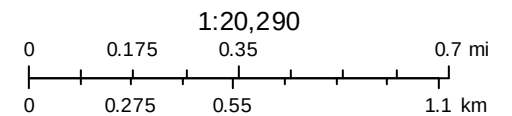
DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW PHS Map



November 7, 2018

- | | | |
|---|---|--|
| PHS Report Clip Area | POLY | QTR-TWP |
| ● PT | AS MAPPED | TOWNSHIP |
| — LN | SECTION | |



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
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<http://www.fws.gov/wafwo/>

In Reply Refer To:
Consultation Code: 01EWF00-2019-SLI-0147
Event Code: 01EWF00-2019-E-00340
Project Name: Anacortes Recon

November 07, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: <http://wdfw.wa.gov/mapping/phs/> or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at <http://www.fws.gov/pacific/eagle/for> information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: <http://www.nmfs.noaa.gov/pr/laws/mmpa/>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:

National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

DRAFT

Project Summary

Consultation Code: 01EWF00-2019-SLI-0147

Event Code: 01EWF00-2019-E-00340

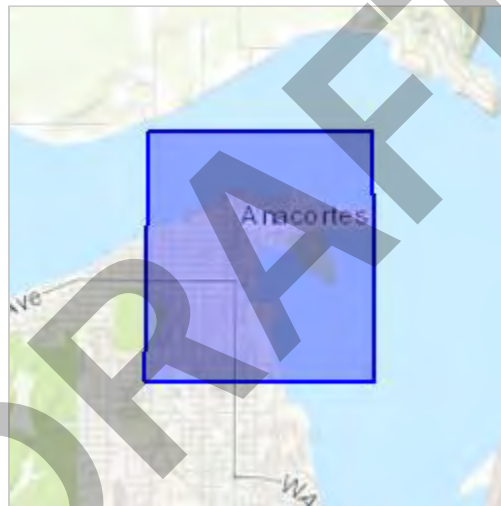
Project Name: Anacortes Recon

Project Type: SHORELINE USAGE FACILITIES / DEVELOPMENT

Project Description: Port of Anacortes north and west basin upland redevelopment

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/48.51484032635062N122.6088809967041W>



Counties: Skagit, WA

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark <i>Eremophila alpestris strigata</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bull Trout <i>Salvelinus confluentus</i> Population: U.S.A., conterminous, lower 48 states There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened
Dolly Varden <i>Salvelinus malma</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1008	Proposed Similarity of Appearance (Threatened)

Flowering Plants

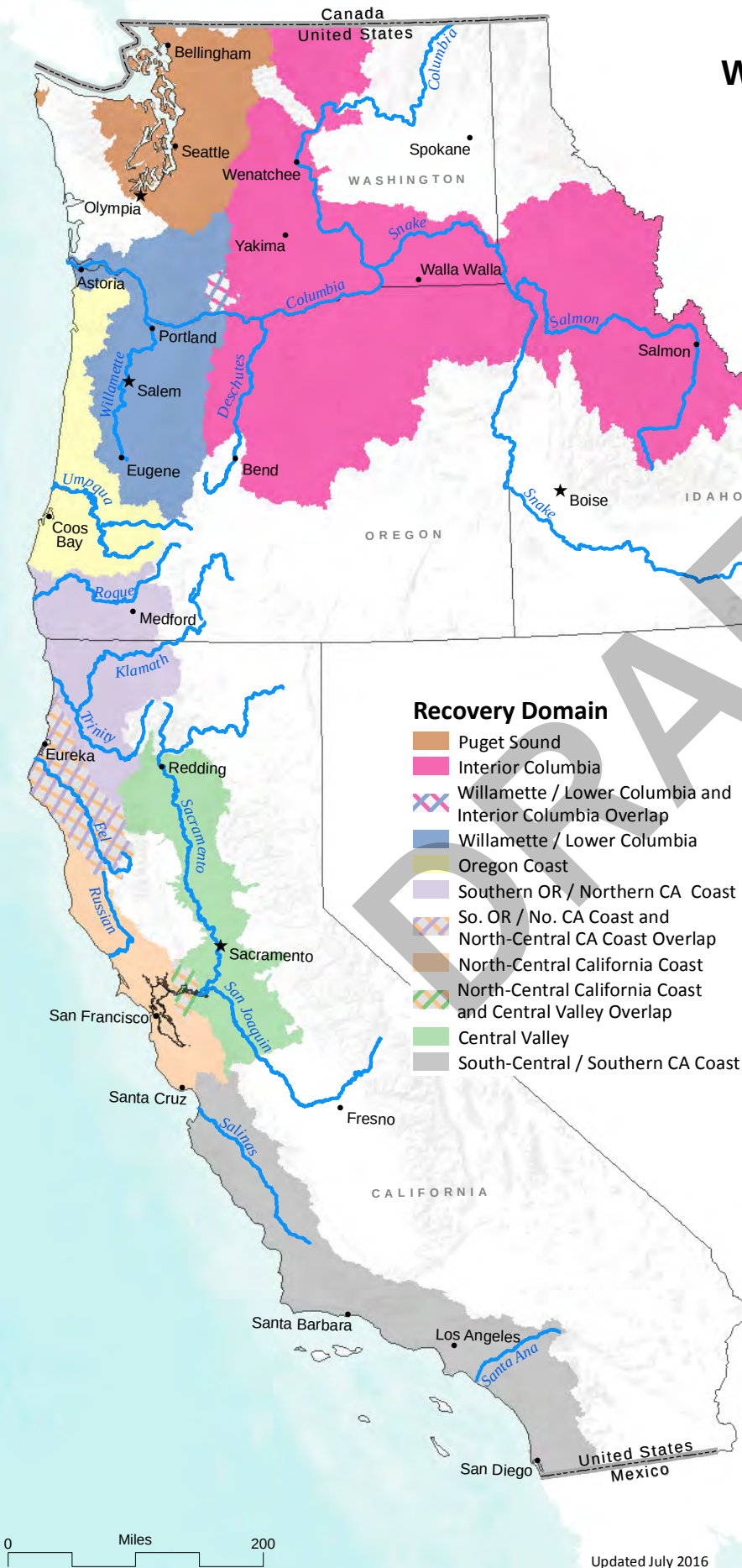
NAME	STATUS
Golden Paintbrush <i>Castilleja levisecta</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7706	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Bull Trout <i>Salvelinus confluentus</i> https://ecos.fws.gov/ecp/species/8212#crithab	Final

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016

Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005

Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005

Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008

Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999

North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005

Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993

South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

APPENDIX C

Site Photographs

DRAFT



Photograph 1. A paved pathway runs between Cap Sante Park and Cap Sante Marina.



Photograph 2. A small salt marsh is located in the northeast corner of Cap Sante Marina.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-1



Photograph 3. A parking lot is present north of the marina. Grass and small trees are scattered through this area.



Photograph 4. The northeastern salt marsh and armored shoreline are dominated by saltgrass and gumweed.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-2



Photograph 5. Looking west along the armored shoreline.



Photograph 6. Looking east along the armored shoreline; vegetated areas begin to transition to bare riprap.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-3



Photograph 7. The shoreline consists of bare riprap along the northern edge of the marina.



Photograph 8. A small salt marsh is located in the northeast corner of the marina and is characterized by saltgrass and gumweed.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-4



Photograph 9. Rotary Park is located north of the marina and consists of mowed grass with a few scattered small trees.



Photograph 10. A creeping ornamental plant dominates the western shoreline of the marina.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-5



Photograph 11. The parking lot on the western edge of the marina.



Photograph 12. Another parking lot on the northwestern edge of the marina.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-6



Photograph 13. A dog park is located along the western edge of the proposed project area. The park consists of an open, grassy field.



Photograph 14. An apartment building is located northeast of the dog park and within the northwestern corner of the proposed project area.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-7



Photograph 15. A wetland is located near the northwest corner of the proposed project area. The wetland has a Himalayan blackberry overstory that transitions into reed canary grass and cattails.



Photograph 16. This wetland had standing water at the time of the site visit.

Site Photographs	
North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure C-8



Photograph 17. A ditch runs east to west along the southern edge of 6th St and is located near the northern edge of the proposed project area. Vegetation was most dense at a seep in the ditch at the corner of Market St and 6th St.



Photograph 18. The ditch was mostly unvegetated, but there were patches of reed canary grass, Himalayan blackberry, and other weedy species.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-9



Photograph 19. A parking lot is located in the northeast corner of the proposed project area.



Photograph 20. This paved parking lot in the northeast corner of the project area abuts a raised gravel lot in the background of this photo. This gravel lot is in an area that NWI maps as emergent wetland.

Site Photographs

North and West Basin Upland Redevelopment
Anacortes, Washington



Figure C-10

Date Received:

12/21/21

COA File #

SDP-2021-0012

**Preliminary Geotechnical Engineering
Services**

Cap Sante Marina North and West Basin
Upland Redevelopment Project
Anacortes, Washington

for

Port of Anacortes

January 10, 2020



600 Dupont Street
Bellingham, Washington 98225
360.647.1510

Preliminary Geotechnical Engineering Services
Cap Sante Marina North and West Basin
Upland Redevelopment Project

File No. 05147-031-00

January 10, 2020

Prepared for:

Port of Anacortes
1019 Q Ave
Anacortes, Washington 98221

Attention: Brenda Treadwell

Prepared by:

GeoEngineers, Inc.
600 Dupont Street
Bellingham, Washington 98225
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Aaron J. Hartvigsen, PE
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Associate

AJH:SWC:tlm

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1.0 INTRODUCTION

This report presents the results of GeoEngineers, Inc.'s (GeoEngineers') preliminary geotechnical engineering services for the planned Cap Sante Marina North and West Basin Upland Redevelopment project to be located in Anacortes, Washington. The redevelopment of this area has been identified as an important future area of development for the Port of Anacortes (Port). The approximate project location is shown in the Vicinity Map (Figure 1) and the existing site conditions relative to surrounding site features are shown in the Site and Exploration Plan (Figure 2).

Our scope of services for this report included reviewing available geotechnical information near the site, drilling 17 geotechnical borings throughout the project site, completing laboratory testing on the samples obtained from the borings, and providing preliminary geotechnical conclusions and recommendations for planning-level design of the proposed development. Our geotechnical engineering services were completed in general accordance with our Agreement for Professional Services Task Order 75-19 dated September 24, 2019, which was authorized by Brenda Treadwell with the Port of Anacortes on October 4, 2019.

2.0 PROJECT DESCRIPTION

As currently envisioned the project will have several different elements in the two project areas, including the following:

West Basin

- A new event center with associated public space and surface parking. The event center is planned to be one-story.
- Extension of the waterfront esplanade.
- Realignment of 9th Street and R Avenue upland from Cap Sante Marina as a new Truck route.

North Basin

- A new recreational vehicle (RV) park.
- Future hotel which is not included in this study.

3.0 SITE DESCRIPTION

3.1. Surface Conditions

The site is located in the marine district east of downtown Anacortes. The North and West Basins were created by filling intertidal areas. Original development included a railroad trestle/embankment across tidal mudflats. Filling was likely accomplished by a variety of methods including placement of dredged material from the adjacent waterway and conventional land-based filling closer to shore.

The West Basin currently consists of a graveled surface and paved parking areas, an active dog park, and manicured lawn. The West Basin is bounded by 9th Street to the north, Cap Sante Marina to the east, 11th Street to the south, and Q Avenue to the west. The existing gravel parking slopes down to the east with a grade change of approximately 4 feet to the historic rail alignment which crosses the basin diagonally.

The area to the east of the historic rail alignment is relatively level with a very slight slope east toward the water.

The North Basin consists of a paved parking area, Port bathroom and laundry facilities, and a large gravel parking lot that is raised above surrounding grades by several feet. The North Basin is bounded by 6th Avenue to the north, paved parking to the east, Cap Sante Marina to the south, and R Avenue to the west. Historical abandoned rail lines are still present at site grades with the western portion of this development area.

The shoreline along both basins is lined with a sidewalk and short retaining walls or rockeries. Most existing structures within the project area were/are supported on pile foundations. The early era structures also typically had/have timber pile foundation support. Most of the piles in the offshore area gain capacity as friction piles.

3.2. Geology

We reviewed a Washington State Department of Natural Resources (DNR) map for the project area, “Geologic Map of The Bellingham 1:100,000 Quadrangle, Washington” by Lapen (2000). The geologic map indicates that the project site is in an area mapped as artificial fill, which generally occurred in the 1950s. The site is a previous beach and intertidal area and therefore the upper native soils are a combination of beach and intertidal deposits. The other known geologic units in increasing age include, glaciomarine drift, glacially consolidated deposits and bedrock. The various geologic units and generalized geotechnical properties interpreted based on review of existing data are discussed below.

Fill in the project vicinity is variable in composition and ranges from sand to clay derived from various marine dredging and upland sources. The fill is generally loose/soft, compressible, and with low shear strength. Granular fill zones can be moderately to highly susceptible to soil liquefaction where located below the water table.

Although not mapped at the site, historical beach/intertidal deposits underlie the fill and consist primarily of loose to medium dense sand and silty sand with interbedded silt or clay layers. The intertidal deposits are moderately compressible, with low shear strength, and the granular zones are highly susceptible to liquefaction.

Glaciomarine drift is mapped west of the site and was encountered underlying artificial fill and/or beach/intertidal deposits and in our explorations as described below. Glaciomarine drift typically consists of unsorted, unstratified silt and clay with varying amounts of sand, gravel, cobbles and occasional boulders. Glaciomarine drift is derived from sediment melted out of floating glacial ice that was deposited on the sea floor during periods of glacial retreat, while the land surface was depressed 500 to 600 feet from previous glaciations. This material locally contains shells, wood and large erratics (boulders), and can be present sporadically or even in a cluster.

Glacially consolidated deposits encountered at the site consisted of very stiff to hard silt with variable sand content. The soil density is due to glacial processes resulting in significant consolidation. This unit has high shear strength and low compressibility characteristics.

Bedrock is mapped at the ground surface east of the site. The bedrock is mapped as part of the Lummi Formation which consists of marine metasedimentary rock. The Lummi Formation is metamorphosed

pebble conglomerate, sandstone, and/or mudstone. The formation was deposited during the early Cretaceous to late Jurassic age (140 to 150 million years before present).

3.3. Field Explorations

Subsurface soil and groundwater conditions were evaluated by completing 17 geotechnical borings, B-1 through B-17, on November 11 through 14, 2019 using a track-mounted drill rig subcontracted to GeoEngineers. The borings were completed to depths of 11½ to 101½ feet below the existing ground surface (bgs). The locations of the explorations are shown in Figure 2. Details of the field exploration program, laboratory testing, and boring logs are presented in Appendix A.

3.4. Subsurface Conditions

3.4.1. Soil Conditions

The general soil profile encountered at the site generally consists of uncontrolled fill overlying a transition zone of possible intertidal/beach or glaciomarine drift deposits, overlying glacially consolidated deposits. Surface conditions varied across the site, generally consisting of 2 to 3 inches of sod, crushed rock, railroad ballast, or asphalt concrete. Generalized cross sections for the West Basin (A-A') and North Basin (B-B') are presented in Figures 3 and 4, respectively.

Fill: Fill soils were encountered in all explorations to depths of approximately 9 to 14 feet bgs. Fill in the project vicinity is variable in composition, ranging from soils derived from dredging and variable silt, sand, gravel, and debris from upland sources. The fill soils encountered in our explorations generally consisted of loose to medium dense sand with variable silt content; soft to medium stiff silt; and clay with variable sand and gravel content; gravel; and spalls. Scattered zones of organic matter, wood shavings, and wood debris were encountered in several of the borings. Occasional debris consisting of bricks, plastic, and shell fragments were also observed in some of the fill. The engineering characteristics of the fill will be variable. The fine-grained portion of the fill is generally loose/soft, compressible, with low shear strength. The granular portions of the fill are loose and moderately to highly susceptible to soil liquefaction below the water table. Borings B-1, B-4, B-7, B-8, and B-9 in the West Basin area, and B-11 through B-17 in the North Basin area, all terminated in the fill unit.

Transition Zone: A transition zone was observed in borings B-2, B-3, B-5, B-6, and B-10 to depths ranging from 18 to 24 feet bgs. The beach/intertidal deposits and glaciomarine drift are the result of a dynamic depositional and historic intertidal environment; therefore, we grouped them together as a “transition zone” unit for purposes of this report. The transition zone generally consisted of medium stiff clay with variable sand, medium dense sand with silt, very loose sandy silt, and stiff silt. Shell fragments were observed in portions of this unit.

Glacially Consolidated Deposits: Glacially consolidated soils were encountered below the transition zone in borings B-2, B-3, B-5, B-6, and B-10. The glacially consolidated deposits encountered in our borings generally consisted of very stiff to hard sandy silt with variable sand content and dense to very dense fine to medium sand with variable silt content. The unit was predominantly homogenous with limited layering or stratification. Each of the explorations that encountered these soils, terminated in this unit.

3.4.2. Groundwater Conditions

Groundwater seepage was encountered in borings B-1 through B-6, B-10, B-13, B-14, B-16, and B-17 at depths ranging from 6.5 to 10 feet bgs. Monitoring wells were installed to monitor groundwater levels in borings B-3 and B-16 and are listed in Table 1 below. Groundwater monitoring was completed with dataloggers and supplemented by manual readings during installation and retrieval of the data loggers. Data plots of water levels, tide levels and precipitation are presented in Figures 5 and 6. Groundwater conditions should be expected to vary as a function of season, precipitation, and other factors including local tides in Fidalgo Bay.

TABLE 1. GROUNDWATER LEVEL MEASUREMENTS

Exploration No.	Date of Groundwater Measurement	Approximate Ground Surface Elevation ¹ (feet)	Measured Depth to Groundwater (feet)	Approximate Groundwater Elevation ¹ (feet)
B-3	December 5, 2019	13	3.34	9.46
	January 6, 2020		2.86	9.94
B-16	December 5, 2019	18	4.63	13.17
	January 6, 2020		3.21	14.59

Notes:

¹ Elevation datum is NAVD88.

3.5. Chemical Analytical Testing

Chemical analytical testing was completed on composite samples collected from drums of soil cuttings derived during the explorations to provide characterization for disposal. The composite samples were placed in laboratory-prepared vials/jars for chemical analytical testing at OnSite Environmental, Inc. (OnSite). Samples were tested for metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), PAHs, gasoline and diesel-range organics and/or lube oil. When detected in the samples, all metals were at or below Model Toxics Control Act (MTCA) Method A or B cleanup levels. Diesel-range organics were also below MTCA Method A cleanup levels. Additional details are provided in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

A summary of the primary site preparation, design, and construction considerations for the proposed project is provided below. The summary is presented for introductory purposes and should only be used in conjunction with the complete recommendations presented in this report.

- A Site Class E in accordance with the 2015 International Building Code (IBC) is appropriate for design.
- Portions of the saturated granular fill are slightly susceptible to liquefaction-induced settlement during a design-level earthquake with estimated 2 to 3 inches of post-seismic settlement following a large design-level earthquake. Lateral spreading varies from a few inches to more than 1 foot along the shoreline. Foundation recommendations provided in this report will mitigate for the seismic hazard.
- We recommend that foundation options be evaluated based on design loads and preliminary cost estimates. Feasible options include.
- Shallow spread footings or grade beams over ground improved soil.

- Structural mat foundation over ground improved soil.
- Pile foundations with ground improvement for lateral support.
- Slab-on-grade may be supported over ground improvement. Existing fill soils are not suitable for slab support.
- Stormwater infiltration is not feasible based on depth to groundwater and variable fine-grained fill material.
- Pavements are feasible with adequate subgrade preparation and pavement section based on intended use such as haul road or parking areas.
- We recommend that where fill is required for the west basin, it be placed as a preload at least 10 weeks in advance of starting hardscape or pavement construction to consolidate the compressible fill and transition soils.
- Existing fill soils in the north basin are not suitable for reuse as structural fill. Grade changes should be optimized to reduce import and export costs.
- Excavations into existing fill soils can generally be completed using conventional earthwork equipment. Although not encountered in our explorations, oversized materials including boulder and cobble sized particles and wood and other construction debris could be encountered in the fill. The contractor should be prepared to handle oversized debris in deeper excavations.
- Dewatering is anticipated to be limited to utility installation.

4.1. Seismic Design Considerations

4.1.1. Seismic Hazards

The Puget Sound region is a seismically active area. The 2018 IBC requires incorporation of structural and/or foundation considerations into the project to adequately mitigate effects of seismic shaking on the proposed structures. We evaluated the site for seismic hazards including liquefaction, lateral spreading, and fault rupture. Our evaluation indicates that some of the saturated fill soils at the site are susceptible to liquefaction as discussed in the following sections.

There is a fault mapped through the middle of the North Basin as shown in Figure 7. The fault is described as “unknown offset – identity and existence certain, location concealed” on the Washington Geologic Information Portal 1:100,000 scale map. Risk of surface rupture should be evaluated further depending on final selected locations of proposed structures in the North Basin area. The risk of fault rupture decreases for structures as the distance from the mapped fault increases. Therefore, the risk is lower for the West Basin.

4.1.2. 2015 International Building Code Seismic Design Information

We anticipate the project will be designed utilizing the 2018 IBC. The 2018 IBC references the 2016 Minimum Design Loads for Buildings and Other Structures (ASCE 7-16). Per ASCE 7-16 Section 11.4.8, a ground motion hazard analysis or site-specific response analysis is required to determine the design ground motions for structures on Site Class E sites with S_1 greater than or equal to 0.2g. For this project, the site is classified as Site Class E with an S_1 value of 0.417g; therefore, this provision applies. Alternatively, the parameters listed in Table 2 below may be used to determine the design ground motions if Exception 2 of Section 11.4.8 of ASCE 7-16 is used. Using this exception, the seismic response coefficient (C_s) is

determined by Equation (Eq.) (12.8-2) for values of $T \leq 1.15T_s$, and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.15T_s$ or Eq. (12.8-4) for $T > T_L$, where T represents the fundamental period of the structure and $T_s=0.71$ sec. If requested, we can complete a site-specific seismic response analysis which might provide reduced seismic demands from the parameters in Table 2 and the requirements for using Exception 2 of Section 11.4.8 in ASCE 7-16.

TABLE 2. MAPPED 2018 IBC SEISMIC DESIGN PARAMETERS

Seismic Design Parameters	Recommended Value ^{1, 2}
Site Class	E
Mapped Spectral Response Acceleration at Short Period (S_s)	1.122g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.398g
Site Modified Peak Ground Acceleration (PGA_M)	0.594g
Site Amplification Factor at 0.2 second period (F_a)	1.2
Site Amplification Factor at 1.0 second period (F_v)	2.4
Design Spectral Acceleration at 0.2 second period (S_{DS})	0.898g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.637g

Note:

¹ Parameters developed based on Latitude 48.513898° and Longitude -122.60954° using the ATC Hazards online tool.

² These values are only valid if the structural engineer utilizes Exception 2 of Section 11.4.8 (ASCE 7-16).

4.1.3. Liquefaction Potential

Liquefaction is a phenomenon where soils experience a rapid loss of internal strength as a consequence of strong ground shaking. Ground settlement, lateral spreading and/or sand boils may result from liquefaction. Structures supported on liquefied soils could suffer foundation settlement or lateral movement that could be severely damaging to the structures. Conditions favorable to liquefaction occur in loose to medium dense, clean to moderately silty sand that is below the groundwater level. Dense soils/bedrock or soils that exhibit cohesion (e.g. clay) are generally considered not to be susceptible to liquefaction.

The fill soils underlying the site include saturated loose to medium dense sand with variable silt content and were observed in the majority of the site explorations. The presence of the saturated, loose sandy soils underlying portions of the site creates a high liquefaction potential at this site.

The evaluation of liquefaction potential is complex and is dependent on numerous site parameters, including soil grain size, soil relative density, site geometry, static stresses, and the magnitude and ground acceleration of the design-level earthquake. Typically, the liquefaction potential of a site is evaluated by comparing the cyclic shear stress ratio (the ratio of the cyclic shear stress to the initial effective overburden stress) induced by an earthquake to the cyclic shear stress ratio required to cause liquefaction. The cyclic shear stress ratio required to cause liquefaction was estimated using an empirical procedure based on the in-situ static ground stresses, the data obtained from the borings, and a design earthquake with a moment magnitude of 7.28 and a peak horizontal ground acceleration of 0.42g. The design earthquake parameters were developed using published hazard maps associated with a maximum credible earthquake (MCE) event that has a 2 percent chance of exceedance in a 50-year period (2,475-year event) as required by IBC.

The subsurface data was evaluated in accordance with methodology presented in Youd and Idriss (2001). Our analysis indicates that portions of the saturated fill have a high potential for liquefaction during the design earthquake. Settlement for an MCE event is predicted to be on the order of 2 to 3 inches at the project site without mitigation. Settlement for a lower level event (LLE) that has a 10 percent probability of exceedance in 50 years (return period of 475 years) is estimated to be about half of the MCE event, or ½ to 1 inch.

4.1.4. Lateral Spreading

In addition to settlements, there is the possibility that lateral spreading of the soils could occur as a result of soil liquefaction. Lateral spreading involves lateral displacement of large, surficial blocks of non-liquefied soil, as well as the liquefied soil itself, as the underlying soil layer liquefies. Lateral spreading generally develops in areas where sloping ground is present or near a free face, such as the Cap Sante Marina. If liquefaction were to occur within the upper soils at the site, we anticipate that there would be a moderate potential for lateral spreading to occur, characterized by movement of the soils towards the marina. During a design earthquake, lateral spread displacements across the site are estimated to range from a few inches at upland portions of the east and west basin to over 1 foot near the marina, without mitigation.

4.1.5. Seismic Mitigation

In nearshore environments such as this site, a combination of overexcavation and replacement, ground improvement technologies, rigid grade-beam or mat foundations, and/or use of pile supported foundations will effectively mitigate the liquefaction seismic hazards.

The upper unsaturated fill soils will provide some separation between the foundations and the liquefaction zone, but may not be sufficient to preserve bearing capacity, especially for large/heavily loaded foundations. Additionally, ground subsidence of the site and surrounding area will likely occur as a result of a large design earthquake. The liquefaction risk can be fully mitigated by either (a) performing ground improvements such as vibroreplacement (stone columns) or (b) pile supporting the structure and implementing some level of ground improvement for lateral pile support especially along the shoreline. The vibroreplacement technique results in densifying the liquefiable sands, provides rigid stone columns for bearing support, and provides rapid drainage paths to dissipate pore pressures.

4.2. Foundation Support

The foundation conditions at the proposed event center were variable but generally included loose/soft fill and soft transition zone overlying hard glacially consolidated silt layer at approximately Elevation -4 to -7 feet. These soils would provide relatively low bearing capacity and be subject to post-construction settlement under static conditions. As previously described, seismic hazard/liquefaction can also result in loss of bearing capacity and additional settlement. Mitigation for these effects will likely require supporting the proposed Event Center on a pile foundation or performing ground improvement prior to construction of a shallow spread footing or mat foundation system.

We are not able to present specific foundation design conclusions and recommendations for the Event Center and other site structures because specific structure, foundation loading, or settlement tolerances have not been developed identified at this stage of design. A discussion of conceptual-level foundation design recommendations are provided in the following sections. Selection of a foundation alternative will require additional analysis, coordination and cost comparisons.

4.2.1. Shallow Foundations

Conventional shallow foundations are not recommended for use in areas of existing compressible and liquefiable fill and transition deposits without mitigation. If shallow foundations are used, they should be constructed directly overlying ground improved soils as discussed in Section 4.3. It is likely that this option will only be feasible for lightly loaded areas with short spans and may or may not require grade beams. Risk of differential settlement between footings and slab-on-grade should be considered evaluated in detail. Larger spans will have larger loads and footing sizes such that a mat foundation would likely be required to reduce bearing pressures, and control total and differential settlements. Allowable bearing pressures for ground improvement will depend on the type and spacing of the improvement; we expect allowable bearing pressures on the order of 3,000 to 4,000 pounds per square foot (psf) could be achieved based on previous experience.

A shallow grade beam foundation over ground improvement with an independent slab-on-grade would result in more conventional construction methods and flexibility of below-grade utilities. Risk of differential settlement after a seismic event could result in damage requiring repairs.

4.2.1.1. Mat Foundations

A mat foundation would be appropriate for structures supported on ground improved soils as discussed in Section 4.3. A mat foundation typically consists of a monolithic, thick concrete slab with multiple layers of steel reinforcement that serves to distribute the column loads and provide support of the lower floor. The purpose of a mat foundation is to tie the foundations into a rigid unit that will distribute foundation loads over a wider area and reduce differential settlement between individual foundation elements. In some instances, a mat foundation can be designed to “float” and bridge expected differential settlement resulting from variable magnitudes of static and liquefaction-induced settlement. The mat foundation is typically thick, 18 to 24 inches or more, with multiple layers of steel reinforcement. The mat foundation will require construction over a uniform subgrade, typically 12 to 24 inches of crushed rock.

Mat foundations require significant coordination during design and construction for below-grade utilities. Additionally, future alterations are difficult due to the thick reinforced concrete that functions as both the foundation and the slab.

4.2.2. Pile Foundations

Pile foundations transfer foundation loads through the compressible and loose/liquefiable soils where present to the hard glacially consolidated silt layer encountered at the site. Pile installation does not stabilize the ground below or around a pile-supported structure, so some settlement below and adjacent to the structure could occur such that the connections to surrounding infrastructure can be compromised during a large earthquake. The incremental increase in cost for a pile foundation relative to a shallow spread footing or mat foundation system can be significant because of the required grade beams and higher lateral load design requirements. We would expect that the bottom floor will also be a structural slab.

Since pile foundations would extend through the potentially liquefiable soils, new pile foundation design must include the effects of downdrag loads. New piles will offer some lateral resistance for the buildings to resist the effects of lateral spreading.

Several pile types would be appropriate at the site including driven steel pipe, driven grout, and augered cast-in-place (“augercast”) pile systems would be appropriate at the site. Driven open-ended steep pipe piles have the ability to confirm adequate bearing by monitoring installation resistance during driving, and do not generate soil cuttings which require disposal. Driven grout piles may also be feasible which would eliminate the need to handle and dispose of soil cuttings. Drilled augercast piles could be used to minimize noise and vibration which are likely considerations for permitting, and are often a cost-effective pile foundation option.

We completed preliminary axial pile capacity analyses based on our borings in the vicinity of the proposed Event Center. For planning and cost comparisons, we have provided the following preliminary pile capacity estimates:

- A 16-inch driven steel pipe pile embedded 5 to 10 feet into the bearing layer would have a capacity on the order of 150 kips.
- A 18-inch augercast pile embedded 10 feet into the hard bearing layer would have an estimated capacity on the order of 100 kips.
- A 18-inch driven grout pile will have an estimated capacity similar to the driven steel pipe pile but would not require handling and disposal of cuttings.

Lateral pile capacity will be a significant component of final design. For the larger structures, it will be necessary to use a sufficient number of piles to resist lateral loads, and/or ground improvement may be required to densify the soil around the piles to provide better lateral resistance during a seismic event.

4.3. Ground Improvement

In absence of pile foundations, ground improvement will likely be required for shallow foundation support of structures in areas of existing fill. The purpose of ground improvement at the site can be four-fold: (1) to improve foundation bearing capacity and reduce settlement under static conditions resulting from soil consolidation under newly imposed structural loads; (2) to reduce settlement resulting from liquefaction of loose saturated foundation soils; (3) to densify loose/soft soils under structures or waterward of structures to improve seismic stability and reduce deformation associated with lateral spreading; and (4) improve soils around pile foundations to provide additional lateral pile resistance.

Numerous methods of ground improvement are available such as vibroreplacement, Rammed Aggregate Piers® (RAPs), timber compaction piles, compaction grouting, soil mixing, deep dynamic compaction, wick drains, and blast densification. Some of these techniques are likely not suitable considering the location, high groundwater table and other factors. For this level of planning, we focused on two common waterfront ground improvement techniques, vibroreplacement and rigid inclusions, that mitigate liquefaction impacts and could be used to provide adequate foundation support for moderately loaded structures. GeoEngineers has successfully used both vibroreplacement and rigid inclusions on other waterfront projects throughout the Puget Sound.

4.3.1. Vibroreplacement Columns

Vibroreplacement columns include stone columns and proprietary systems like the rammed aggregate pier (RAP Geopier® Impact System) are common ground improvement techniques that could be designed to mitigate the seismic hazards at the site. Conventional shallow foundations for lighter low-rise structures

could be supported on the vibroreplacement columns directly, or, for heavily loaded structures, the columns could be used in combination with mat foundations or pile foundations. It may be beneficial and/or necessary to use a ground improvement technique to stiffen the bearing soils for lateral resistance around the pile foundations and/or resist lateral spreading. Vibroreplacement column techniques are typically one of the more cost-effective methods of ground improvement.

Construction of vibroreplacement columns (stone columns or RAPs) involves the displacement of loose/soft soils by installation of vertical columns of compacted stone; no soil cuttings need to be generated with these techniques. Typically, a hollow tube or probe is vibrated, or jetted into the ground to the desired depth for the columns. As the tube or probe is withdrawn, crushed stone is fed to the bottom of the hole and compacted. With RAPs below groundwater, a casing can be used to the bearing depth and then a mandrel is used to compact layers of stone. The end result is a column of dense stone which penetrates through the loose/soft unsuitable soil and is capable of transferring loads into the underlying competent soils. The presence of the column creates a composite material of lower overall compressibility and higher shear strength than the native soil alone. Confinement of the stone is provided by the lateral stress within the densified loose/soft soils. As loads are applied, the stone columns and soft soil move downward together, resulting in transfer of the majority of the load to the stone column.

Additional analyses of stone columns will be required during design to determine the specific amount of ground improvement (replacement ratio and depth) that will be necessary to meet the project needs. When soils are very soft or contain organics, sometimes the designer will include cement grouting in conjunction with the stone columns, due to low confining pressures. This type of ground improvement method is typically satisfactory to mitigate liquefaction and support structures that can then be designed using conventional shallow foundation and slab-on-grade techniques, or structures with mat foundations. A slightly higher allowable bearing pressure can oftentimes be used to help off-set some of the ground improvement costs.

At this site, we would expect the stone columns would extend through the liquefiable fill and transition zone to glacially consolidated soil. For preliminary estimating purposes, we recommend a design elevation of approximately -5 feet. Typically, the area in which stone columns are installed will extend at least 10 to 20 feet (one to two rows) laterally beyond the edges of buildings.

4.3.2. Rigid Inclusions

Rigid inclusions are another ground improvement technique that could be designed to mitigate the seismic hazards at the site. Rigid inclusions are formed by constructing unreinforced lean concrete piles beneath the shallow foundations, typically using the same equipment that installs augercast piles. This type of installation does generate soil cuttings, which may be an archaeological or environmental consideration. The intent of the rigid inclusions is to provide foundation bearing by transferring foundation loads to the underlying dense soil layer when the surrounding soil liquefies during a design earthquake event. Rigid inclusions could likely be used in the same areas as the stone columns; this technique typically results in lower postconstruction settlements and would be used for larger structures.

4.4. Slab-on-Grade Floor Support

The slab-on-grade with or without reinforcement may be supported on ground improvement. A load transfer layer of sand and gravel is common and may or may not include geotextile layers. In all cases, use of a typical capillary break layer below the slab, and sufficient drainage provisions are recommended.

4.5. Utilities

New and existing utilities will experience settlement from liquefaction, likely differential in nature between the ground improved soil under buildings or pile supported buildings and the surrounding soils. Therefore, we recommend critical and rigid utilities such as gas, water, sewer lines and drains be attached to the building via flexible fittings to allow for differential settlement between the building and the surrounding ground supporting the utilities. Also, we recommend that gas and water lines be equipped with automatic shutoff valves that are activated by ground shaking to reduce the potential for gas leaks or water leaks during an earthquake.

4.6. West Basin Site Grading and Settlement Considerations

At the time of this preliminary report, the planned finished grade elevation for the West Basin was approximately Elevation 16 feet. This will require fill placement ranging from less than ½ foot to approximately 4 feet mostly below future parking areas and partly below the proposed Event Center.

The existing fill and transition deposits underlying the project site include compressible silt, and other organic material that will experience settlement under the anticipated fill and structure foundation loads. We recommend that new fill in the West Basin area be placed early on in construction process as a preload. Preloading will significantly reduce postconstruction total and differential settlement and improve long-term pavement performance.

4.6.1. Preload Considerations

Placement of a preload fill at the site will result in elastic and consolidation-related settlement. The purpose of the preload fill is to induce a majority of the expected settlement from new fill placement prior to construction of pavement or hardscapes to improve performance. All fill should be placed and compacted as structural fill.

Based on our preliminary settlement analysis and experience in the project vicinity, we estimate the placement of up to 4 feet of new fill will result in about 2 to 3 inches of elastic and consolidation settlement in the West Basin, and the majority (90 percent) of the settlement should occur within about 2 to 3 months of fill placement. Similar settlement would occur in the North Basin; however, grades are not anticipated to be raised in this area. Based on our experience in the region with similar soil conditions, the settlement magnitude and duration will vary depending on the soil profile and site loading history. Accordingly, we recommend survey monitoring of the preload settlement as described below.

Organic material in the nearshore deposits will continue to decay overtime beyond the time period of the preload program, resulting in long-term secondary settlement. The evaluation of secondary settlement is complex and will depend on the exact thickness and composition of the organic material. For planning purposes, we anticipate that up to 1 inch of additional long-term, secondary settlement may occur during the lifetime of the proposed project as a result of organic decay.

4.6.2. Preload Settlement Monitoring

In order to evaluate the magnitude, rate, and effective time of completion for the preload settlements, we recommend survey monitoring prior to, during and following preload placement.

Settlement plates should be constructed on the prepared ground surface before placing fill on the site. We recommend GeoEngineers be retained to evaluate the settlement data and determine when it is appropriate to end the preload and begin final construction. For planning purposes, we recommend the fill be monitored during fill placement and for a minimum of 10 weeks after achieving full subgrade height, or until settlement marker observations indicate that consolidation of the underlying compressible strata is largely complete.

Additional recommendations for settlement monitoring can be prepared when a final grading plan has been developed.

4.7. North Basin Site Grading and Settlement Considerations

At the time of this preliminary report, it was undecided if the North Basin area would be regraded to a lower elevation. A significant consideration is the potential reuse of existing site soils as structural fill as part of grading for the West Basin. As discussed in more detail in Section 4.10.2, the existing fill soils in the North Basin are not suitable for reuse as structural fill. We have provided some additional considerations regarding grading for the North Basin:

- Based on the soils encountered, we recommend that site grading in the North Basin be optimized as much as possible. Soils excavated due to lowering site grades should be planned to be exported and imported structural fill will be required where site grades are raised.
- Based on the poor quality of existing fill and transition zone soils, placement of new fill will result in settlement of underlying soils. If new fill is placed, we should evaluate the magnitude of resulting settlement based on anticipated fill thickness. A preload will likely be appropriate as discussed in Sections 4.6.1 and 4.6.2 above for the West Basin.
- If existing grades are lowered at the north end of the north basin, the subgrade will be loose/soft and require overexcavation and/or geotextiles to provide adequate support for vehicles for proposed RV Park.

4.8. Stormwater Considerations

Infiltration will not be appropriate at this site because of the high groundwater table encountered 2.8 to 3.2 feet bgs in our monitoring wells, and variable fill consisting of mixed fine-grained soils. Stormwater requirements will need to be evaluated by a civil engineer when specific project elements are better defined. Some limited low impact development (LID) strategies such as rain gardens could be evaluated during design.

We recommend that the ground surface be sloped away from the buildings to the extent practical. Due to the poorly draining site conditions, we recommend that perimeter-footing drains be included around all buildings. The footing drains should be tightlined to the storm drain system or other suitable discharge point. All downspouts should also be tightlined away from the building foundation areas and should be discharged into a stormwater disposal system. Downspouts should not be connected to footing drains. Drainage systems should consider sea-level rise.

4.9. Pavement Considerations

We do not have specific design parameters (traffic data) to develop pavement sections. The owner can choose the pavement section based on the available capital budget for the project and desired pavement

performance. For the proposed new haul route pavement, based on recent experience in Anacortes near the project site, we recommend the following typical heavy pavement section for planning purposes:

- 5 to 6 inches of asphalt concrete pavement (ACP) per 2020 Washington State Department of Transportation (WSDOT) *Standard Specifications for Road, Bridge and Municipal Construction* (hereinafter referred to as WSDOT *Standard Specifications*);
- 6 inches of Crushed Surfacing Base Course (CSBC) per WSDOT *Standard Specifications* 9-03.9(3);
- 14 to 18 inches of sub-base course consisting of Gravel Base in accordance with WSDOT *Standard Specifications* 9-03.10; and
- placement of a woven geotextile over the subgrade with a minimum grab tensile strength (ASTM D 4632) of 200 pounds, such as Mirafi HP270 or equivalent. (Note: The subgrade should be compacted to a dense condition prior to placement of the geotextile fabric and gravel base.)

For planning purposes of new parking lot pavements and light traffic, we recommend the following:

- 2½ to 3 inches of ACP;
- 3 to 4 inches of CSBC;
- 8 to 12 inches of gravel base;
- placement of a woven geotextile over the subgrade.

4.10. Construction Considerations

As previously described, foundation construction will involve installation of piles or ground improvement to mitigate for liquefaction and lateral spreading. These foundation practices are common for buildings located in waterfront developments. Therefore, we conclude that construction for this project would be reasonably conventional.

4.10.1. Soil Excavation

We expect that any site development will likely consist of surface grading and ground improvement or piles. Excavations below present site grades will primarily be limited to installation of new utilities. Project excavations will largely be completed in existing fill soils. The native transition zone and, less likely, glacially consolidated deposits may also be encountered in deeper excavations. The site soils can be excavated with conventional equipment. Large debris can be present in uncontrolled fill, and cobbles and boulders can be encountered in the glacially consolidated soils. The clayey and silty fill soils are highly moisture sensitive and easily susceptible to disturbance by construction equipment during wet weather. The clay/silt fill soils will not support rubber-tired construction equipment during wet conditions. A gravel working surface should be anticipated to support construction equipment.

We did not observe visual evidence of contamination at the site based on the results of our explorations; however, the undocumented nature of the fill always represents a potential for random buried contamination. It may be necessary to perform some chemical testing for disposal of fill soils at the contractor's disposal site.

4.10.2. Suitability of On-site Soils for Reuse as Structural Fill

The on-site soils should generally be considered unsuitable for reuse as structural fill. Existing fill soils with high silt and clay contents are very moisture sensitive and can be difficult to compact to above 90 percent of the maximum dry density (MDD) even at or near their optimum moisture content. Granular silty sands with high moisture content are also difficult to compact to above 90 percent of the MDD without moisture conditions; therefore, soils with very high fines or moisture content should not be reused as structural fill.

The on-site near-surface soils observed in the explorations consists of highly variable uncontrolled fill soils. As discussed, much of the fill observed contains a high percentage of fine-grained soil and are highly moisture sensitive. As the fines content increases in these materials they become more sensitive to changes in moisture content and may not be suitable for use if placed during wet weather. Soils excavated from below the groundwater table have moisture contents well above optimum that will not be suitable for reuse as structural fill without moisture conditioning.

If significant quantities of granular sand and gravel soils above the groundwater are encountered during site excavation, these soils may be suitable for reuse but will require careful separation, moisture conditioning and testing during construction. For planning purposes, we recommend that import soils be used where structural fill is required for the project.

4.10.3. Structural fill Considerations

Materials used to support foundations, structures, and roadways and parking areas are classified as structural fill. Structural fill material quality varies depending upon its use. Based on very limited opportunity for reuse of onsite soils, the structural fill for the project will likely be imported to the site in most instances. Specific materials should generally conform to WSDOT Standard Specifications.

4.10.4. Temporary Slopes

The excavations necessary at the site are anticipated to be limited to general site grading and utility installation and will encounter mixed granular and clayey fill soils. Regardless of the soil type encountered in the excavation, either shoring, trench boxes, or sloped sidewalls will be required for excavations deeper than 4 feet under Washington State Administrative Code (WAC) 296-155, Part N. For planning purposes, the existing fill, is considered a "Type C" soil with a temporary slope at 1.5H:1V. Flatter slopes would be required in areas of seepage. Any excavations below groundwater would need to be dewatered for safety.

4.11. Dewatering Considerations

As previously discussed the groundwater elevation was encountered at approximately Elevation 8.6 to 11.2 feet, and could vary by several feet based on seasonal fluctuation during the winter months and tidal events. Dewatering is only anticipated for installation of new utilities, depending on the depth below groundwater.

Along with the tidal influence, the amount of dewatering necessary will be dependent upon the time of construction, length of time, size and depth of the excavation that will remain open, soil type and other factors. Where dewatering is required, we recommend that groundwater be drawn down at least 2 feet below the base of the excavation so that a suitably stable base is provided for construction. It is anticipated that dewatering at the site can likely be achieved by means of open pumping or wellpoints. A summary of these dewatering methods is provided below.

4.11.1. Open Pumping

This dewatering method involves removing water that has seeped into the excavation by pumping from a sump that has been excavated at one end of the excavation or trench (or a series of sumps along a trench). Drainage ditches that are connected to the sump are typically excavated along the sidewalls at the base of the excavation or trench. The excavation for the sump and the drainage ditches should be backfilled with appropriately sized material to serve as a filter to reduce the amount of erosion and associated sediment in the water pumped from the sump. In our experience, a slotted casing that is installed in the sump backfill provides a suitable housing for a submersible pump. Open pumping will likely be a suitable dewatering method for shallow excavations that encounter minimal groundwater.

The amount of water removed from the excavation by open pumping should be minimized because of high turbidity levels. Temporary storage of dewatering effluent from the sumps in a settlement tank or basin may be required to meet discharge permit requirements and reduce sediment content prior to discharging the water to surface water courses.

4.11.1. Wellpoints

Vacuum wellpoints are effective for dewatering most types of soils, whether pumping small amounts of water from silt or large quantities of water from coarse sand and gravel. The volume of water generated by a wellpoint system is typically less than the volume generated by a corresponding system of pumped wells because the wellpoints are generally completed at a shallower depth. Because of the shallower completion depth, the volume of aquifer that contributes water to a wellpoint system is less than for a comparable deep well system. Wellpoint systems are most suitable for dewatering excavations where the water table must be lowered no more than about 15 to 18 feet bgs or the header surface.

Depending on whether they are utilized for a specific below-grade structure or a linear trench, the wellpoints would likely need to be installed on 10-foot centers or less (typically 4 to 8 feet) to be effective and as close as possible to the edge of the excavation. The wellpoint screens should be appropriately filter packed to improve pumping efficiency and minimize the discharge of turbid water. Wellpoints must be sealed to a depth of at least 3 feet with hydrated bentonite chips forming a surface seal to encourage the development of a partial vacuum around each wellpoint. It has been our experience that the vacuum associated with well points also increases stability of the excavation sidewalls.

4.12. Recommended Additional Geotechnical Services

We recommend project specific geotechnical design studies for any future development within the north and west basin. The site has significant ground modification and complex geology such that the soil-structure interaction and building performance will need to be carefully considered during design in a collaborative effort by the architect, structural and geotechnical engineers.

The subsurface conditions at the site are adequately defined for this level of planning and pre-design effort. However, it may be appropriate to perform additional exploration for individual projects.

5.0 LIMITATIONS

We have prepared this report for use by the Port of Anacortes and members of the design team for use in design of the proposed Cap Sante Marina North and West Basin Upland Redevelopment project in Anacortes, Washington.

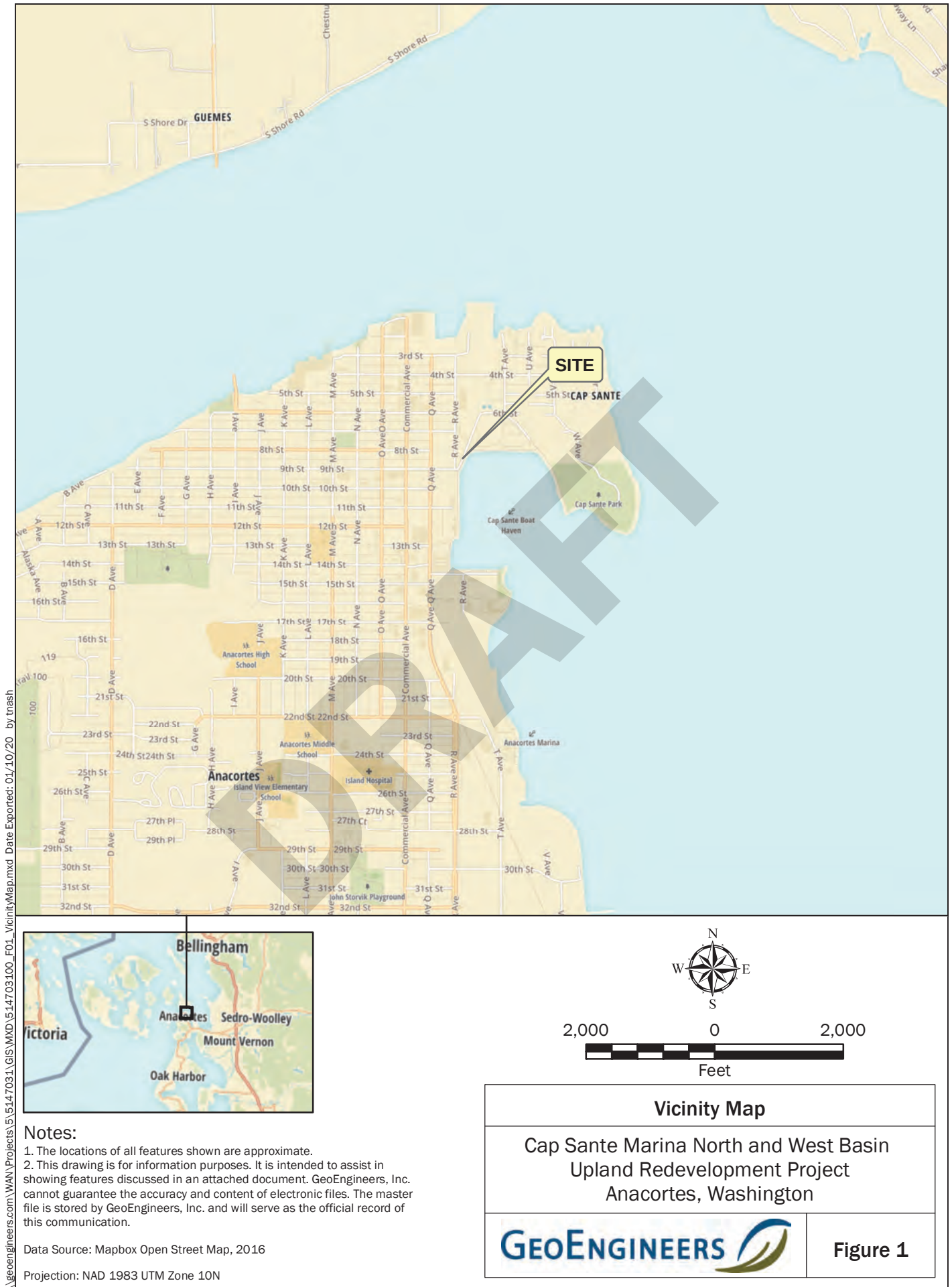
Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix C, "Report Limitations and Guidelines for Use," for additional information pertaining to use of this report.

6.0 REFERENCES

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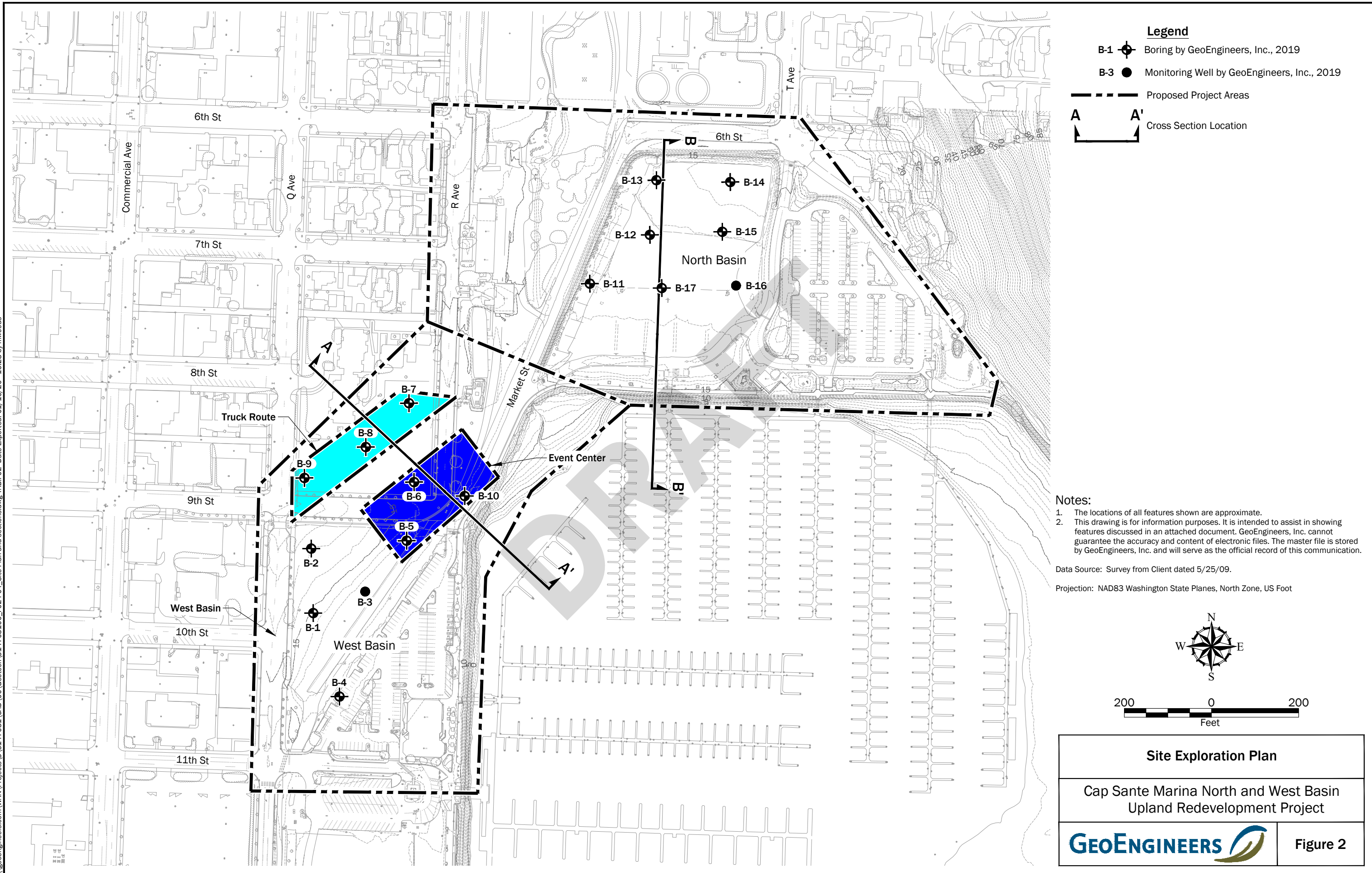
Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

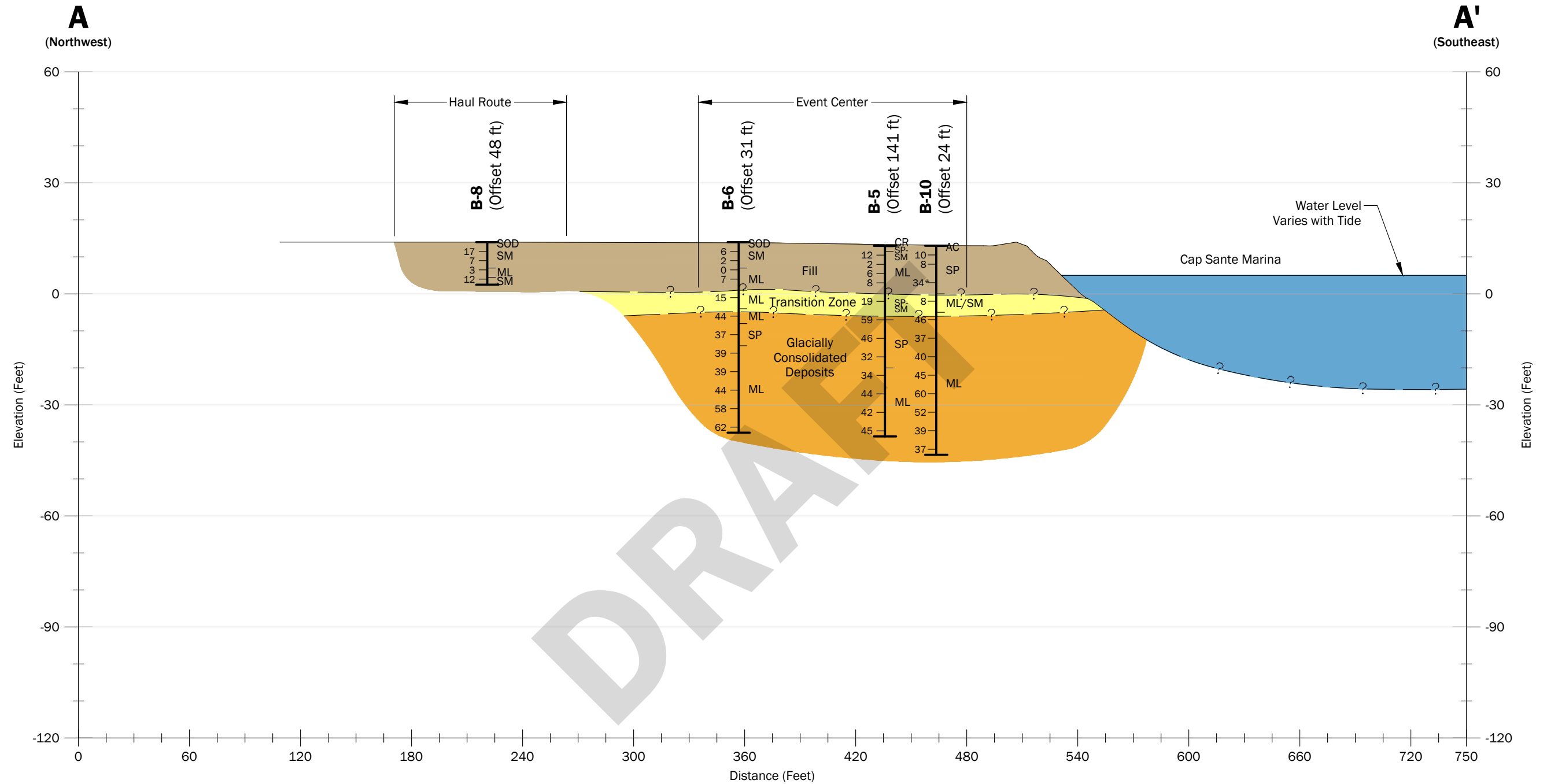
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Projection: NAD 1983 UTM Zone 10N

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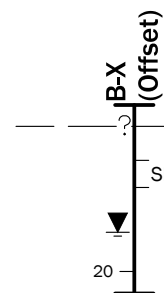
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Notes:

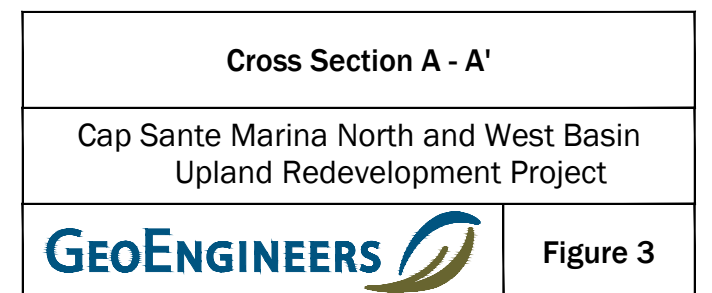
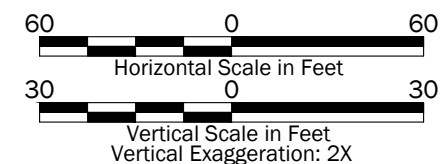
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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Datum: NAVD 88, unless otherwise noted.

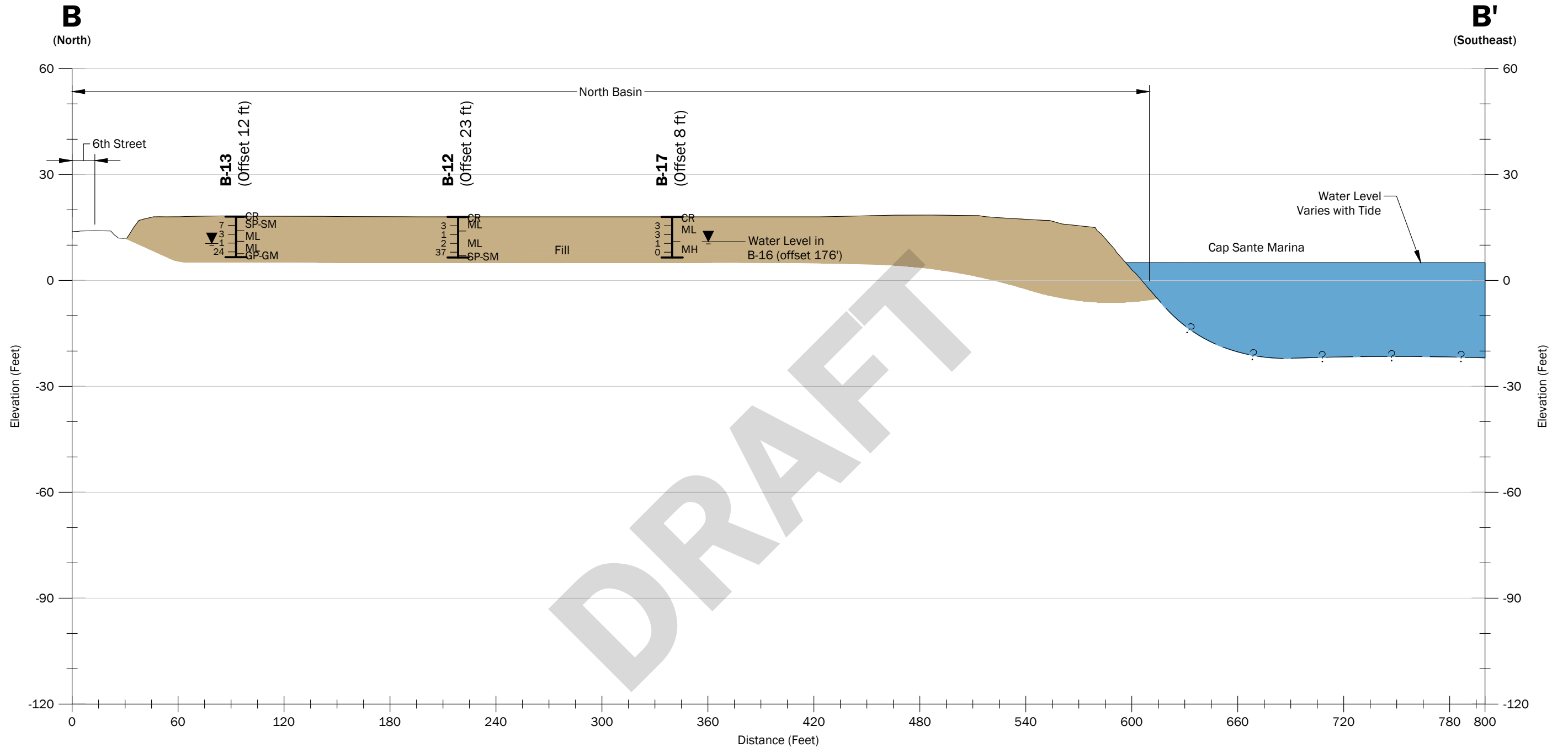


Legend

- Fill
- Transition Zone
- Glacially Consolidated Deposits



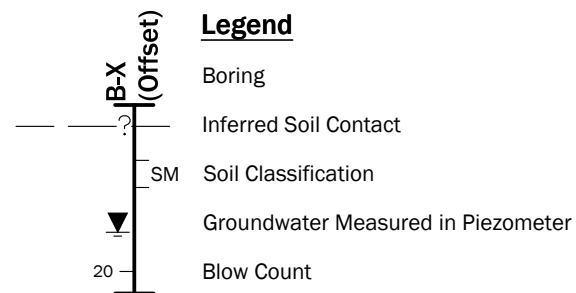
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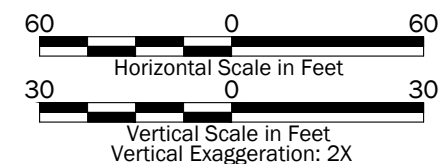
Notes:

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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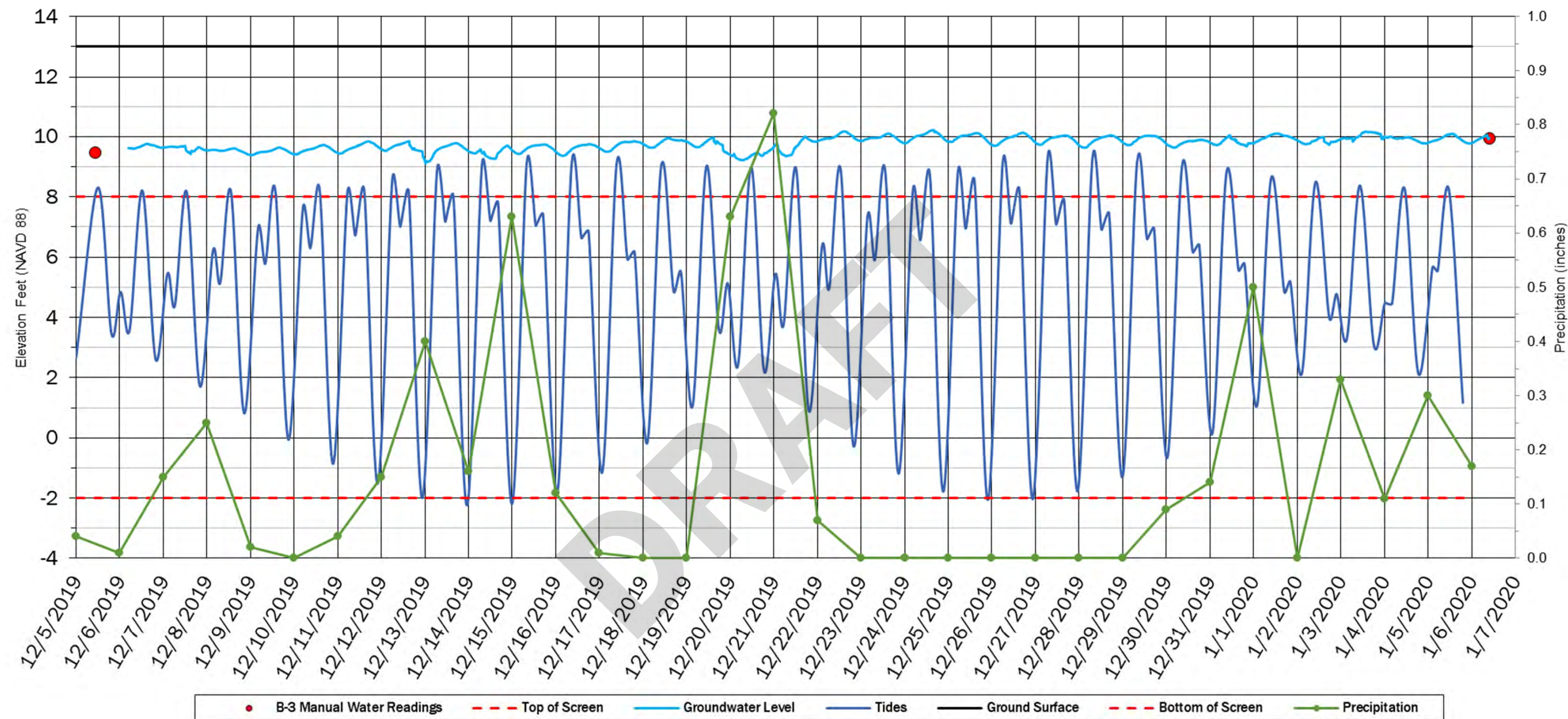


Fill



Cross Section B - B'	
Cap Sante Marina North and West Basin Upland Redevelopment Project	
GEOENGINEERS 	Figure 4

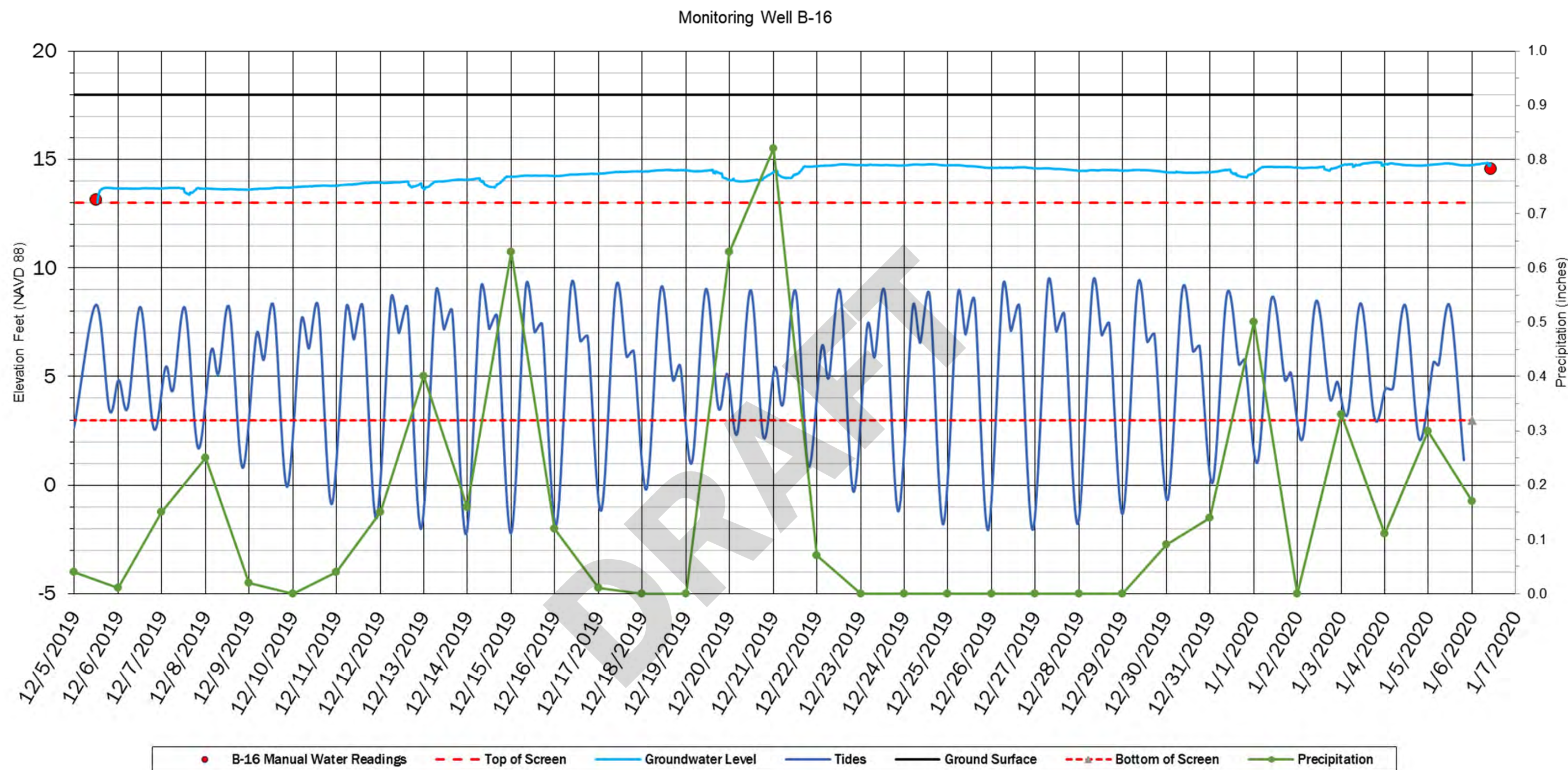
Monitoring Well B-3



Notes:

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Groundwater Monitoring Data B-3	
Cap Sante Marina North and West Basin Upland Redevelopment Project Anacortes, Washington	
	Figure 5



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Groundwater Monitoring Data B-16	
Cap Sante Marina North and West Basin Upland Redevelopment Project Anacortes, Washington	
	Figure 6



Notes:

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Data Source: Slope generated from North Puget Sound Lidar, 2017. Fault from Wa DNR 100K Geology. Liquefaction from Skagit County. Tsunami inundation area from NOAA and WDNr, June 2018, <https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/geologic-hazard-maps#tsunami-inundation>

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Site Boundary
- Fault - Location Concealed
- Slope >35%
- High Liquefaction Susceptibility
- Generalized Tsunami Inundation Approximate Area

200 0 200

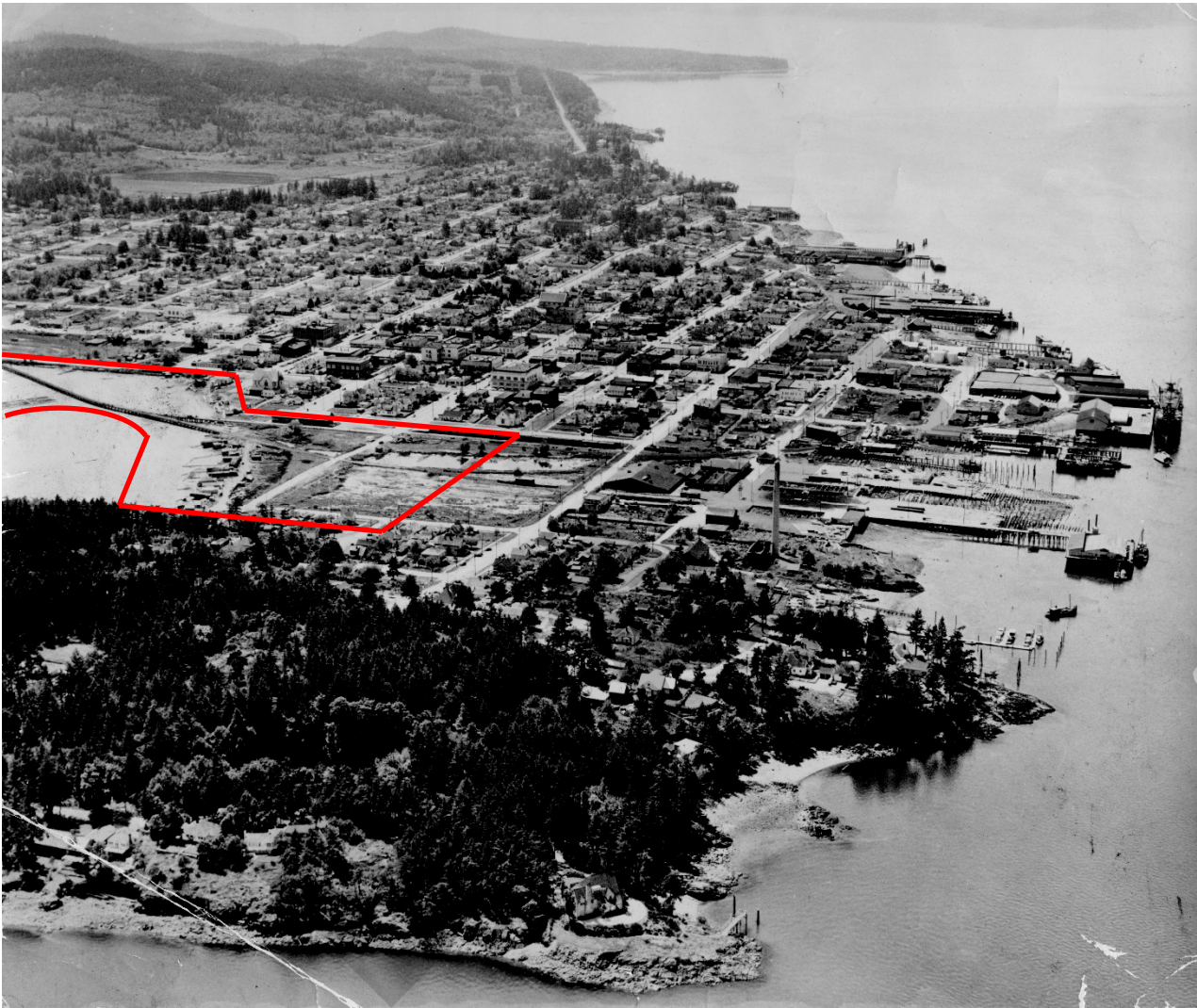
Feet

Geologic Hazards

Cap Sante Marina North and West Basin
Upland Redevelopment Project
Anacortes, Washington

GEOENGINEERS

Figure 7



Facing West

Legend:

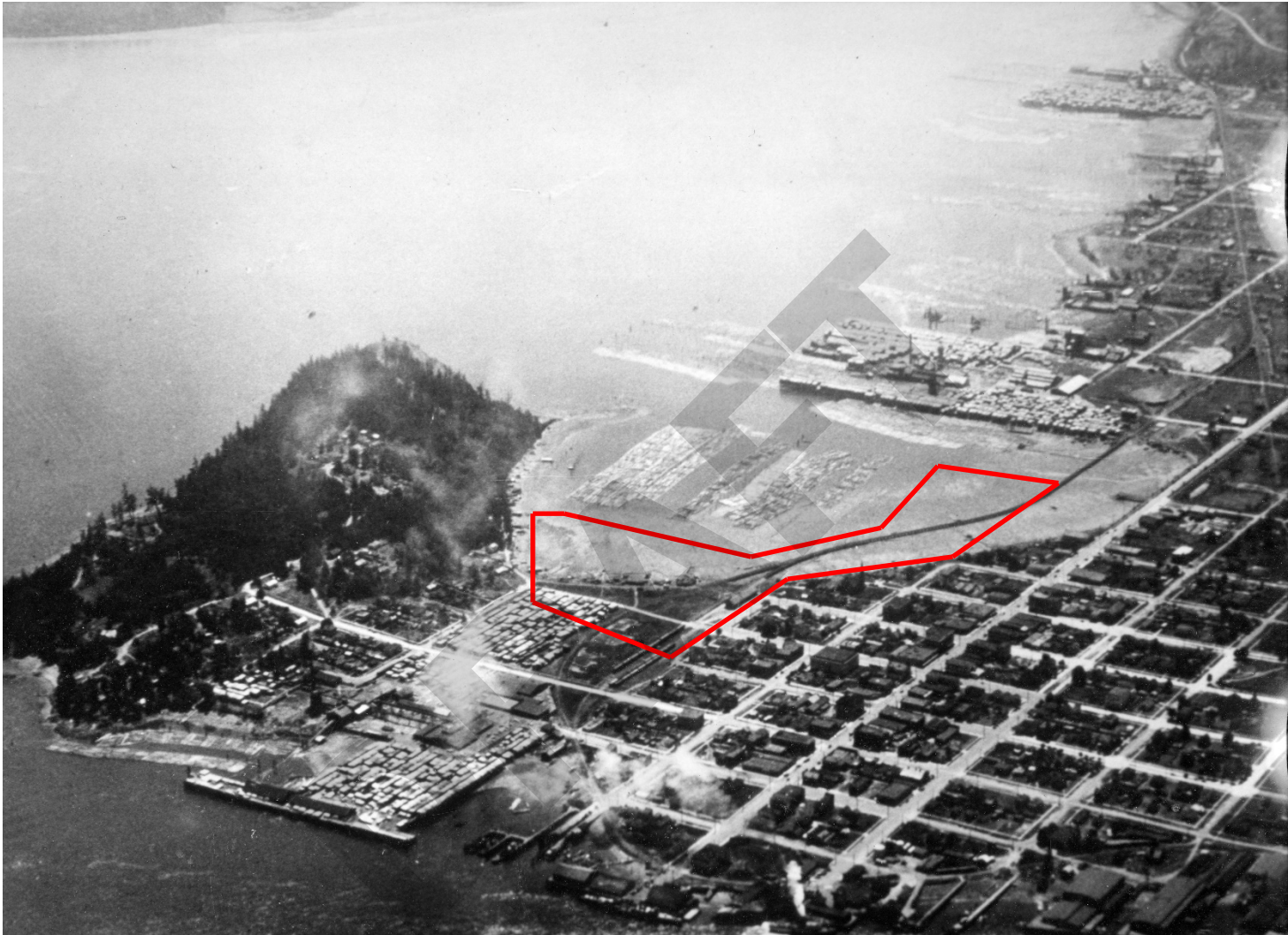
— Approximate project site boundary

Notes:

- 1. The locations of all features shown are approximate.
- 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Photograph Courtesy of the Anacortes Museum. D.X.092 Anacortes aerial across Cap Sante to Ship Harbor, c. 1940

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure 8



Facing Southeast

Legend:

— Approximate project site boundary

Notes:

1. The locations of all features shown are approximate.
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Data Source: Photograph Courtesy of the Anacortes Museum. D.X.104 Aerial view of Cap Sante and Anacortes Business District.

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure 9



Aerial Photo

Legend:

— Approximate project site boundary

Notes:

- 1. The locations of all features shown are approximate.
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- GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Photograph Courtesy of the Anacortes Museum, Wallie Funk Collection. WF 5597.A, B – Aerial View of Morrison Mill, Cap Sante Marina.

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure 10

APPENDIX A
Field Explorations and Laboratory Testing

DRAFT

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

GeoEngineers explored subsurface conditions at the site by completing 17 geotechnical borings on November 11 through 14, 2019. The borings were completed using a track-mounted drill rig subcontracted to GeoEngineers. The explorations were advanced using both hollow-stem auger and mud rotary drilling techniques. The approximate locations of the explorations are shown in the Site and Exploration Plan, Figure 2. The locations of the explorations were determined by recreational grade global positions system (GPS) in the field; therefore, the locations shown in Figure 2 should be considered approximate.

Soil samples from the borings were obtained using the Standard Penetration Test (SPT) method. This method involves driving a split spoon sampler a total of 18 inches using a 140-pound automatic hammer free falling 30 inches. Samples were also obtained using a 3.0-inch outside diameter modified California sampler driven into the soil with a 140-pound hammer free-falling 30 inches. For both sampler types, the number of blows required for each 6 inches of penetration was recorded. The number of blows required to drive the sampler the last 12 inches are recorded in the boring logs. The samples were placed in plastic bags to maintain the moisture content and transported back to our laboratory for analysis and testing.

The explorations were continuously monitored by a geological engineer or geologist from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each boring. Soils encountered were classified visually in general accordance with ASTM International (ASTM) D-2488-90, which is described in Figure A-1. An explanation of our boring log symbols is also shown in Figure A-1.

The boring logs are presented in Figures A-2 through A-18. The exploration logs are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered. It also indicates the depths at which these soils or their characteristics change, although the change might actually be gradual. If the change occurred between samples in the boring, it was interpreted.

Laboratory Testing

Soil samples obtained from the borings were transported to our laboratory and examined to confirm or modify field classifications, as well as to evaluate index properties of the soil samples. Representative samples were selected for laboratory testing consisting of the determination of the moisture content, percent fines content, and sieve analysis. The tests were performed in general accordance with test methods of ASTM or other applicable procedures.

Moisture Content Testing

The natural moisture contents of selected soil samples obtained from the test pits were determined in general accordance with ASTM D 2216 test procedures. The results from the moisture content determinations are displayed in the column labeled "Moisture Content %" adjacent to the corresponding samples on the summary logs.

Percent Passing U.S. No. 200 Sieve

Selected samples were “washed” through the U.S. No. 200 mesh sieve to determine the relative percentage of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted in general accordance with ASTM D 1140. The results from the percent fines determinations are displayed in the column labeled “Fines Content (%)” adjacent to the corresponding samples on the summary exploration logs.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 422 to determine the sample grain size distribution. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, classified in general accordance with the Unified Soil Classification System (USCS), and are presented in Figure A-19.

Atterberg Limits

Atterberg limit tests were completed for two soil samples. The tests were used to classify the soil as well as to aid in evaluating index properties and consolidation characteristics of the fine-grained soil deposits. The liquid limit and the plastic limit were obtained in general accordance with ASTM D 4318. The results of the Atterberg limits are summarized in Figure A-20.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND
FINE GRAINED SOILS	SILTS AND CLAYS		LIQUID LIMIT LESS THAN 50		SM
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
				ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
HIGHLY ORGANIC SOILS				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	2.4-inch I.D. split barrel
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab
	Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Measured free product in well or piezometer

Graphic Log Contact



Distinct contact between soil strata



Approximate contact between soil strata

Material Description Contact



Contact between geologic units



Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point lead test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

Key to Exploration Logs



Figure A-1

Start Drilled 11/11/2019	End 11/11/2019	Total Depth (ft) 11.5	Logged By Checked By NBD AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 15 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209666 557381		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
0		6			1	Gray fine to coarse sand with gravel (medium dense, moist) (fill)			
		4	8		2 %F		5	6	
5		18	3		3 MC	Gray clay with occasional sand and gravel, 1- to 2-inch layer of black clay (soft, moist)	34		
		2	11		4	Gray sandy gravel with organic matter and plastic debris (loose to medium dense, wet)			Groundwater observed at 7½ feet at time of drilling
10		4	7		5 MC	Gray-black clay with gravel and occasional sand with shell fragments and woody debris (2- to 3-inch layer of wood) (medium stiff, wet)	44		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-1



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-2
Sheet 1 of 1

Start Drilled	11/11/2019	End 11/12/2019	Total Depth (ft)	101.5	Logged By Checked By	NBD AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft) Vertical Datum	17 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209662 557529				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample						
0	6			1		GP-GW	4 to 6 inches gravel surfacing			
1.5	2	9		2 MC		CL	Brown clay with gravel and organic matter (medium stiff, wet) (fill)	72		
5	1	4		3 MC			Becomes with occasional sand, soft and increased organic content	231		
10	6	3		4 MC		GM	Gray gravel with silty clay, shell fragments and occasional sand (plastic) (loose, wet)	25		Groundwater observed at 7½ feet at time of drilling
10	6	2		5 %F				25	18	
15	12	30		6 MC		CL	Gray clay with sand, shell fragments and occasional gravel very stiff, wet) (transition zone)	29		
20		37		7						
25		49		8 MC		ML	Gray sandy silt with clayey fine to medium sand (very stiff, wet) (glacially consolidated deposits)	25		
30		26		9 MC				29		
35										

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-2



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-3
Sheet 1 of 3

Date: 1/10/20 Path: \\GEOENGINEERS.COM\W\PROJECTS\5147\031\GINT\5147\031\00.GPJ DBLibrary\Library\GEOENGINEERS_DF STD_US_JUNE_2017.GLB\GEB8_GEOTECH_STANDARD_SF_NO.GW

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
35										
38			38	10 MC				27		
40			34	11 MC		ML	Gray sandy silt (hard, moist)	33		
45			48	12 MC				32		
50			42	13 MC				37		
55			52	14 MC				32		
60			49	15 MC				27		
65			51	16 MC				35		
70			59	17 MC				29		
75			54	18 %F				33	97	

Log of Boring B-2 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Figure A-3
 Sheet 2 of 3

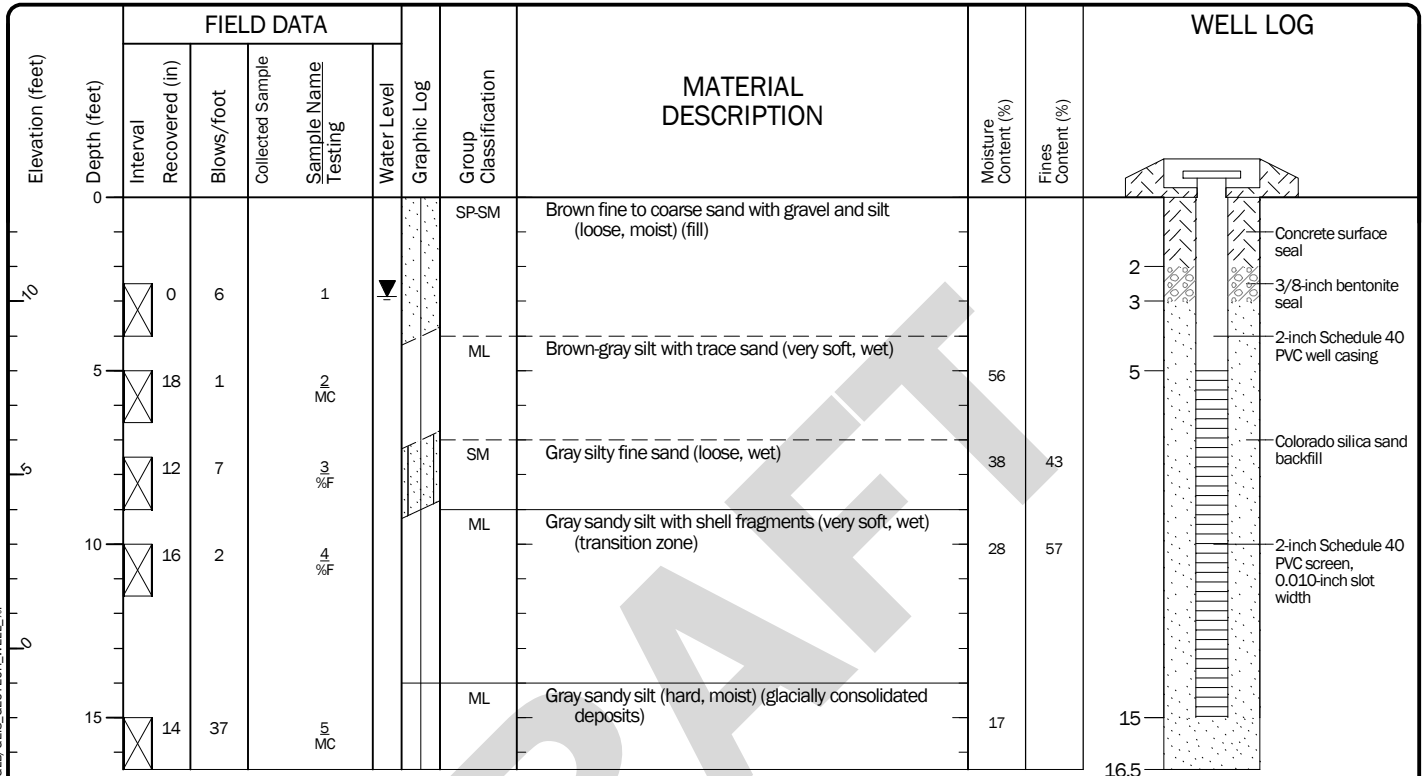
Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
80			65		19 MC		27		
85			66		20 MC		27		
90			53		21 MC	Increased plasticity (stickier)	27		
95			67		22 MC		20		
100			89		23 MC		27		

Log of Boring B-2 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Start Drilled 11/13/2019		End 11/13/2019		Total Depth (ft)	16.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.		Drilling Method	Hollow-stem Auger	
Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment		Diedrich D-50 Turbo Track Rig			DOE Well I.D.: BLU266 A 2-in well was installed on 11/13/2019 to a depth of 15 ft.		
Surface Elevation (ft) Vertical Datum		13 NAVD88				Top of Casing Elevation (ft)		12.80			Groundwater		
Easting (X) Northing (Y)		1209786 557431				Horizontal Datum		WA State Plane North NAD83 (feet)			Date Measured	Depth to Water (ft)	Elevation (ft)
											1/6/2020	2.86	9.94
Notes:													



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring with Monitoring Well B-3



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-4
Sheet 1 of 1

Start Drilled	11/13/2019	End 11/13/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	14 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209727 557190				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Interval Depth (feet)	Recovered (in)	Blows/foot	Collected Sample Sample Name Testing					
0					AC	Approximately 2½ inches asphalt concrete			
					GW/GP	Approximately 4 inches brown gravel with sand and silt / (dense, moist) (gravel base/fill)			
					ML	Gray brown silt with trace sand (medium stiff, moist) (fill)	63		
5	14	4		1 MC		Becomes soft to very soft	70		
	14	2		2 MC					
	0	14		3	SPSM	Gray fine to coarse sand with gravel and silt (medium dense, wet)			Groundwater observed at 6½ feet during drilling Driller indicated gravelly conditions during drilling
10	0	3	8	4 5 %F		Grades to very loose	14	6	California sampler

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-4



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-5
Sheet 1 of 1

Start Drilled	11/12/2019	End 11/12/2019	Total Depth (ft)	51.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft)				13	Hammer			Autohammer	Drilling	
Vertical Datum				NAVD88	Data			140 (lbs) / 30 (in) Drop	Equipment	
Easting (X)				1209881	System			WA State Plane North	See "Remarks" section for groundwater observed	
Northing (Y)				557547	Datum			NAD83 (feet)		
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	Approximately 3 inches crushed rock			
						SP-SM	Gray and brown fine to coarse sand with gravel and silt (dense, moist) (fill)			
						ML	Brown and gray silt with sand (stiff, moist)	17		
5		6	12	1		MC				
							Becomes very soft to soft			
5		0	2	2						
							Becomes medium stiff, wet	36	29	Groundwater observed at 7½ feet at time of drilling
10		6	6	3		%F				
10		0	8	4						
15		6	19	5		SA	Gray fine to medium sand with silt to silty sand (medium dense, wet) (transition zone)	25	15	Chatter during drilling indicated small gravel layers at intervals approximately 1 to 3 feet apart
20		18	59	6		SA	Gray silty fine to medium sand (very dense, wet) (glacially consolidated deposits)	22	30	
						SP				
25		18	46	7		MC	Grades to dense	24		
30		18	32	8		MC		27		
35						ML	Gray silt with sand (hard, wet)			

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-5



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-6
Sheet 1 of 2

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
35		18	34		9 MC		31		AL (LL = 23, PI = 3)
40		18	44		10 AL		30		
45		18	42		11 MC		26		
50		18	45		12 MC		31		

Log of Boring B-5 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project Project Location: Anacortes, Washington Project Number: 5147-031-00	Figure A-6 Sheet 2 of 2
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Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 51.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Mud Rotary
Surface Elevation (ft) Vertical Datum 14 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209898 557682		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)			
5		4	6	1			Grades to very loose			
		0	2	2						
		0	0	3		ML	Gray silt with sand and shell fragments (very soft, wet)			
							Grades to medium stiff			
10		6	7	4 MC				42		
						ML	Gray silt (stiff, wet) (transition zone)			
15		8	15	5 %F				31	84	
						ML	Gray silt interbedded with gray fine sand with silt (hard, wet) (glacially consolidated deposits)			
20		18	44	6 %F				29	81	
						SP-SM	Gray fine to medium sand with silt (dense, wet)			
25		18	37	7 SA				22	6	
						ML	Gray sandy silt (hard, wet)			
30		18	39	8 MC				26		
35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-6



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-7
Sheet 1 of 2

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147\031\GINT\5147\031\00.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEOTECH_STANDARD_SF_NO_0W

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
35		18	39	9 MC				29		
35										
40		18	44	10 %F				31	92	
40										
45		18	58	11 %F				27	96	
45										
50		18	62	12 %F				27	87	
50										

Log of Boring B-6 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Figure A-7
 Sheet 2 of 2

Start Drilled	11/13/2019	End 11/13/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	14 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209886 557863				System Datum	WA State Plane North NAD83 (feet)			Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						GP	Gray and brown gravel with sand, silt and debris (tiny brick or concrete fragments and whole large brick pieces) (loose to medium dense, moist) (fill)			Heavy chatter from rig at approximately 6 inches, whole brick in cuttings *Blow counts overstated
5		4	15*	1						
						SM	Gray brown silty fine to coarse sand with gravel (loose, moist)	21		
		4	5	2						
		2	26*	3						
10		12	2	4		ML	Dark gray silt with sand and trace organic matter (decayed small wood fragments) (soft, moist)	55		*Rock in shoe; blow counts overstated due to gravel

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-7



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-8
Sheet 1 of 1

Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 14 NAVD88			Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y) 1209787 557762			System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						SM	Dark brown silty fine to coarse sand with gravel (medium dense, moist) (fill)			
10		10	17					11		
				1 MC						
5		14	7				Becomes loose	27		
				2 MC						
		18	3			ML	Brown silt with sand and organic matter (soft, moist)	71		
				3 MC						
10		18	12			SM	Gray silty fine to medium sand with shell fragments and layers of decayed organic matter (approximately 1/2 inch thick) (medium dense, moist)	60		
				4 MC						

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-8



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-9
Sheet 1 of 1

Start Drilled 11/11/2019	End 11/11/2019	Total Depth (ft) 11.5	Logged By Checked By NBD AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 14 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209646 557691		System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	FIELD DATA					Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					
0		6			1	SOD	3 inches sod			
						SM	Gray silty fine to coarse sand with occasional gravel (medium dense, moist)	31		
5		6	14		2 MC					
		8	8		3 MC	CL	Brown clay with rootlets (medium stiff, moist)	27		
		8	8		4 MC			50		
10		8	49*		5	SM	1- to 2-inch layer of broken rock/gravel Gray silty sand with gravel and clay and broken rock/cobble fragments (medium dense, moist)			*Blowcounts overstated due to rocks/gravel

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-9



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-10
Sheet 1 of 1

Start Drilled	11/12/2019	End 11/12/2019	Total Depth (ft)	56.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft) Vertical Datum	13 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1210014 557650				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						AC	Approximately 3 inches asphalt concrete			
10		4	10	1		SP	Brown fine to medium sand with gravel and angular cobbles (spalls) (dense, moist) (fill)			
5		3	8	2						
10		0	34*	3			Becomes wet			
15		8	8	4		ML/SM	Gray silt with sand and shell fragments interbedded with silty fine sand (medium stiff/loose, wet) (transition zone)			
20		12	46	5 %F		ML	Gray silt with sand (hard, wet) (glacially consolidated deposits)	25	64	
25		18	37	6 MC				33		
30		18	40	7 MC				30		

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-10



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-11
Sheet 1 of 2

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147031\GINT\514703100.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEO TECH_STANDARD_SF_NO_0W

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
35		18	45		8 %F		29	97	
30		18	60		9 MC		31		
35		8	52		10 MC		27		
40		18	39		11 MC		33		
45		18	37		12 %F		29	93	

Log of Boring B-10 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Figure A-11
 Sheet 2 of 2

Start Drilled	11/14/2019	End 11/14/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	18 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1210301 558137				System Datum	WA State Plane North NAD83 (feet)			Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	FIELD DATA				Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample Sample Name Testing					
0					CR	2 inches gray angular gravel (railroad ballast)			
					SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)	40		
5		12	5	1 MC					
		12	8	2 MC			23		
10		12	4	3 MC	ML	Dark brown silt with sand and organic matter (horizontal oriented wood pieces) (medium stiff, moist)	61		
		12	7	4 MC		Increasing sand, smaller wood fragments, brick fragments	76		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

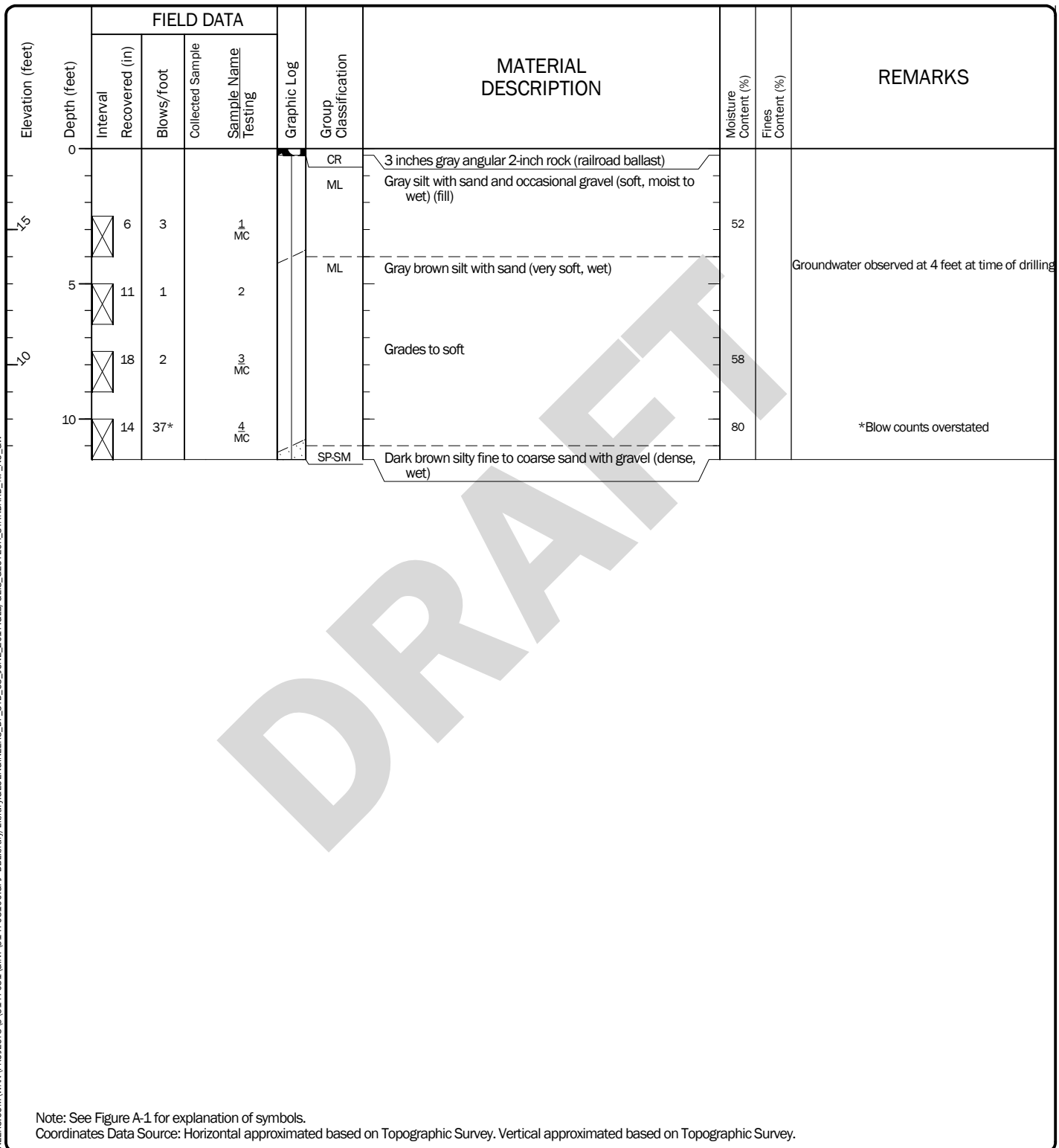
Log of Boring B-11



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-12
Sheet 1 of 1

Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1210439 558249		System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					



Log of Boring B-12	
	Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
	Project Location: Anacortes, Washington
	Project Number: 5147-031-00
Figure A-13 Sheet 1 of 1	

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1210454 558375		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	2 inches gray angular approximately 2 inch rock (railroad ballast)			
2.5		2	7			SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)	6	13	
5		6	3			ML	Brown silt with sand (soft, moist)	63		
7.5		12	1			ML	Gray brown silt with sand and shell fragments (very soft, wet)	29		Groundwater observed at 7 feet during drilling
10		12	24			GP-GM	Dark gray angular gravel with sand and silt (medium dense, wet)	56		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-13



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-14
Sheet 1 of 1

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 19 NAVD88			Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y) 1210623 558370			System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	2 inches gray angular 2-inch rock (railroad ballast)			
						SP-SM	Gray fine to coarse sand with silt and gravel (very loose, moist) (fill)	30		
5		4	3	1						
		10	9	2				29	40	
				%F						
						SM	Gray silty fine to medium sand with occasional gravel and shell fragments (loose, wet)			Groundwater observed at 6 feet at time of drilling
		0	8	3						
10		18	6	4				31		
				MC						

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-14



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-15
Sheet 1 of 1

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88			Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y) 1210605 558256			System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	2 inches gray angular 2-inch rock (railroad ballast)			
						SM	Gray silty fine to coarse sand with gravel (loose, moist) (fill)	51		
5		10	4	1 MC						
						ML	Gray silt with sand and occasional shell fragments (soft, moist)	58		
10		18	2	3 MC			Decreased sand content	32		
							Becomes very soft	44		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

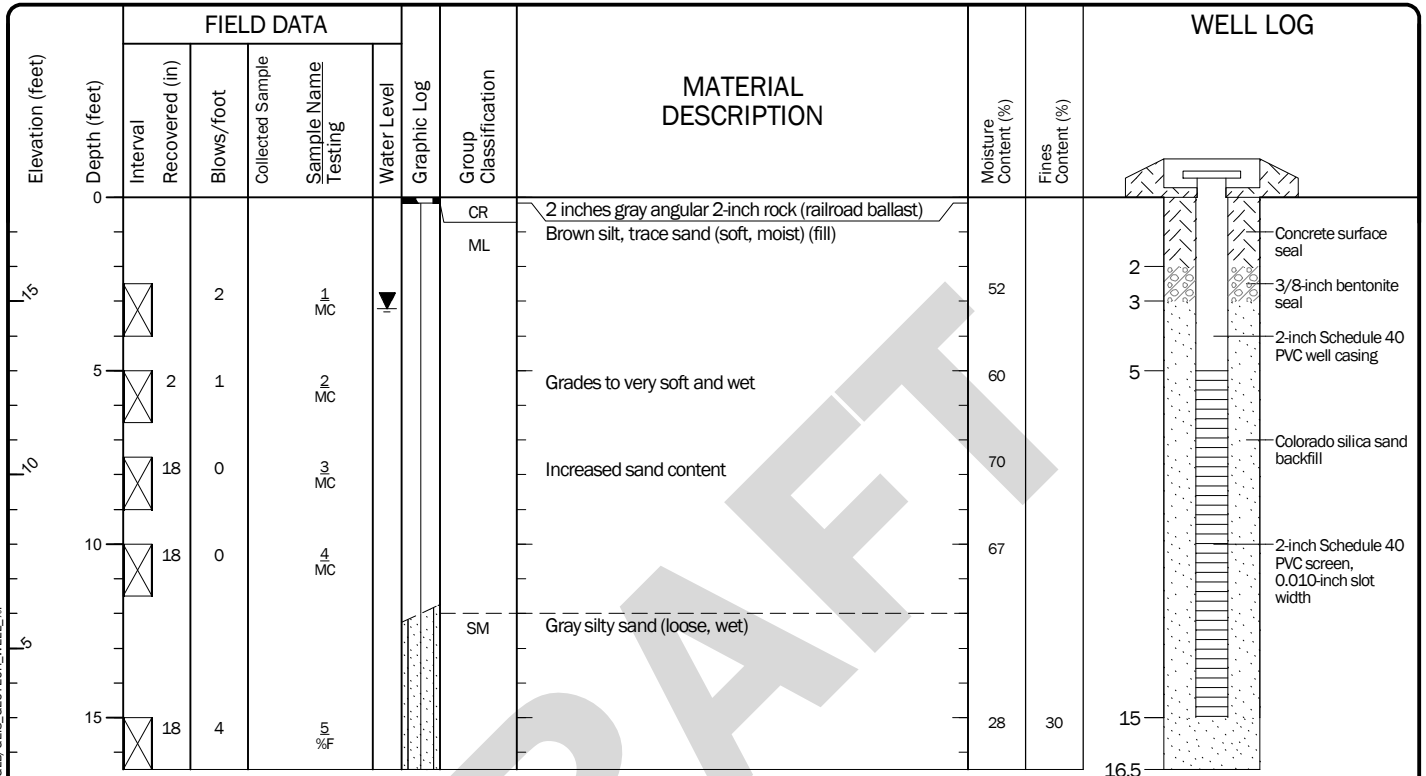
Log of Boring B-15



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-16
Sheet 1 of 1

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 16.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs)/ 30 (in) Drop	Drilling Equipment	Diedrich D-50 Turbo Track Rig		
Surface Elevation (ft) Vertical Datum	18 NAVD88	Top of Casing Elevation (ft)	17.80		
Easting (X) Northing (Y)	1210636 558133	Horizontal Datum	WA State Plane North NAD83 (feet)		
		Groundwater Date Measured	1/6/2020	Depth to Water (ft)	3.21
				Elevation (ft)	14.59
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring with Monitoring Well B-16



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-17
Sheet 1 of 1

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1210466 558127		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
0						CR			
						ML			
5		0	3		1	2 inches gray angular 2-inch rock (railroad ballast)			
		6	3		2 MC	Gray-brown silt with sand, occasional gravel and shell fragments (soft, wet) (fill)			
		18	1		3 AL	Becomes wet	51		Groundwater observed at 5 feet at time of drilling
		18	0		4 MC	Gray organic silt (very soft, wet)	80		AL (LL = 59, PI = 16)
						Trace organic matter (wood fragments, decayed to varying degrees)	77		

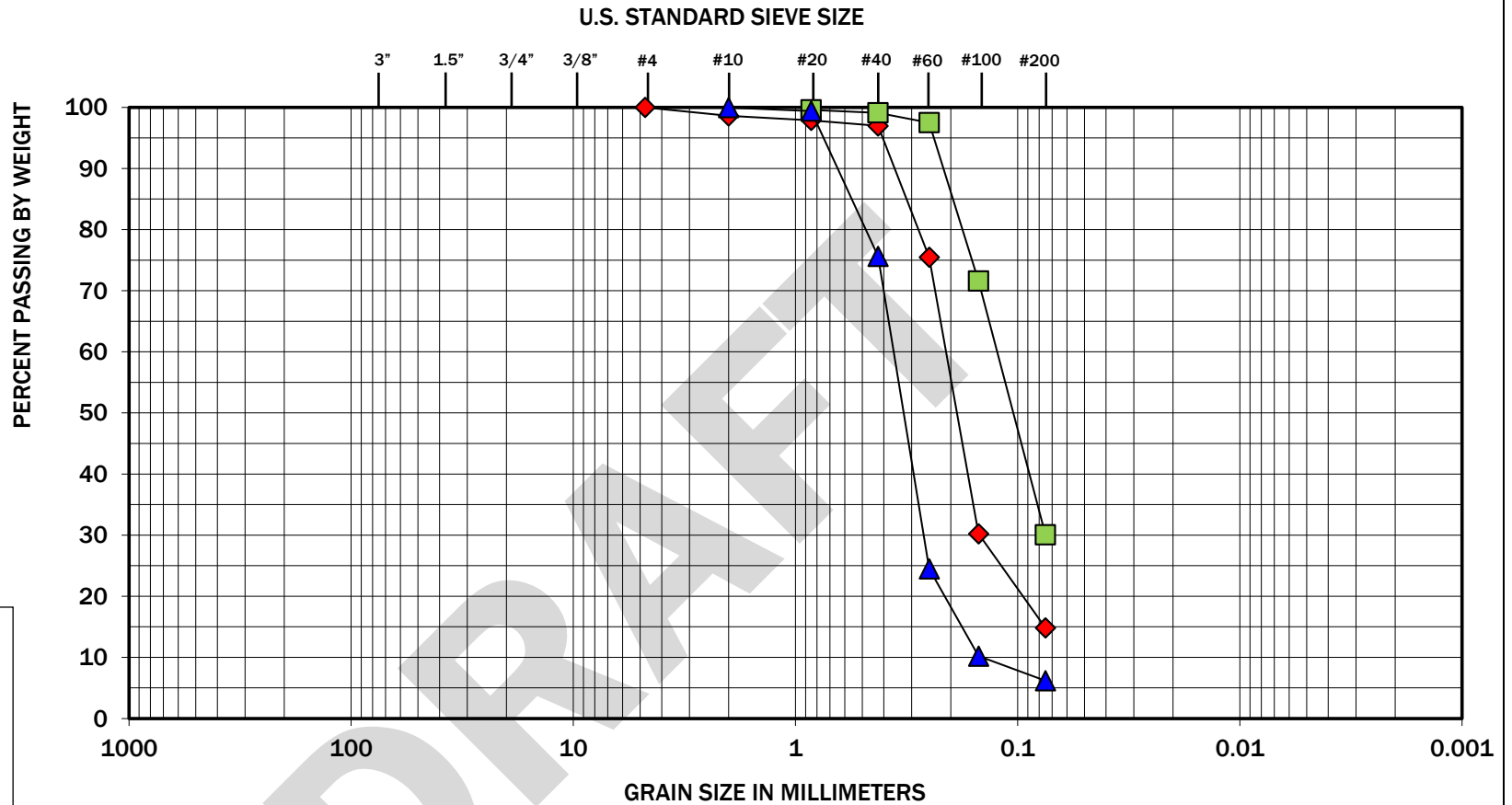
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-17



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-18
Sheet 1 of 1



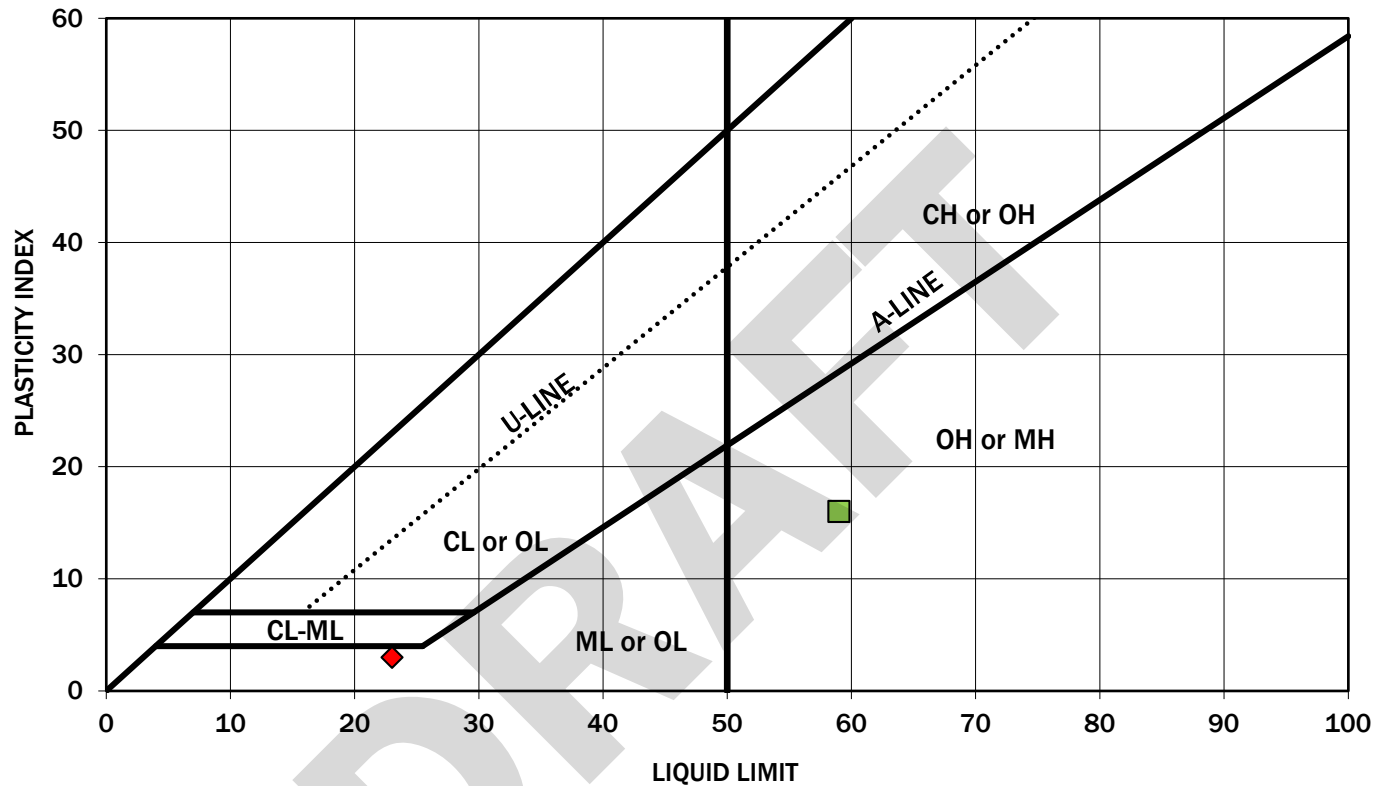
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	B-5	15	25	Silty fine sand (SM)
■	B-5	20	22	Silty fine sand (SM)
▲	B-6	25	22	Fine to medium sand with silt (SP-SM)

Note: This report may not be reproduced, except in full, without written approval of GeoEngineers, Inc. Test results are applicable only to the specific sample on which they were performed, and should not be interpreted as representative of any other samples obtained at other times, depths or locations, or generated by separate operations or processes.

The grain size analysis results were obtained in general accordance with ASTM D 6913. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

PLASTICITY CHART



Symbol	Boring Number	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Description
◆	B-5	40	30	23	3	Sandy silt (ML)
■	B-17	7.5	80	59	16	Silt with occasional sand (OH)

Note: This report may not be reproduced, except in full, without written approval of GeoEngineers, Inc. Test results are applicable only to the specific sample on which they were performed, and should not be interpreted as representative of any other samples obtained at other times, depths or locations, or generated by separate operations or processes. The liquid limit and plasticity index were obtained in general accordance with ASTM D 4318. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

Atterberg Limits Test Results

Cap Sante Marina North and West Basin
Upland Redevelopment Project
Anacortes, Washington



Figure A-20

APPENDIX B
Chemical Analytical Lab Reports

DRAFT

APPENDIX B CHEMICAL ANALYTICAL PROGRAM

Soil Sampling

Chemical analytical testing was conducted on four composited soil samples obtained from the drill cuttings for waste disposal characterization. Composite soil samples representative of the drilling cuttings generated from the Events Center, Dog Park, West Basin and North Basin investigation areas were placed in laboratory-prepared vials/jars and placed in a cooler with ice for transport to OnSite Environmental, Inc. (OnSite) of Redmond, Washington, for the following chemical analytical testing:

- gasoline-range petroleum hydrocarbons by NWTPH-G;
- diesel and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- volatiles including benzene, ethylbenzene, toluene and xylenes (BETX) by Environmental Protection Agency (EPA) Method 8260
- polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270SIM; and;
- RCRA 8 metals by EPA Methods 6000/7000 series.

Petroleum hydrocarbons and metals were not detected in the soil samples, with the following exceptions:

- Lube oil was detected in the composite drum sample from the North Basin at 76 mg/kg (parts per million [ppm]). **The detected concentrations are less than the MTCA Method A or B cleanup level of 2000 mg/kg (ppm).**
- Barium and chromium were detected in each of the four drum samples with lead detected in three of the drum samples; **the detected concentrations were less than the MTCA Method A or B cleanup levels.** The detected metals levels are as shown in Table B-1.

TABLE B-1. SUMMARY OF DETECTED METAL RESULTS

Boring and Sample	Barium (mg/kg) ¹	Chromium (mg/kg) ²	Lead (mg/kg) ³
Event center	88	26	ND
Dog Park	81	34	11
South Basin (West Basin)	45	35	9.2
North Basin	44	35	9.4

Notes:

¹ The Model Toxics Control Act (MTCA) Method B cleanup level for barium is 16,000 milligrams per kilogram (mg/kg).

² The MTCA Method A cleanup level for chromium III is 2,000 mg/kg.

³ The MTCA Method A cleanup level for Lead is 250 mg/kg.

ND = Not detected

The results of the analytical testing are provided in the attached OnSite Environmental, Inc. report. Based on a review of the waste disposal characterization test result, drill cutting generated by the Cap Sante Marina North and West Basin Upland Redevelopment project were transferred from the site for permitted disposal at Cadman's Everett, Washington, solid waste landfill.



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 25, 2019

Aaron Hartvigsen
GeoEngineers, Inc.
600 Dupont Street
Bellingham, WA 98225

Re: Analytical Data for Project 5147-031-00
Laboratory Reference No. 1911-163

Dear Aaron:

Enclosed are the analytical results and associated quality control data for samples submitted on November 15, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", followed by a horizontal line.

David Baumeister
Project Manager

Enclosures



Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

Case Narrative

Samples were collected on November 14, 2019 and received by the laboratory on November 15, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

DRAFT



Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Convention Center	11-163-01	Soil	11-14-19	11-15-19	
Dog Park	11-163-02	Soil	11-14-19	11-15-19	
South Basin	11-163-03	Soil	11-14-19	11-15-19	
North Basin	11-163-04	Soil	11-14-19	11-15-19	

DRAFT



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID:	11-163-01					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.7	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	89	58-129				
Client ID: Dog Park						
Laboratory ID:	11-163-02					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.3	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	84	58-129				
Client ID: South Basin						
Laboratory ID:	11-163-03					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.1	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	68	58-129				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	8.8	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	75	58-129				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Convention Center					
Laboratory ID:	11-163-01					
Diesel Range Organics	ND	34	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	69	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	Dog Park					
Laboratory ID:	11-163-02					
Diesel Range Organics	ND	33	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	67	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Client ID:	South Basin					
Laboratory ID:	11-163-03					
Diesel Range Organics	ND	31	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	62	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Diesel Range Organics	ND	33	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	76	67	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID: 11-163-01						
Naphthalene	0.030	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[j,k]fluoranthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	78	40 - 111				
Pyrene-d10	78	40 - 110				
Terphenyl-d14	80	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		Dog Park				
Laboratory ID:		11-163-02				
Naphthalene	0.025	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	0.010	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	0.0094	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	0.010	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	83	40 - 111				
Pyrene-d10	75	40 - 110				
Terphenyl-d14	80	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: South Basin						
Laboratory ID: 11-163-03						
Naphthalene	0.025	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
2-Methylnaphthalene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
1-Methylnaphthalene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthylene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Fluorene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Phenanthrene	0.011	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Fluoranthene	0.0093	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Pyrene	0.010	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Chrysene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[b]fluoranthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[j,k]fluoranthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]pyrene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Dibenz[a,h]anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[g,h,i]perylene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	80	40 - 111				
Pyrene-d10	85	40 - 110				
Terphenyl-d14	91	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		North Basin				
Laboratory ID:		11-163-04				
Naphthalene	0.055	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
2-Methylnaphthalene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
1-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Fluorene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Phenanthrene	0.029	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Anthracene	0.0091	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Fluoranthene	0.043	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Pyrene	0.044	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]anthracene	0.017	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Chrysene	0.020	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[b]fluoranthene	0.021	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]pyrene	0.018	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Indeno(1,2,3-c,d)pyrene	0.011	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[g,h,i]perylene	0.011	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	79	40 - 111				
Pyrene-d10	78	40 - 110				
Terphenyl-d14	85	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**TOTAL METALS
 EPA 6010D/7471B**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID: 11-163-01						
Arsenic	ND	14	EPA 6010D	11-20-19	11-21-19	
Barium	88	3.4	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.68	EPA 6010D	11-20-19	11-21-19	
Chromium	26	0.68	EPA 6010D	11-20-19	11-21-19	
Lead	ND	6.8	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.34	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	14	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.4	EPA 6010D	11-20-19	11-21-19	
Client ID: Dog Park						
Laboratory ID: 11-163-02						
Arsenic	ND	13	EPA 6010D	11-20-19	11-21-19	
Barium	81	3.3	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.67	EPA 6010D	11-20-19	11-21-19	
Chromium	34	0.67	EPA 6010D	11-20-19	11-21-19	
Lead	11	6.7	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.33	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	13	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.3	EPA 6010D	11-20-19	11-21-19	
Client ID: South Basin						
Laboratory ID: 11-163-03						
Arsenic	ND	12	EPA 6010D	11-20-19	11-21-19	
Barium	45	3.1	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.62	EPA 6010D	11-20-19	11-21-19	
Chromium	35	0.62	EPA 6010D	11-20-19	11-21-19	
Lead	9.2	6.2	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.31	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	12	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.2	EPA 6010D	11-20-19	11-21-19	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**TOTAL METALS
 EPA 6010D/7471B**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Arsenic	ND	13	EPA 6010D	11-20-19	11-21-19	
Barium	44	3.3	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.67	EPA 6010D	11-20-19	11-21-19	
Chromium	35	0.67	EPA 6010D	11-20-19	11-21-19	
Lead	9.4	6.7	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.33	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	13	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.3	EPA 6010D	11-20-19	11-21-19	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1119S1					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-19-19	
Toluene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
Ethyl Benzene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
m,p-Xylene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
o-Xylene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
Gasoline	ND	5.0	NWTPH-Gx	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	96	58-129				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-160-04							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	30	
Toluene	ND	ND	NA	NA	NA	NA	30	
Ethyl Benzene	ND	ND	NA	NA	NA	NA	30	
m,p-Xylene	ND	ND	NA	NA	NA	NA	30	
o-Xylene	ND	ND	NA	NA	NA	NA	30	
Gasoline	ND	ND	NA	NA	NA	NA	30	
Surrogate:								
Fluorobenzene				101	99	58-129		

SPIKE BLANKS

Laboratory ID:	SB1119S1							
	SB	SBD	SB	SBD	SB	SBD		
Benzene	0.985	0.991	1.00	1.00	99	99	69-109	1 10
Toluene	0.998	1.01	1.00	1.00	100	101	67-112	1 10
Ethyl Benzene	1.01	1.02	1.00	1.00	101	102	67-113	1 10
m,p-Xylene	1.01	1.02	1.00	1.00	101	102	66-114	1 11
o-Xylene	0.984	0.998	1.00	1.00	98	100	68-112	1 11
Surrogate:								
Fluorobenzene					99	100	58-129	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1120S1					
Diesel Range Organics	ND	25	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	50	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i>-Terphenyl	89	50-150				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	11-176-05									
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						77	80	50-150		



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1119S1					
Naphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	92	40 - 111				
Pyrene-d10	88	40 - 110				
Terphenyl-d14	96	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES								
Laboratory ID:	11-160-03							
	MS	MSD	MS	MSD	MS	MSD		
Naphthalene	0.0734	0.0703	0.0833	0.0833	ND	88 84	44 - 111	4 21
Acenaphthylene	0.0765	0.0711	0.0833	0.0833	ND	92 85	47 - 122	7 24
Acenaphthene	0.0790	0.0695	0.0833	0.0833	ND	95 83	46 - 122	13 24
Fluorene	0.0787	0.0715	0.0833	0.0833	ND	94 86	53 - 118	10 23
Phenanthrene	0.0770	0.0706	0.0833	0.0833	ND	92 85	41 - 124	9 24
Anthracene	0.0790	0.0724	0.0833	0.0833	ND	95 87	53 - 119	9 21
Fluoranthene	0.0779	0.0721	0.0833	0.0833	ND	94 87	39 - 135	8 32
Pyrene	0.0761	0.0720	0.0833	0.0833	ND	91 86	39 - 134	6 34
Benzo[a]anthracene	0.0887	0.0814	0.0833	0.0833	ND	106 98	53 - 131	9 23
Chrysene	0.0815	0.0759	0.0833	0.0833	ND	98 91	46 - 126	7 24
Benzo[b]fluoranthene	0.0815	0.0744	0.0833	0.0833	ND	98 89	45 - 127	9 25
Benzo[j,k]fluoranthene	0.0810	0.0751	0.0833	0.0833	ND	97 90	52 - 122	8 21
Benzo[a]pyrene	0.0795	0.0727	0.0833	0.0833	ND	95 87	51 - 126	9 24
Indeno(1,2,3-c,d)pyrene	0.0775	0.0708	0.0833	0.0833	ND	93 85	48 - 127	9 23
Dibenz[a,h]anthracene	0.0786	0.0721	0.0833	0.0833	ND	94 87	51 - 124	9 22
Benzo[g,h,i]perylene	0.0810	0.0740	0.0833	0.0833	ND	97 89	50 - 120	9 22
Surrogate:								
2-Fluorobiphenyl						90 87	40 - 111	
Pyrene-d10						91 86	40 - 110	
Terphenyl-d14						97 86	45 - 122	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**TOTAL METALS
 EPA 6010D/7471B
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1120SH1					
Arsenic	ND	10	EPA 6010D	11-20-19	11-21-19	
Barium	ND	2.5	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.50	EPA 6010D	11-20-19	11-21-19	
Chromium	ND	0.50	EPA 6010D	11-20-19	11-21-19	
Lead	ND	5.0	EPA 6010D	11-20-19	11-21-19	
Selenium	ND	10	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.0	EPA 6010D	11-20-19	11-21-19	

Laboratory ID:	MB1120S1					
Mercury	ND	0.25	EPA 7471B	11-20-19	11-20-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-163-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	20	
Barium	64.3	68.3	NA	NA	NA	6	20	
Cadmium	ND	ND	NA	NA	NA	NA	20	
Chromium	18.8	19.9	NA	NA	NA	6	20	
Lead	ND	ND	NA	NA	NA	NA	20	
Selenium	ND	ND	NA	NA	NA	NA	20	
Silver	ND	ND	NA	NA	NA	NA	20	

Laboratory ID:	11-197-02							
Mercury	0.322	0.324	NA	NA	NA	1	20	

MATRIX SPIKES

Laboratory ID:	11-163-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	98.9	99.0	100	100	ND	99	99	75-125	0	20
Barium	159	156	100	100	64.3	95	92	75-125	2	20
Cadmium	45.6	45.4	50.0	50.0	ND	91	91	75-125	0	20
Chromium	113	110	100	100	18.8	94	91	75-125	2	20
Lead	225	226	250	250	ND	90	90	75-125	0	20
Selenium	97.7	96.8	100	100	ND	98	97	75-125	1	20
Silver	22.7	22.8	25.0	25.0	ND	91	91	75-125	0	20

Laboratory ID:	11-197-02									
Mercury	0.788	0.791	0.500	0.500	0.322	93	94	80-120	0	20



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
Convention Center	11-163-01	27	11-18-19
Dog Park	11-163-02	25	11-18-19
South Basin	11-163-03	19	11-18-19
North Basin	11-163-04	25	11-18-19

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Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





Company:	GeoEngineers
Project Number:	5147-031-00
Project Name:	Cap Sante Marina N+S Basins
Project Manager:	Aaron Hartvigsen Robert Trahan
Sampled by:	EAW

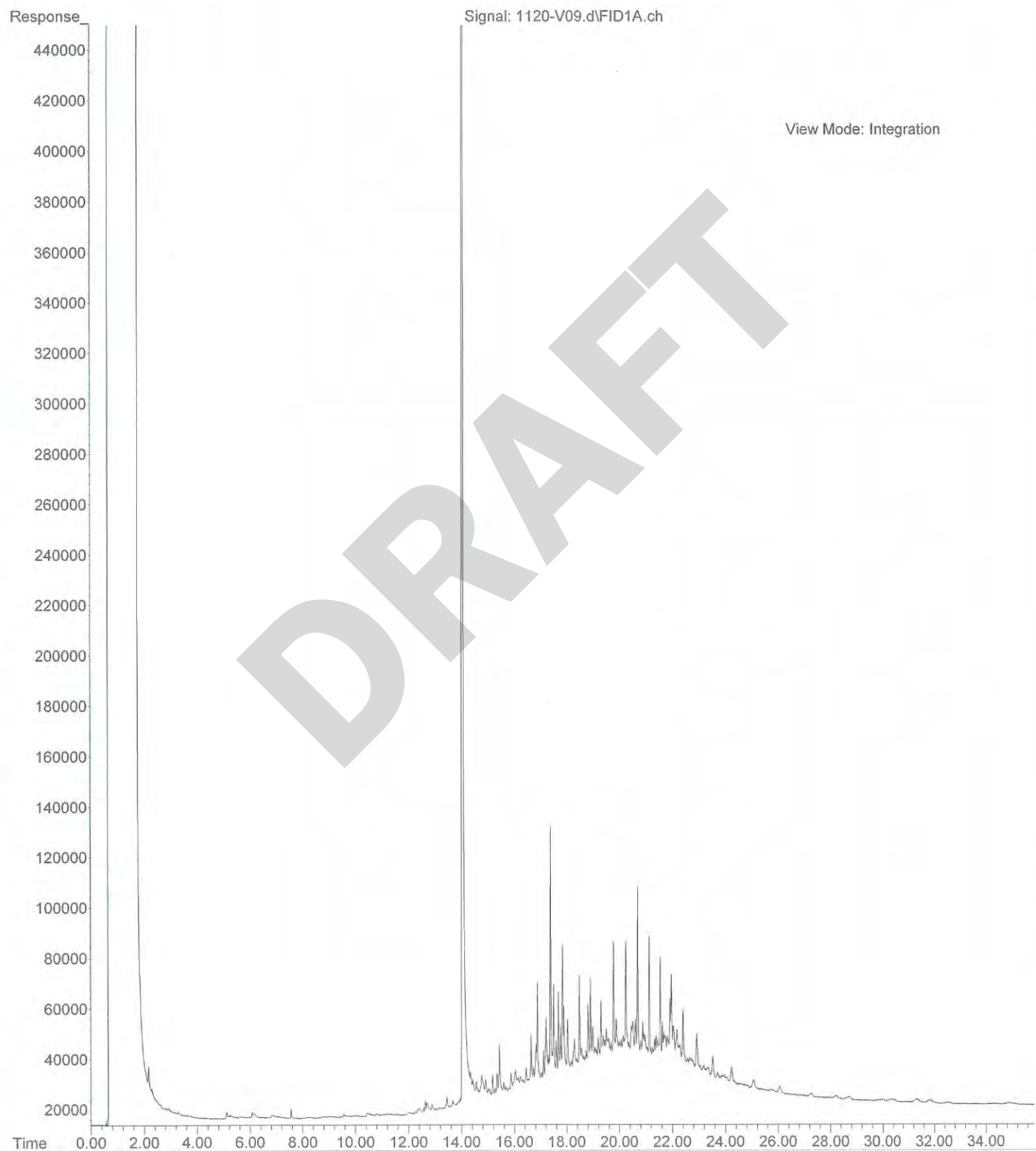
Page 1 of 1

Turnaround Request (in working days)		
(Check One)		
☐ Same Day	☐ 1 Day	
☐ 2 Days	☐ 3 Days	
☒ Standard (7 Days)		
☐		
(other)		
Date Sampled	Time Sampled	Matrix
11/14	1200	Soil
11/14	1210	Soil
11/14	1220	Soil
11/14	1230	Soil

Laboratory Number:	11-163
NWTPH-HCID	X
NWTPH-Gx/BTEX	X
NWTPH-Gx	X
NWTPH-Dx Acid / SG Clean-up	X
Volatiles 8260C	X
Halogenated Volatiles 8260C	X
EDB EPA 8011 (Waters Only)	X
Semivolatiles 8270D/SIM (with low-level PAHs)	X
PAHs 8270D/SIM (low-level)	X
PCBs 8082A	X
Organochlorine Pesticides 8081B	X
Organophosphorus Pesticides 8270D/SIM	X
Chlorinated Acid Herbicides 8151A	X
Total RCRA Metals	X
Total MTCA Metals	X
TCLP Metals	X
HEM (oil and grease) 1664A	X
% Moisture	X

Company	Date	Time	Comments/Special Instructions
GeoEngineers	2019/11/15	1450	X - Added 11/18/19 DB (STA)
OSE	11/15/19	1450	
			Data Package: Standard ☒ Level III ☐ Level IV ☐
Reviewed/Date	Chromatograms with final report ☒ Electronic Data Deliverables (EDDs) ☒		

File :X:\DIESELS\VIGO\DATA\V191120\1120-V09.d
Operator : JT
Acquired : 20 Nov 2019 13:01 using AcqMethod V180601F.M
Instrument : Vigo
Sample Name: 11-163-04 ACU REX
Misc Info :
Vial Number: 9



APPENDIX C

Report Limitations and Guidelines for Use

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APPENDIX C

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services are Performed for Specific Purposes, Persons and Projects

This report has been prepared for use by the Port of Anacortes and members of the design team for use in the design of this project. This report may be made available to prospective contractors for bidding or estimating purposes; but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. No one except the Port of Anacortes and members of the design team should rely on this report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed Cap Sante Marina North and West Basin Upland Redevelopment project in Anacortes, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

¹ Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Environmental Concerns are Not Covered

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings are Professional Opinions

Our interpretations of subsurface conditions are based on the boring results completed at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted. GeoEngineers reviewed historic field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

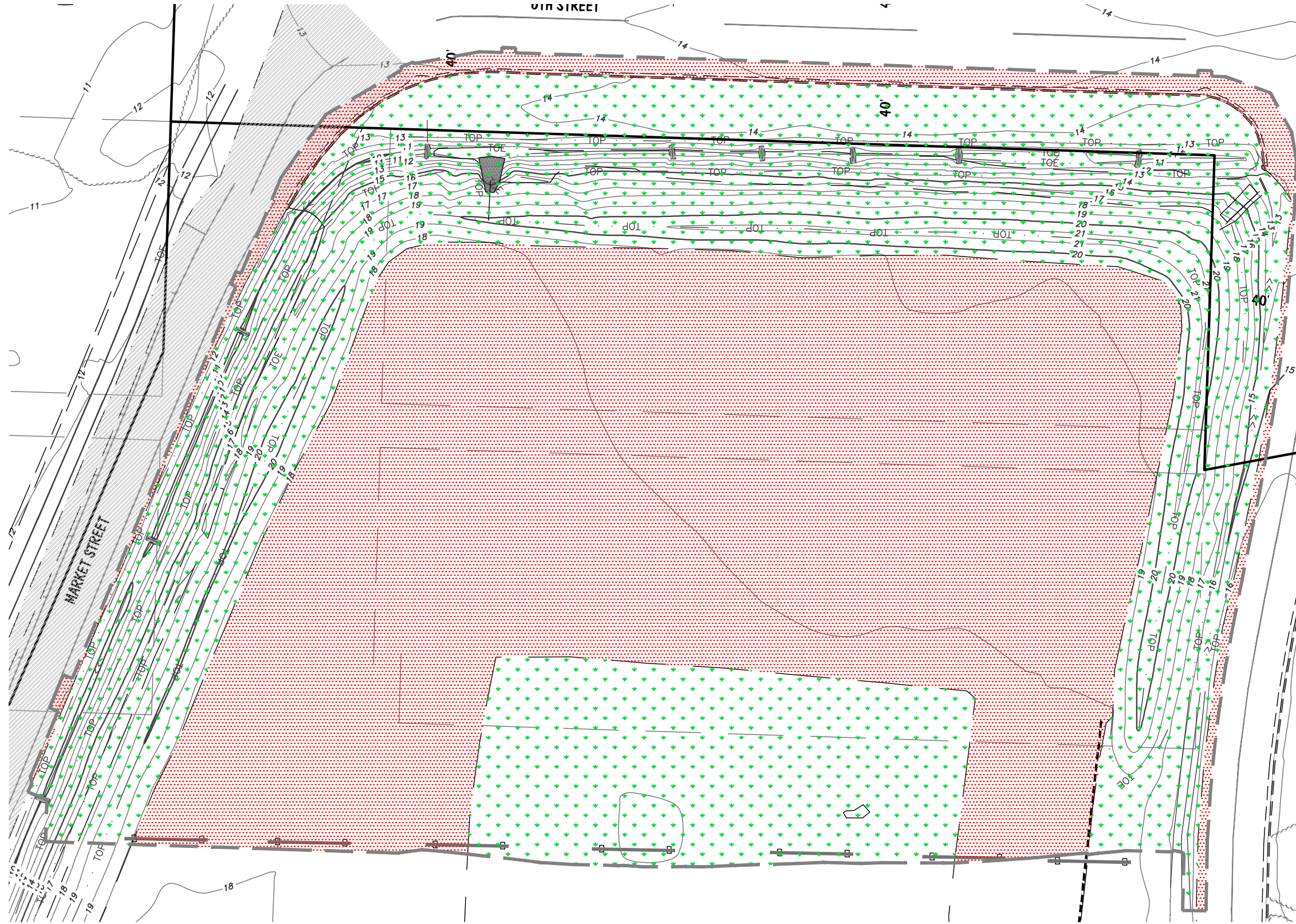
The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, or assessment of the presence of Biological Compounds which are Pollutants in or around any structure. Accordingly, this report includes no interpretations, recommendations, findings, or conclusions for the purpose of detecting, assessing, or abating Biological Pollutants. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

BASIN MAPS

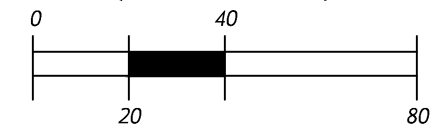
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PRE-DEVELOPED BASIN AREA SUMMARY

IMPERVIOUS	62,275 SF /	1.430 AC
PERVIOUS	51,839 SF /	1.190 AC
TOTAL	114,114 SF /	2.620 AC

GRAPHIC SCALE
(US SURVEY FEET)



**PACIFIC SURVEYING
& ENGINEERING, INC.**
909 Squicum Way, Suite 111 | BELLINGHAM, WA 98225
T: 360.671.7387 | F: 360.671.4685
WWW.PSESURVEY.COM | INFO@PSESURVEY.COM

CAP SANTE
RV PARK IMPROVEMENTS
PORT OF ANACORTES

PRE-DEVELOPED BASIN MAP
ANACORTES, WASHINGTON

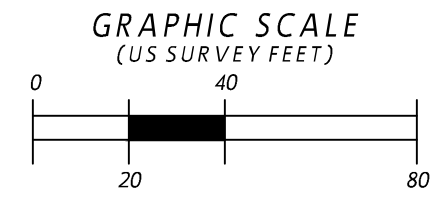
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DATE:	02/18/2021	DWG:	2020064_ecP_SP-RV.dwg

SHEET **01** OF **02**

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POST-DEVELOPED BASIN AREA SUMMARY		
BASIN 1 - WETLAND "c"		
	ASPHALT	54,352 SF / 1.248 AC
	CONCRETE	10,802 SF / 0.248 AC
	ROOF	1,100 SF / 0.025 AC
	IMPERVIOUS TOTAL	66,254 SF / 1.521 AC
	LANDSCAPE	47,860 SF / 1.099 AC
	TOTAL	114,114 SF / 2.620 AC



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CAP SANTE
RV PARK IMPROVEMENTS
PORT OF ANACORTES

PRE-DEVELOPED BASIN MAP
ANACORTES, WASHINGTON

DRAWN:	XXX	SCALE:	XXX
CHECKED:	XXX	JOB#:	XXX
DATE:	02/18/2021	DWG:	2020064_ecP_SP-RV.dwg

SHEET **02** OF **02**

Date Received:

1/13/22

SDP-2021-0012

Storm Water Management Report

CAP SANTE RV PARK & JKL PARKING LOT
CITY OF ANACORTES, SKAGIT COUNTY



January 22, 2022

Prepared by:

Pacific Surveying and Engineering Services, Inc.
909 Squaticum Way, Suite 111
Bellingham, Washington 98226
(360) 671-7387
www.psesurvey.com

Prepared for:

Port of Anacortes
100 Commercial Avenue
Anacortes, WA 98221



01-12-2022



Storm Water Minimum Requirements #1 to #9

ENGINEERING DEPARTMENT

904 6th Street Anacortes, WA 98221

www.anacorteswa.gov

Official Use Only: (Information to Inspectors)

Required Storm Water Facility and other related requirements:

Project Address: 1015 18th Street RV & Parking Lot

Parcel Number:

Permit Number:

Submittal Date: January 12, 2022

Revision Number:

Acceptance Date (COA): _____

Reviewer: _____

Submittal Checklist:

- o TAB #1 through #9 - Drainage Analysis – Minimum Requirement #1 to #9
- o APPENDIX 1 - Survey performed by a Professional Land Surveyor
- o APPENDIX 2 - Soils Analysis (Volume 1, Chapter 3.1.1)
- o APPENDIX 3 - Model Soil Management Plan for BMP T5.13
- o APPENDIX 4 - Determining Construction Site Sediment Damage Potential (Appendix 7)
- o APPENDIX 5 - Site Plan with all applicable information (Minimum Size 11x17 – 30 scale)
- o APPENDIX 6 - Documented Site Photos (North, South, East and West)
- o APPENDIX 7 - Drainage BMP Facility Maintenance Covenant, if applicable. To be recorded prior to the Temporary Certificate of Occupancy, Certificate of Occupancy or Final Acceptance.
- o APPENDIX 8 – Western Washington Hydrology Model Reports

Project Description:

The project is located on the north side of Cap Sante Marina in Anacortes and is bound by Market Street to the west, 6th Street to the north, and T Avenue to the east. The project will replace the existing gravel parking area with an RV park, paved parking lot, and a restroom / laundry facility that will serve the RV park. The project will be permitted as three separate projects that include 1. RV Park; 2. RV Park Restroom / Laundry facility; and 3. JKL Parking Lot. This Stormwater analysis considers all three permitted projects as a single project for stormwater management purposes.

The combined projects will result in approximately 3.4 acres of new plus replaced impervious surface area.

Existing Site Conditions Summary:

The site is currently home to a gravel parking area that periodically accommodates RV's but does not provide utility connections. The 12.2-acre basin area that includes the project site, includes approximately 7.9-acres of existing impervious surface area (64 % Impervious). The geotechnical report describes the site soils as " The general soil profile encountered at the site generally consists of uncontrolled fill overlying a transition zone of possible intertidal/beach or glaciomarine drift deposits, overlying glacially consolidated deposits. Surface

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conditions varied across the site, generally consisting of 2 to 3 inches of sod, crushed rock, railroad ballast, or asphalt concrete.” The complete geotechnical report prepared by Geoengineers is included in Appendix 2.

Stormwater runoff is generated in one of four drainage basins on the site, each having a separate discharge location.

- Basin 1 – T Avenue North: This basin is approximately 2 acres and includes 6th Street, portions of T Avenue, and a portion of the existing RV / Parking lot site. Stormwater runoff from this basin is collected via an underground conveyance system and conveyed north in T Avenue approximately 0.25 miles before being discharged into the Puget Sound.
- Basin 2 – East Conveyance System: This basin includes a portion of the existing gravel parking area that will be developed with this project and the existing large paved parking area currently serves the marina. Runoff from this basin is collected in catch basins and conveyed to the southeast corner of the basin where it discharges in to the Cap Sante Marina.
- Basin 3 – West Conveyance System: This basin includes the majority of the project site that will be developed into the RV Park and new JKL parking lot. It also includes the portion of Market Street immediately west of the project site. Stormwater from this basin is collected and routed to an existing pipe near the southwest corner of the project site that discharges runoff directly to the Cap Sante Marina.
- Basin 4 – Cap Sante Marina: This basin includes the strip of land immediately north of the Cap Sante Marina. It includes portions of existing access roads, sidewalks, and landscaping. Stormwater runoff from this basin sheets flows south and enters Cap Sante Marina.

A Pre-Developed Basin Map is included in Appendix 5 that details the existing basin boundaries and existing surface areas within each basin. The following table provides a summary of the pre-developed site pervious and impervious surface areas:

	Impervious Area (AC)	Pervious Area (AC)	Total (AC)
Basin 1 – T Avenue North	1.106	0.919	2.025
Basin 2 – East Conveyance	3.212	1.418	4.630
Basin 3 – West Conveyance	2.995	1.041	4.035
Basin 4 – Cap Sante Marina	0.550	0.979	1.529
TOTAL	7.863	4.357	12.219

Developed Conditions Summary:

The developed site will construct an RV park and paved parking lot in the location of the existing gravel parking / RV site. Curb, gutter, and sidewalk will be installed along the east side of Market Street, the west side of T Avenue, and along the internal east / west access road that connects Market Street to the extended T Avenue. The proposed improvements occur within all four of the project drainage basins described above. Due to site grading and drainage improvements the total basin areas and surface area compositions will change. The proposed site conditions are detailed in the Post-Developed Basin Map found in Appendix 5. The following table provides a summary of post-developed site pervious and impervious surface areas:

	Impervious Area (AC)	Pervious Area (AC)	Total (AC)
Basin 1 – T Avenue North	0.789	0.427	1.216
Basin 2 – East Conveyance	3.108	1.678	4.786
Basin 3 – West Conveyance	3.353	1.489	4.842
Basin 4 – Cap Sante Marina	0.443	0.932	1.375
TOTAL	7.693	4.526	12.219

The project site is located within two separate threshold discharge basins. Basin 1 drains north in T Avenue while Basins 2, 3 & 4 all drain south to Cap Sante Marina.

Flow control facilities are not proposed for the project since each of the threshold discharge basins discharge directly to the saltwater which is considered a flow control exempt water body by the Department of Ecology.

Multiple facilities are proposed to meet water quality standards for the improvement areas. One Stormfilter device and two Modular Wetland Systems will be installed to provide water quality treatment to pollution generating impervious surfaces. The systems have been designed to cumulatively treat 2.809 acres of pollution generating impervious surface area, exceeding the 2.805 acres of pollution generating impervious surface area proposed for the project. Detailed water quality system sizing calculations are found in the Water Quality section of this report.

Provide the Infiltration Rates found during the rainy season: The geotechnical report prepared by Geoengineers discusses the site soils and infiltration potential in Section 4.8 Stormwater Considerations. In summary, the geotechnical report concludes the soils on the project site are not unsuitable for infiltration based on the conditions encountered in their explorations and the guidance for infiltration facilities provided in the Washington State Department of Ecology's Stormwater Management Manual for Western Washington (DOE Manual). No additional infiltration tests are proposed. The complete report is included Appendix 2.

What was the depth of the ground water table? Depth to groundwater ranged from 5-feet to greater than 11-feet below existing grade at the time of soil explorations. See Geotechnical report in Appendix 2.

Site Sediment Transport Score: 140 Total Points (**High**\Low) (See *Determining Construction Site Sediment Damage Potential (Appendix 4)*)

Drainage Basin 2007 Storm Comp Plan – Basin G21.

Although the project site lies within Basin G21 as identified by the 2007 Comp. Plan, based on the detailed topographic survey of the site, stormwater runoff from the majority of the project area is collected and routed south to Fidalgo Bay (Cap Santer Marina), not to the north as identified in the Comp. Plan.

Basin 1 – T Avenue North as defined in the project specific basin maps included in Appendix 5 is the only area on the site that drains north to Guemes Channel, the remaining basins delineated for the project drain south to Fidalgo Bay.

Area 30 in the 2007 Stormwater Comprehensive Plan is identified as a ditch with debris problem with no recommended improvements. As part of this project, the ditch connection will be removed and replaced with curb and gutter and underground conveyance pipe. In addition, the amount of impervious surface area and volume of runoff directed to the T Avenue conveyance system will be reduced as part of the project to improve the drainage system performance.

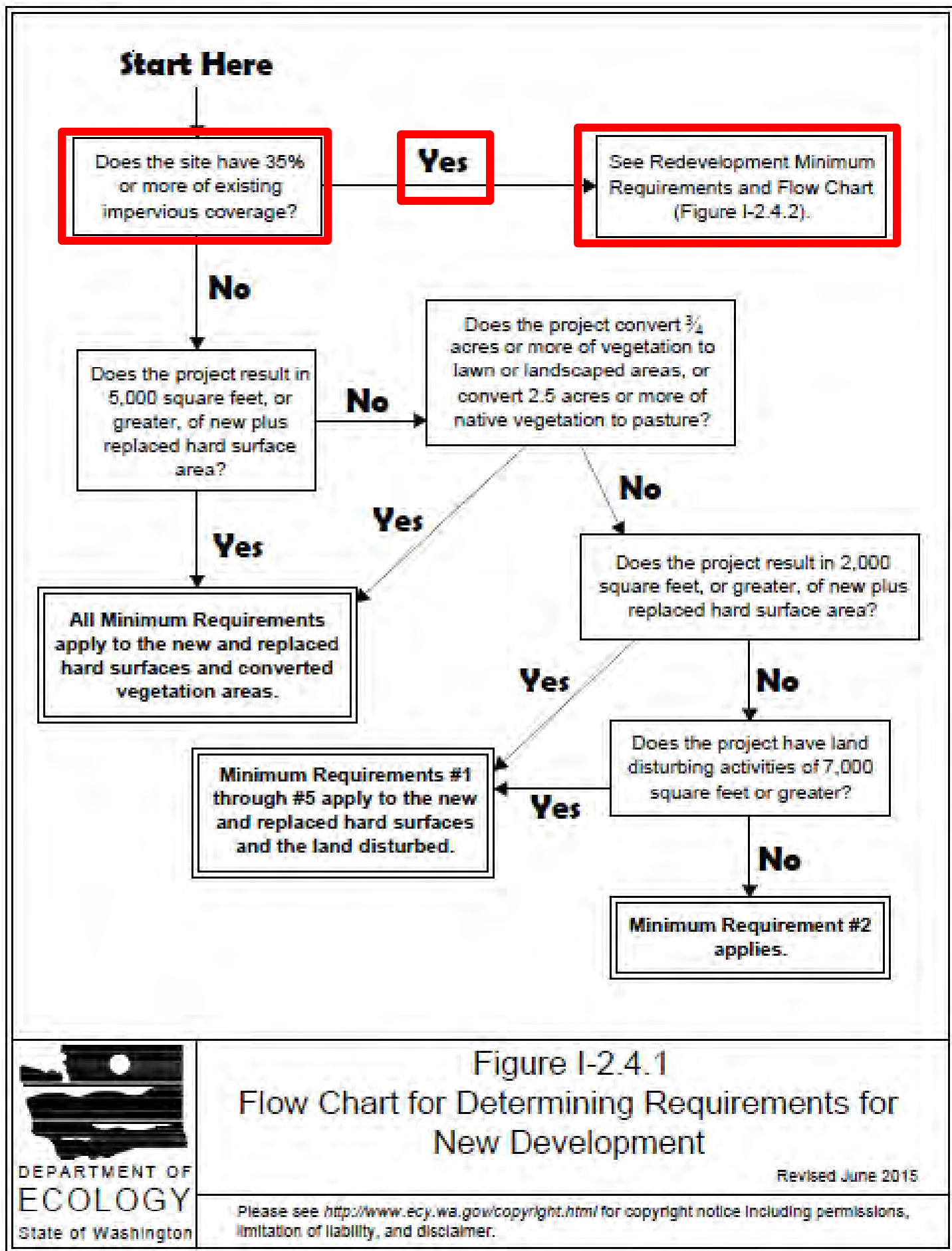
Complete the Applicability Requirements – Flow Chart (Figure I-2.4.1 Attached, Figure I-2.4.2 Attached and Figure I-2.5.1 Attached)

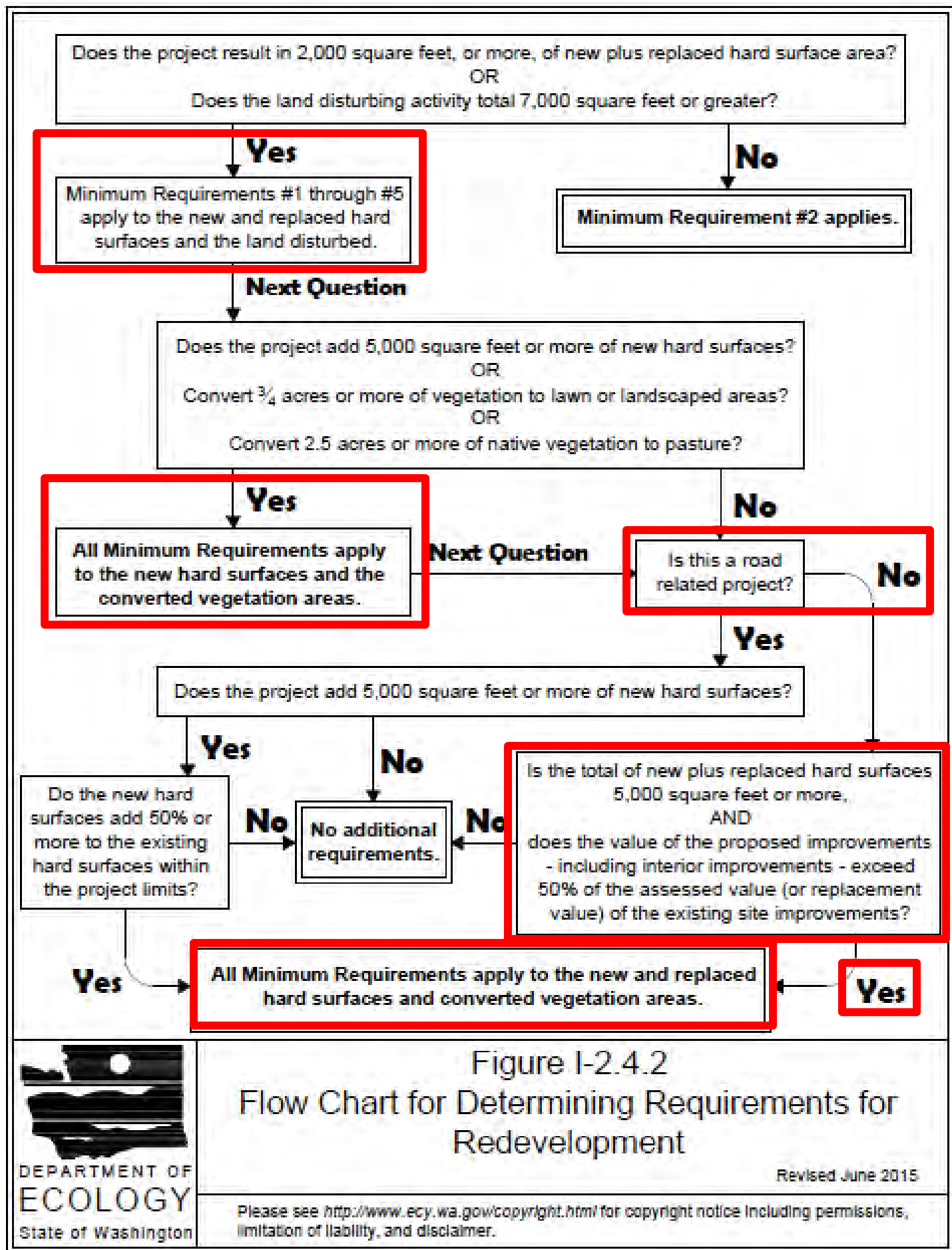
- The flow charts have been highlighted to identify the project requirements.

All minimum requirements apply to the new and replaced hard surfaces and the converted vegetation areas.

DOE Stormwater Management Manual Minimum Requirements: (MR#1 to MR#9).

Refer to the 2012 Department of Ecology Manual, as amended in 2014 for further required information.





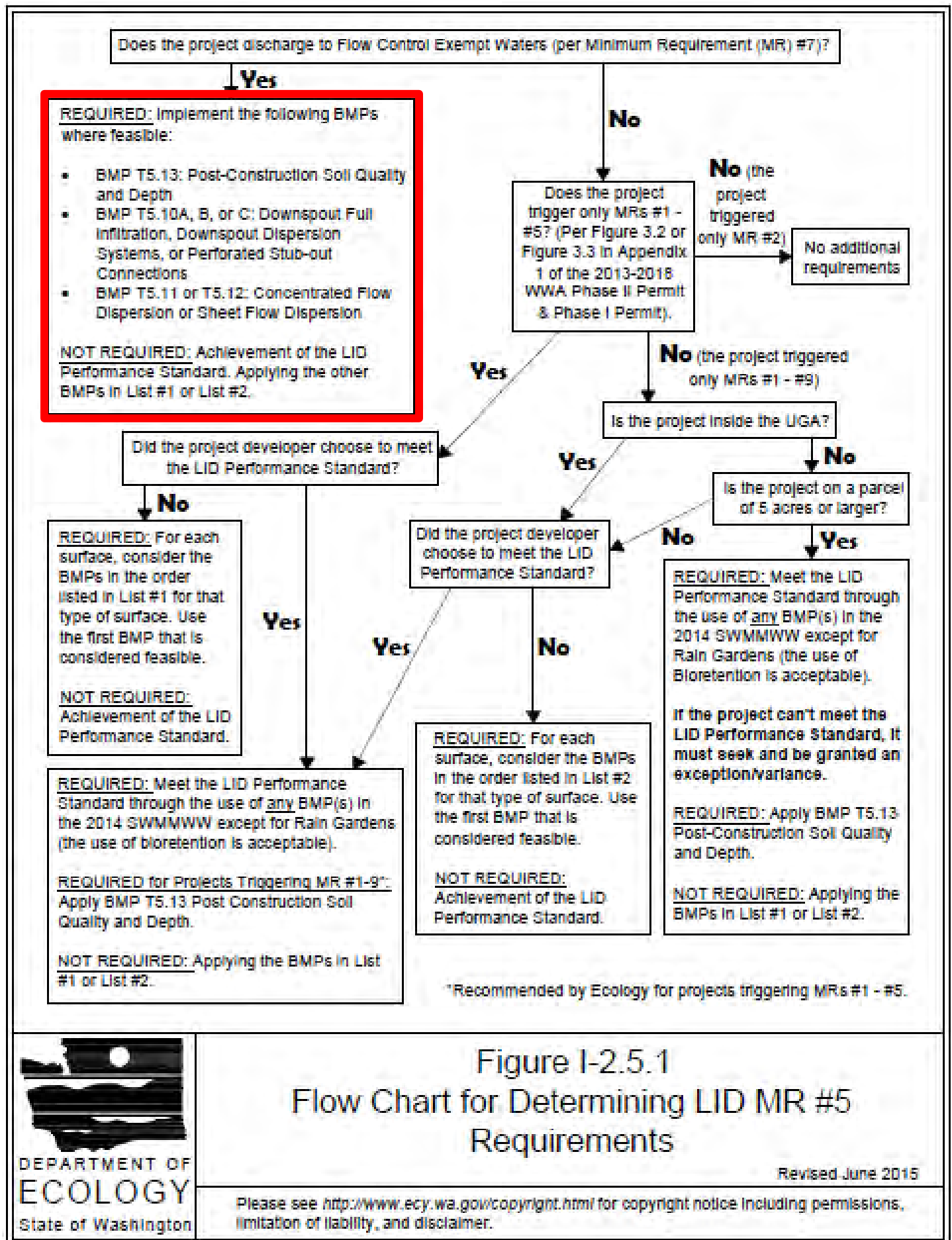


Figure I-2.5.1
Flow Chart for Determining LID MR #5
Requirements

Revised June 2015

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TAB 1 (MINIMUM REQUIREMENT #1)

□ 1-2.5.1 Minimum Requirement #1 – Prepare a Stormwater Site Plan

- 1.3 – Preparation of a Stormwater Site Plan
- 1.3.1 – Stormwater Site Plans: Step-by-Step

Note: The level of detail needed for each step depends upon the project size. Provide a narrative description of each step.

1-3.1.1 Step 1 - Site Analysis: Collect and Analyze Information on Existing Conditions

Site analysis shall be submitted as part of the Existing Conditions Summary above. Part of the information in this step should be used to help prepare the Construction Stormwater Pollution Prevention Plan. Purpose of the Site Analysis is to provide for a Low Impact Development site design that is intended to compliment the predeveloped conditions of the site.

A topographic survey was performed on the site to detail existing topography of the site and provide accurate information related to existing site improvements and utilities. Site visits were performed to delineate drainage basins on the project site that drain north to T Avenue, east to the conveyance system in the existing parking lot east of T Avenue, and those that drain to the southwest corner of the project site adjacent to Market Street where an existing outfall drains to the Cap Sante marina.

A geotechnical Investigation was performed to evaluate onsite soils which determined the site soil conditions are not suitable for infiltration.

1-3.1.2 Step 2 - Prepare Preliminary Development Layout

Based upon the analysis of existing site conditions, locate the buildings, roads, parking lots, landscaping features, on-site stormwater management BMP's, and preliminary location of stormwater treatment and retention/detention facilities for the proposed development.

The preliminary development layout was prepared that creates a formal RV Park and improves the existing gravel parking area. The layout allows the use of BMP T5.13 in landscaped and disturbed vegetated areas. Three stormwater treatment systems are proposed to meet runoff treatment requirements..

1-3.1.3 Step 3 - Perform Off-site Analysis (at Local Agency's Option): Use additional Sheets, if necessary,

Ecology recommends that local governments require an off-site analysis for projects that add 5,000 SF or more of new hard surfaces or convert $\frac{3}{4}$ acres of vegetation to lawn or landscape areas or convert 2.5 acres of forested area to pasture.

Off-site analysis extends to $\frac{1}{4}$ mile downstream of the project site.

The qualitative analysis was performed that extends more than $\frac{1}{4}$ mile downstream from the project site.

There are four discharge locations from the site, each shown with their respective drainage basin limits on the Pre-Developed Basin Map in Appendix 5.

- Basin 1 – T Avenue North: This basin on the northern portions of the project site drains to the north via an 18-inch diameter underground pipe. Stormwater runoff from the basin

enters the underground conveyance system and is conveyed north approximately ¼ of a mile before discharging into the Puget Sound.

Through the public comment process of the project, it has been noted that stormwater occasionally ponds in low portions of the intersection of T Avenue and 6th Street. In an effort to alleviate the drainage concerns in this area, the proposed site improvements will reduce the total basin area that contributes runoff to this area and reduce the total amount of impervious surface area within the basin.

- Basin 2 – East Conveyance: This basin includes a portion in the south east corner of the project site. Stormwater runoff from this basin is collected and routed through a series of underground conveyance pipes prior to discharging into the Puget sound approximately 500-feet east of the project site. There are no known drainage concerns in this conveyance system.
- Basin 3 – West Conveyance: This basin includes the western portion of the project site and includes Market Street on the west side of the project site. Stormwater runoff from this basin is collected and routed through a 12-inch diameter pipe that discharges into the Puget Sound near the southwest corner of the project site. There are no known drainage concerns in this basin.
- Basin 4 – Cap Sante Marina: This basin includes the very southern portion of the project site. Runoff from this basin sheet flows south and enters the Puget Sound. There are no known drainage concerns in this basin.

1-3.1.4 - Determine Applicable Minimum Requirements

Establish project size thresholds for the application of Minimum Requirements to new development and redevelopment projects. Figures 2.4.1 *(Attached)* and 2.4.2 *(Attached)* provide the same thresholds in a flow chart format. Based on the preliminary layout, determine whether Minimum Requirements #1 through #5 apply to the project; or, whether Minimum Requirements #1 through #9 apply.

Please note, that Minimum Requirement #1 through #5 may trigger additional Minimum Requirements, such as Flow Control.

Minimum requirements 1-9 apply to all the new and replaced hard surfaces and converted vegetated areas as determined in attached Figures 2.4.1 and 2.4.2.

1-3.1.5 Step 5 - Prepare a Permanent Stormwater Control Plan (Refer to this section of the Ecology Manual for requirements.)

A Permanent Stormwater Control Plan was prepared in Accordance with the Ecology Manual that includes the following:

- Existing Site Hydrology: The existing site hydrology is discussed previously in the Existing Conditions Summary Section. The site includes four separate basins, one that drains north in T Avenue that outfalls into the Puget Sound and Basins 2-4 that drain south to Cap Sante Marina. A detailed Pre-Developed basin map is included in Appendix 5 for reference. The pre-developed and post-developed conditions of the site were modeled using the Western Washington Hydrology Model (WWHM). The detailed WWHM reports are included in Appendix 8 for reference.
- Developed Site Hydrology: The developed project site maintains the four pre-development drainage basins. A Post-developed Basin Exhibit detailing the developed

site basin boundaries and land use areas within each basin is included in Appendix 8.5 for reference.

Basin 1 - T Avenue: The total area contributing to Basin 1 has been reduced as well as the total hard surface area in an effort to reduce runoff flowrates to this conveyance system and alleviate drainage concerns. In addition a water quality treatment device will be added within the 6th Street improvements to provide water quality treatment to runoff from existing road improvements.

Basin 3 – West Conveyance: The total area of Basin 3 increases in the Developed condition to provide relief to drainage concerns in Basin 1. Two stormwater treatment systems will be installed in Basin 3 to meet water quality requirements on the project. Since the project site directly discharges to the Puget Sound, there are no flow control facilities proposed for the site.

1-3.1.6 Step 6 - Prepare a Construction Stormwater Pollution Prevention Plan (**MR#2 – 13 Elements**)

Refer to Chapter II-3 – Planning for a detailed description of each element. See also attached Tables 4.1.1 (Source Control BMP's by SWPPP Element) and Table 4.2.1 (Runoff Conveyance and Treatment BMP's by SWPPP Element).

See attached 13 Elements of a SWPPP included with Minimum Requirement No. 2.

1-3.1.7 Step 7 - Complete the stormwater site plan

The Stormwater Site Plan encompasses the entire submittal to the Local Agency with drainage review authority. Refer to this section of the Manual for further clarification of each item and what is required. See below:

- ☐ Project Overview
- ☐ Existing Conditions Summary
- ☐ Off-site Analysis Report
- ☐ Permanent Stormwater Control Plan
- ☐ Construction Stormwater Pollution Prevention Plan
- ☐ Special Reports and Studies
- ☐ Other Permits
- ☐ Operation and Maintenance Manual
- ☐ Declaration of Covenant for Privately Maintained Flow Control and Treatment Facilities. *(See attached Drainage BMP Maintenance Covenant BMP Agreement)*
- ☐ Declaration of Covenant for Privately Maintained On-site Stormwater BMP's *(See attached Drainage BMP Maintenance Covenant BMP Agreement)*
- ☐ Bond Quantities Worksheet, if applicable

This Stormwater Site Plan has been prepared in accordance with the Ecology Manual.

1-3.1.8 Step 8 - Check Compliance with all Applicable Minimum Requirements

A Stormwater Site Plan as designed and implemented should specifically fulfill all Minimum Requirements applicable to the project. The Stormwater Site Plan should be reviewed to check that these requirements are satisfied.

The Stormwater Site Plan has been reviewed and satisfies the requirements listed in the Ecology Manual.

TAB 2 (MINIMUM REQUIREMENT #2)

- **1-2.5.2 Minimum Requirement #2 – Construction Stormwater Pollution Prevention Plan (SWPPP)**
 - All projects are required to complete Minimum Requirement 2.
 - Refer to the 13 Elements of the SWPPP (See document below, complete and attach)
 - See attached Table 4.1.1, Table 4.2.1 and Table
 - Provide Engineering Calculations as an attachment for Sediment Ponds\Traps, Diversions, Waterways and Runoff/Stormwater Detention Calculations.
 - The site is considered a **High Sediment Transport Site**, BMP's in addition to the ones listed in this report may be required. An adaptive management approach shall be applied to implementation of BMP's throughout the project.

Table 4.1.1 Source Control BMP's by SWPPP Element

BMP or Element Name	Element #1 Preserve Vegetation/Mark Clearing Limits	Element #2 Establish Construction Access	Element #5 Stabilize Soils	Element #6 Protect Slopes	Element #9 Control Pollutants	Element #11 Maintain BMPs	Element #12 Manage the Project	Element #13 Protect Low Impact Development
BMP C101: Preserving Natural Vegetation	✓							
BMP C102: Buffer Zones	✓							✓
BMP C103: High Visibility Plastic or Metal Fence	✓							✓
BMP C105: Stabilized Construction Entrance / Exit		✓						
BMP C106: Wheel Wash		✓						
BMP C107: Construction Road/Parking Area Stabilization		✓						
BMP C120: Temporary and Permanent Seeding			✓	✓				
BMP C121: Mulching			✓	✓				
BMP C122: Nets and Blankets			✓	✓				
BMP C123: Plastic Covering			✓					
BMP C124: Sodding			✓					
BMP C125: Topsoiling / Composting			✓					
BMP C126: Polyacrylamide for Soil Erosion Protection			✓					
BMP C130: Surface Roughening			✓	✓				
BMP C131: Gradient Terraces			✓	✓				
BMP C140: Dust Control			✓					
BMP C150: Materials On Hand						✓	✓	
BMP C151: Concrete Handling					✓			
BMP C152: Sawcutting and Surfacing Pollution Prevention					✓			
BMP C153: Material Delivery, Storage and Containment					✓			
BMP C154: Concrete Washout Area					✓			
BMP C160: Certified Erosion and Sediment Control Lead						✓	✓	
BMP C162: Scheduling							✓	

Table 4.2.1 Runoff Conveyance and Treatment BMP's by SWPPP Element

BMP or Element Name	Element #3 Control Flow Rates	Element #4 Install Sediment Controls	Element #5 Protect Slopes	Element #7 Protect Drain Inlets	Element #8 Stabilize Channels and Outlets	Element #9 Control Pollutants	Element #10 Control De- Watering	Element #13 Protect Low Impact Development
BMP C200: Interceptor Dike and Swale			✓					✓
BMP C201: Grass-Lined Channels			✓					
BMP C202: Channel Lining					✓			
BMP C203: Water Bars	✓		✓					
BMP C204: Pipe Slope Drains			✓					
BMP C205: Subsurface Drains			✓					
BMP C206: Level Spreader			✓					
BMP C207: Check Dams			✓					✓
BMP C208: Triangular Silt Dike (Geotextile Encased Check Dam)			✓					✓
BMP C209: Outlet Protection					✓			
BMP C220: Storm Drain Inlet Protection				✓				
BMP C231: Brush Barrier		✓						✓
BMP C232: Gravel Filter Berm		✓						
BMP C233: Silt Fence		✓						✓
BMP C234: Vegetated Strip		✓						✓
BMP C235: Wattles		✓						
BMP C236: Vegetative Filtration							✓	
BMP C240: Sediment Trap	✓	✓						
BMP C241: Temporary Sediment Pond	✓	✓						
BMP C250: Construction Stormwater Chemical Treatment						✓		
BMP C251: Construction Stormwater Filtration						✓		
BMP C252: High pH Neutralization Using CO ₂						✓		
BMP C253: pH Control for High pH Water						✓		

13 Elements of SWPPP (Construction Stormwater Pollution Prevention Plan)

Please check off boxes to show that each element has been read and understood. Provide details where applicable and if certain aspects are unnecessary or exempt, clearly justify. Details of the 13 Elements and the correlating BMPs are listed **Above from** the 2014 Stormwater Management Manual for Western Washington (SWMMWW). A link is provided on the City of Anacortes website, under Planning, Community, & Economic Development Department, as well as under Stormwater on the Engineering Division of Public Work's page.

Owner Name: Port of Anacortes

Site Address: Southeast corner of 6th and Market Streets

Prepared By: David Galbraith, PE. Pacific Surveying and Engineering

The Stormwater checklist or building permit determined that:

- ☐ These elements must be addressed for construction activity adding 2,000 sq. ft. or more of hard surface area. This means that an attached narrative and site plan are required with this document.

Under each element, explain the best management practices (BMPs) used or justify reasoning for those that will not be used. If needed, please attach a narrative to further explain plans or justification.

ELEMENT 1: Preserve Vegetation/Mark Clearing Limits

- ☐ Before beginning land disturbing activities, including clearing and grading, clearly mark all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area.
- ☐ Retain the duff layer, native top soil, and natural vegetation in an undisturbed state to the maximum degree practical.
- ☐ Clearing limits are clearly detailed on the Temporary Erosion and Sediment Control Plan (TESCP) included in the civil design drawings found in Appendix 5.

Silt fence will be installed along the southern boundary of the project site to provide sediment control during construction. The northern, eastern, and western boundaries of the site are defined by existing access roads. The project clearing limits along the northern limits of the project site coincide with the existing 6th Street curb. The clearing limits on the east and west sides of the project are the sawcut limits within the existing roads shown on the plans.

The minimum required BMP is:

- ☐ BMP C233: Silt Fence

ELEMENT 2: Establish Construction Access

- ☐ Limit construction vehicle access and exit to one route, if possible.
- ☐ Stabilize access points with a pad of quarry spalls, crushed rock, or other equivalent BMPs, to minimize tracking onto roads.
- ☐ Locate wheel wash or tire baths on site, if the stabilized construction entrance is not effective in preventing tracking sediment onto roads.
- ☐ If sediment is tracked off site, clean the affected roadway thoroughly at the end of each day, or more frequently as necessary (ex: wet weather). Remove sediment from roads by shoveling, sweeping, or pick up and transport the sediment to a controlled sediment disposal area.

Version Date: January 12, 2022

- ☐ Conduct street washing only after sediment is removed in accordance with the above bullet.
- ☐ Control street wash wastewater by pumping back on site or otherwise preventing it from discharging into systems tributary to waters of the State.

The project site will be accessed via a single access point off Market Street and a single access point off the southern end of the T Avenue right of Way. The two access locations will allow for safe flow of construction traffic through the site. A stabilized construction access shall be constructed on the site at the access locations as shown on the TESCP.

The minimum required BMP is:

- ☐ BMP C105: Stabilized Construction Entrance / Exit

ELEMENT 3: Control Flow Rates

- ☐ Protect properties and waterways downstream of development sites from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site.
- ☐ Where necessary to comply with the bullet above, construct stormwater retention or detention facilities as one of the first steps in grading. Assure that detention facilities function properly before constructing site improvement (e.g. impervious surfaces).
- ☐ If permanent infiltration ponds are used for flow control during construction, protect these facilities from siltation during the construction phase.

Existing water bars in the ditch adjacent to Market Street shall remain until the Market Street curb, gutter, and sidewalk improvements are constructed. No additional flow control measures are proposed.

ELEMENT 4: Install Sediment Controls

- ☐ Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants.
- ☐ Construct sediment control BMPs (sediment ponds, traps, filters, etc.) as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.
- ☐ Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.
- ☐ Direct stormwater runoff from disturbed areas through a sediment pond or other appropriate sediment removal BMP, before the runoff leaves a construction site or before discharge to an infiltration facility. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must meet the flow control performance standard in Element #3, bullet #1.
- ☐ Locate BMPs intended to trap sediment on-site in a manner to avoid interference with the movement of juvenile salmonids attempting to enter off-channel areas or drainages.
- ☐ Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal, and maximize stormwater infiltration.
- ☐ Where feasible, design outlet structures that withdraw impounded stormwater from the surface to avoid discharging sediment that is still suspended lower in the water column.

Silt fence will be installed along the south property line to provide sediment control during construction.

Storm Drain Inlet Protection will be installed in all existing and proposed catch basins on the site as well as offsite catch basins identified in the TESCP Plan.

Media filter stormwater treatment devices will be installed in 6th Street, Market Street, and onsite that may be used for sediment control during construction in accordance with manufacturer's recommendations. If excessive sediment is released into the structure the filter media will need to be changed upon project completion to assure the system meets water quality treatment requirements.

The minimum required BMP is:

- ☐ BMP C220: Storm Drain Inlet Protection
- ☐ BMP C233: Silt Fence

ELEMENT 5: Stabilize Soils

- ☐ Stabilize exposed and unworked soils by application of effective BMPs that prevent erosion. Applicable BMPs include but are not limited to: temporary and permanent seeding, sodding, mulching, plastic covering, erosion control fabrics and matting, soil application of polyacrylamide (PAM), the early application of gravel base early on areas to be paved, and dust control.
- ☐ Control stormwater volume and velocity within the site to minimize soil erosion.
- ☐ Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion.
- ☐ Soils must not remain exposed and unworked for more than the time periods set forth below to prevent erosion.
 - o During the dry season (May 1 – Sept 30): 7 days
 - o During the wet season (Oct 1 – Apr 30): 2 days
- ☐ Stabilize soils at the end of the shift before a holiday or weekend if needed based on the weather forecast.
- ☐ Stabilize soil stockpiles from erosion, protect with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.
- ☐ Minimize the amount of soil exposed during construction activity.
- ☐ Minimize the disturbance of steep slopes.
- ☐ Minimize soil compaction and, unless infeasible, preserve topsoil.

The minimum required BMP's are:

- ☐ BMP C120: Temporary & Permanent Seeding
- ☐ BMP C121: Mulching
- ☐ BMP C123: Plastic Covering
- ☐ BMP C125: Topsoiling / Composting
- ☐ BMP C140: Dust Control

ELEMENT 6: Protect Slopes

- ☐ Design and construct cut-and-fill slopes in a manner to minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (Ex: track walking).
- ☐ Divert off-site stormwater (run-on) or ground water away from slopes and disturbed areas with interceptor dikes, pipes, and/or swales. Off-site stormwater should be managed separately from stormwater generated on the site.
- ☐ At the top of slopes, collect drainage in pipe slope drains or protected channels to prevent erosion.
 - o *Temporary pipe slope drains must handle the peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour flow rate predicted/indicated by an approved continuous runoff model, increased by a factor of 1.6, may be used. The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western

Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as “landscaped” area.

- o Where 15-minute time steps are available in an approved continuous runoff model, they may be used directly without a correction factor.
- ☐ Place excavated material on the uphill side of trenches, consistent with safety and space considerations.
- ☐ Place check dams at regular intervals within constructed channels that are cut down a slope.
- ☐ Consider soil types and its potential for erosion.
- ☐ Stabilize soils on slopes, as specified in Element 5.
- ☐ BMP combinations are the most effective method of protecting slopes with disturbed soils. Ex: Use both mulching and straw erosion control blankets.

The minimum required BMP's are:

- ☐ BMP C120: Temporary & Permanent Seeding
- ☐ BMP C121: Mulching
- ☐ BMP C125: Topsoiling / Composting

ELEMENT 7: Protect Drain Inlets

- ☐ Protect all storm drain inlets made operable during construction so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.
- ☐ Clean or remove and replace inlet protection devices when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
- ☐ Where possible, protect all existing storm drain inlets so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.
- ☐ Keep all approach roads clean. Do not allow sediment and street wash water to enter storm drains without prior and adequate treatment unless treatment is provided before the storm drain discharges to waters of the State.
- ☐ Inlets should be inspected weekly at a minimum and daily during storm events.

The minimum required BMP is:

- ☐ BMP C220: Storm Drain Inlet Protection

ELEMENT 8: Stabilize Channels and Outlets

- ☐ Design, construct, and stabilize all on-site conveyance channels to prevent erosion from the following expected peak flows:
 - o *Channels must handle same peak volumetric flow rate as temporary pipe slope drains listed in Element 6, above.
- ☐ Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches at the outlets of all conveyance systems.
- ☐ The best method for stabilizing channels is to completely line the channel with a blanket product first, then add check dams as necessary to function as an anchor and to slow the flow of water.

The site outlets are currently stabilized and no additional outlet protection is required.

ELEMENT 9: Control Pollutants

- ☐ Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants.
- ☐ Handle and dispose of all pollutants, including waste materials and demolition debris that occur on-site in a manner that does not cause contamination of stormwater.
- ☐ Provide cover, containment, and protection from vandalism for all chemicals, liquid products, petroleum

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products, and other materials that have the potential to pose a threat to human health or the environment. On-site fueling tanks must include secondary containment. Secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume contained in the largest tank within the containment structure. Double-walled tanks do not require additional secondary containment.

- ☐ Conduct maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures. Clean contaminated surfaces immediately following any spill incident.
- ☐ Discharge wheel wash or tire bath wastewater to a separate on-site treatment system that prevents discharge to surface water, such as closed-loop recirculation or upland land application, or to the sanitary sewer, with local sewer district approval. Wheel wash or tire bath wastewater should not include wastewater from concrete washout areas.
- ☐ Apply fertilizers and pesticides in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturers' label requirements for application rates and procedures.
- ☐ Use BMPs to prevent contamination of stormwater runoff by pH-modifying sources. The sources for this contamination include, but are not limited to bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, dewatering concrete vaults, concrete pumping, and mixer washout waters. Adjust the pH of stormwater if necessary, to prevent violations of the water quality standards.
- ☐ Assure that washout of concrete trucks is performed off-site or in designated concrete washout areas only. Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams. Do not dump excess concrete on site, except in designated concrete washout areas. Concrete spillage or concrete discharge to surface waters of the State is prohibited. Do not use upland land applications for discharging wastewater from concrete washout areas.
- ☐ Obtain written approval from Ecology and provide to the City before using chemical treatment other than CO₂ or dry ice to adjust pH.
- ☐ Woody debris may be chopped and spread on site.
- ☐ Conduct oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff using spill prevention measures, such as drip pans.
- ☐ Clean contaminated surfaces immediately following any discharge or spill incident. Emergency repairs may be performed on-site using temporary plastic placed beneath and, if raining, over the vehicle.

The minimum required BMP's are:

- ☐ BMP C151: Concrete handling
- ☐ BMP C152: Sawcutting & Surface Pollution prevention
- ☐ BMP C153: Material Delivery, Storage and containment
- ☐ BMP C154: Concrete Washout Area

ELEMENT 10: Control De-Watering

- ☐ Discharge foundation, vault, and trench dewatering water, which have characteristics similar to stormwater runoff at the site, into a controlled conveyance system before discharge to a sediment trap or sediment pond.
- ☐ Discharge clean, non-turbid de-watering water, such as well-point ground water, to systems tributary to, or directly into surface waters of the State, as specified in Element 8, provided the de-watering flow does not cause erosion or flooding of receiving waters or interfere with the operation of the system. Do not route clean dewatering water through stormwater sediment ponds. Note that "surface waters of the State" may exist on a construction site as well as off site; for example, a creek running through a site.
- ☐ Handle highly turbid or contaminated dewatering water separately from stormwater.
- ☐ Other treatment or disposal options may include:
 1. Infiltration
 2. Transport off-site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that

- does not pollute state waters.
- 3. Ecology-approved on-site chemical treatment or other suitable treatment technologies.
- 4. Sanitary or combined sewer discharge with local sewer district approval, if there is no other option.
- 5. Use of a sedimentation bag with outfall to a ditch or swale for small volumes of localized dewatering.
- ☐ Construction equipment operation, clamshell digging, concrete tremie pour, or work inside a cofferdam can create highly turbid or contaminated dewatering water.
- ☐ Discharging sediment-laden (muddy) water into waters of the State likely constitutes a violation of water quality standards for turbidity. The easiest way to avoid discharging muddy water is through infiltration and preserving vegetation.

ELEMENT 11: Maintain BMPs

- ☐ Maintain and repair all temporary and permanent erosion and sediment control BMPs as needed to assure continued performance of their intended function in accordance with BMP specifications.
- ☐ Remove all temporary erosion and sediment control BMPs within 30 days after achieving final site stabilization or after the temporary BMPs are no longer needed. Some temporary erosion and sediment control BMPs are bio-degradable and designed to remain in place following construction such as compost socks.
- ☐ Provide protection to all BMPs installed for the permanent control of stormwater from sediment and compaction. All BMPs that are to remain in place following completion of construction shall be examined and placed in full operating conditions. If sediment enters the BMPs during construction, it shall be removed, and the facility shall be returned to the conditions specified in the construction documents.
- ☐ Remove or stabilize trapped sediment on site. Permanently stabilize disturbed soil resulting from removal of BMPs or vegetation.

BMP's will be maintained and inspected daily by the contractor / property owner. All BMP's requiring maintenance will be fixed immediately and noted on the SWPPP.

The minimum required BMP's are:

- ☐ BMP C150: Materials on Hand
- ☐ BMP C160: Certified Erosion & Sediment Control Lead

ELEMENT 12: Manage the Project – Projects subject to Minimum Requirements 1-9 must have a Certified Erosion and Sediment Control Lead (CESCL) for site inspections. Projects subject to Minimum Requirements 1-5 do not require the inspector to be certified. By the initiation of construction, the SWPPP must identify the CESCL or inspector, who shall be present on-site or on-call at all times.

- ☐ Phase development projects to the maximum degree practicable and take into account seasonal work limits to prevent soil erosion and prevent transporting sediment from the site during construction.
- ☐ Inspection and monitoring – Inspect, maintain, and repair all BMPs as needed to assure continued performance of their intended function.
- ☐ Maintain, update, and implement the SWPPP.
- ☐ Clearing and grading activities for developments shall be permitted only if conducted using an approved site development plan (e.g., subdivision approval).
- ☐ From Oct 1 through Apr 30, clearing, grading, and other soil disturbing activities is permitted only if shown that the site operator will prevent silt-laden runoff from leaving the site through a combination of the following:
 1. Site conditions including existing vegetative coverage, slope, soil type, and proximity to receiving waters.
 2. Limit activities and the extent of disturbed areas.
 3. Proposed erosion and sediment control measures.

Weather conditions can influence the seasonal limitation on site disturbance. The City of Anacortes has the authority to take enforcement action per AMC 19.76 Stormwater.

- ☐ The following activities are exempt from the seasonal clearing and grading limitations:
 1. Routine maintenance and necessary repair of erosion and sediment control BMPs;
 2. Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil
 3. Activities where there is 100% infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities.

The minimum required BMP's are:

- ☐ BMP C150: Materials on hand
- ☐ BMP C160: Certified Erosion & Sediment Control Lead
- ☐ BMP C162: Scheduling

ELEMENT 13: Protect Low Impact Development BMPs

- ☐ If implementing any bioretention facilities or rain gardens, refer to the applicable BMP sections of the Manual for requirements.

Bioretention facilities or rain gardens are not proposed on this site, nor are there any on the site currently.

 _____ Applicant Signature	1-12-2022 _____ Date
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TAB 3 (MINIMUM REQUIREMENT #3)

□ 1-2.5.3 Minimum Requirement #3 – Source Control of Pollution

All known, available and reasonable source control BMP's must be applied to all projects. Source control BMP's must be selected, designed, maintained according to the reference Ecology Manual.

The intent of source control BMP's is to prevent stormwater from coming in contact with pollutants. They are a cost-effective means of reducing pollutants in stormwater, and, therefore, should be considered in all projects.

The following construction site source control BMP's have been selected as requirements on this project:

The minimum required BMP's are:

- o BMP C105: Stabilized Construction Entrance / Exit
- o BMP C120: Temporary & Permanent Seeding
- o BMP C121: Mulching
- o BMP C125: Topsoiling / Composting
- o BMP C140: Dust Control
- o BMP C150: Materials on Hand
- o BMP C151: Concrete handling
- o BMP C152: Sawcutting & Surface Pollution prevention
- o BMP C153: Material Delivery, Storage and containment
- o BMP C154: Concrete Washout Area
- o BMP C160: Certified Erosion & Sediment Control Lead
- o BMP C162: Scheduling

Additional required source control BMP's for the project site are listed in Volume 4, Section 2.1 of the Ecology Manual, "Applicable (Mandatory) Operational Source Control BMP's."

Upon completion of construction the following pollutant source control BMPs are recommended for implementation associated with the management and maintenance of the development, obtained from the Ecology Manual, Volume 4:

- o S410: BMP's for Illicit Connections to Storm Drains
- o S411: BMP's for Landscaping and Lawn / Vegetation Management
- o S417: BMP's for Maintenance of Stormwater Drainage and Treatment Systems
- o S424: BMP's for Roof / Building Drains at Manufacturing and Commercial Buildings
- o S431: BMP's for Washing and Steam Cleaning Vehicles / Equipment / Building Structures

TAB 4 (MINIMUM REQUIREMENT #4)

□ **Minimum Requirement #4 – Preservation of Natural Drainage Systems and Outfalls**

Natural drainage patterns shall be maintained and discharges from the project shall occur at the natural location, to maximum extent practicable. The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and down gradient properties. All outfalls require energy dissipation.

The objective is to preserve and utilize drainage systems to the fullest extent because of the multiple stormwater benefits these systems provide; and to prevent erosion at the downstream of the discharge location.

Refer to the reference manual for supplemental guidelines and additional information under this section.

The natural drainage systems and outfalls on the project site have been maintained. All runoff from the site is conveyed through manmade channels / pipes to their respective outfall locations into the Puget Sound. Minor adjustments have been made to the basins due to site grading. The basin adjustments and conveyance system design have purposely reduced runoff to areas where drainage concerns have been voiced to improve drainage conditions in these areas.

See the basin maps include in Appendix 5 for pre and post developed site basin area summaries and the WWHM model reports in Appendix 8.

TAB 5 (MINIMUM REQUIREMENT #5)

☐ Minimum Requirement #5 – On-site Stormwater Management

Project thresholds that trigger Minimum Requirements #1 through #5, shall utilize the On-site Stormwater Management BMP's from List #1 for all surfaces within each type of surface in List #1; or, Demonstrate compliance with the LID Performance Standard. Projects selecting this option cannot use Rain Gardens. They may choose to use Bioretention BMP's as described in Chapter V-7 – Infiltration and Bioretention Treatment Facilities to achieve the LID Performance Standard.

Refer to this section of the reference Manual for all Feasibility or Infeasibility Criteria.

Is this project Flow Control Exempt? YES (See Appendix I-E: Flow Control-Exempt Surface Water). If yes, provide reasoning from the applicability section of 1-2.5.7 Minimum Requirement #7: Flow Control). If No, then the project triggers Minimum Requirement #7 (1-2.5.7) and possibly Minimum Requirement #8 (1-2.5.8).

Runoff from the project site is conveyed through manmade conveyance elements from the site directly to the Puget Sound, an exempt receiving water. Per Figure I-2.5.1 Flow Chart for Determining LID MR #5 Requirements, the following BMP's should be implemented when feasible:

- o BMP T5.13: Post Construction Soil Quality and depth
- o BMP T5.10A, B, or C: Downspout Full Infiltration, Downspout Dispersion, or Perforated Stub-out Connections
- o BMP T5.11 or T5.12: Concentrated Flow Dispersion or Sheet Flow Dispersion

It is not required to achieve the LID Performance Standard or to apply other BMP's in List #1 and list #2.

The following summarizes BMP's:

All sites are required to utilize BMP T5.13 – Post Construction Soil Quality and Depth.

For each surface, consider the BMP's in the order listed for that type of surface. Use the first BMP that is considered feasible. No other on-site Stormwater Management BMP is necessary for that surface. Feasibility shall be determined by evaluation against:

1. Design criteria, limitations and infeasibility criteria identified for each BMP in this manual, and;
2. Competing needs criteria listed in Chapter V-5 – On-site Stormwater Management.

Lawn and Landscaped Area:

- ☐ **BMP T5.13: Post-Construction Soil Quality and Depth.** (Attach Detail in Report)
Refer to this site for requirements and specifications. All projects are required to utilize this BMP.

http://www.soilsforsalmon.org/pdf/Soil_BMP_Manual.pdf

See below for the "Model Soil Management Plan for BMP T5.13" to be submitted with Drainage Report and Application Material.

The contractor shall submit a test report from a soils supplier that identifies the soils meet the specifications established by Department of Ecology.

PROJECT INFORMATION "Model Soil Management Plan for BMP T5.13" age # ____ of ____ pages
Complete all information on page 1; only site address and permit number on additional pages.

Site Address / Lot No.: _____	
Permit Type:	Permit Number:
Permit Holder:	Phone:
Mailing Address: _____	
Contact Person:	Phone:
Plan Prepared By:	

ATTACHMENTS REQUIRED (Check off required items that are attached to this plan)

☐ Site Plan showing, to scale: ☐ Areas of undisturbed native vegetation (no amendment required) ☐ New planting beds and turf areas (amendment required) ☐ Type of soil improvement proposed for each area
Soil test results (required if proposing custom amendment rates)
Product test results for proposed amendments

AREA # _____ (should match Area # on Site Plan)

PLANTING TYPE ☐ Turf ☐ Undisturbed native vegetation ☐ Planting Beds ☐ Other: _____		
SQUARE FOOTAGE OF THIS AREA: _____ square feet		
SCARIFICATION ☐ Subsoil will be scarified	_____ inches (depth) of scarification needed to achieve finished total 12" loosened depth.	
PRE-APPROVED AMENDMENT METHOD: ☐ Topsoil import ☐ Amend with compost ☐ Stockpile and amend (_____ cu. yds. stockpiled)	_____ inches of compost or imported topsoil applied X <u>3.1</u> (conversion factor, inches to cubic yards) _____ = cu. yards per 1,000 sq. ft. X _____,000s sq.ft. in this area _____ = cubic yards of amendment → → → → → (needed to cover this area to designated depth)	PRODUCT: _____ QUANTITY: _____ CU. YDS.
CUSTOM AMENDMENT ☐ Topsoil import ☐ Topsoil & compost lift ☐ Amend ☐ Stockpile and amend (_____ cu. yds. stockpiled)	Attach test results and calculations. _____ inches organic matter or topsoil import X <u>3.1</u> _____ = cu. yards / 1,000 sq. ft. X _____,000s sq.ft. in this area _____ = cubic yards of amendment → → → → →	PRODUCT: _____ QUANTITY: _____ CU. YDS.
MULCH	_____,000 sq.ft. X <u>6.2</u> (conversion, to give 2 inch mulch depth) _____ = cubic yards of mulch → → → → →	PRODUCT: _____ QUANTITY: _____ CU. YDS.

TOTAL AMENDMENT/TOPSOIL/MULCH FOR ALL AREAS (complete on page 1 only, totaling all areas/pages in this Plan)

☐ Product #1: _____	☐ Quantity: _____ cu. yds.
☐ Test Results: _____ % organic matter _____ C:N ratio <25:1 (except mulch, or <35:1 for native plants)	_____ "stable" (yes/no)
☐ Product #2: _____	☐ Quantity: _____ cu. yds.
☐ Test Results: _____ % organic matter _____ C:N ratio <25:1 (except mulch, or <35:1 for native plants)	_____ "stable" (yes/no)
☐ Product #3: _____	☐ Quantity: _____ cu. yds.
☐ Test Results: _____ % organic matter _____ C:N ratio <25:1 (except mulch, or <35:1 for native plants)	_____ "stable" (yes/no)

Date:	Inspector:	Approved:	Revisions Required:
Date:	Inspector:	Approved:	Revisions Required:

Roofs: (Provide feasible detail and maintenance and operations specifications in the report)

1. BMP T5.10A: Downspout Full Infiltration System Feasible\Infeasible

If infeasible, explain the criteria:

The geotechnical report prepared by Geoengineers discusses the site soils and infiltration potential in Section 4.8 Stormwater Considerations. In summary, the geotechnical report concludes the soils on the project site are unsuitable for infiltration based on the conditions encountered in the soil explorations and the guidance for infiltration facilities provided in the Washington State Department of Ecology's Stormwater Management Manual for Western Washington (DOE Manual). No additional infiltration tests are proposed.

2. BMP T5.10B: Downspout Dispersion Systems Feasible\Infeasible

If infeasible, explain the criteria:

No location the site provides the dispersion flow length required by the DOE Manual.

3. BMP T5.10C: Perforated Stub-out Connections Feasible\Infeasible

If infeasible, explain the criteria:

The applications and limitations section of the BMP states: "To facilitate maintenance, do not locate the perforated pipe portion of the system under impervious or heavily compacted (e.g., driveways and parking areas) surfaces. Use the same setbacks as for infiltration trenches in Section 3.1.1."

The proposed building location does not allow for placement of perforated pipe in an area that is not impervious or heavily compacted or does not meet setback requirements.

Other Hard Surfaces: (Provide feasible detail and maintenance and operations specifications in the report)

1. BMP T5.12 Sheet Flow Dispersion or BMP T5.11: Concentrated Flow Dispersion

Feasible\Infeasible. If infeasible, explain the criteria:

The project site is not able to provide vegetated flow paths adjacent to hard surfaces at the ratios required by the Sheet Flow Dispersion BMP due to site topography and the proposed improvements.

The site does not have an area that meets the minimum 50 foot vegetated flow path requirement, therefore Concentrated Flow Dispersion is considered infeasible on the site.

If all BMP's have been declared infeasible to the project site, then the site is subject to Adjustments (Section 5) and Exceptions/Variations (Section 6) per the City's Phase II Municipal Stormwater Permit and the Anacortes Municipal Code, Section 19.76.040 – Stormwater Management Manual, Item G – Adjustments and Exceptions. The review type is considered a Type 2 – Administrative Decision, requiring a 14-day comment period, per Table 19.20.030-1 – Review Classification and Process Matrix. See attached document.



Applicant Signature

1-12-2022

Date



City of Anacortes
Engineering Department
Attention: Steven Lange
904 6th Street Anacortes, WA 98221
www.anacorteswa.gov

Request for Adjustments and Exceptions/Variance To the Stormwater Management Manual

If all BMP's have been declared infeasible to the project site, then the site is subject to Adjustments (Section 5) and Exceptions/Variations (Section 6) per the City's Phase II Municipal Stormwater Permit and the Anacortes Municipal Code, Section 19.76.040 – Stormwater Management Manual, Item G – Adjustments and Exceptions. The review type is considered a Type 2 – Administrative Decision, requiring a 14-day comment period, per Table 19.20.030-1 – Review Classification and Process Matrix.

The application will be considered a written request that covers the specifics below, as well as any additional information requested by the Planning Director.

The deviation describes the process for exception to the Nine Minimum Requirements of the City of Anacortes Stormwater Management Manual. These requirements are as follows:

- ☐ Minimum Requirement 1 – Stormwater Site Plan
- ☐ Minimum Requirement 2 – Construction Stormwater Pollution Prevention Plan
- ☐ Minimum Requirement 3 – Source Control of Pollution
- ☐ Minimum Requirement 4 – Preservation of Natural Drainage Systems
- ☐ Minimum Requirement 5 – On-site Stormwater Management
- ☐ Minimum Requirement 6 – Runoff Treatment
- ☐ Minimum Requirement 7 – Flow Control
- ☐ Minimum Requirement 8 – Wetland Protection
- ☐ Minimum Requirement 9 – Operation and Maintenance

Adjustments:

Adjustments to the Minimum Requirements may be granted by the Planning Director provided that a written finding of fact is prepared that addresses the following:

- ☐ The adjustment provides substantially equivalent environmental protection.
- ☐ Based on sound Engineering practices, the objective of safety, function environmental protection and facility maintenance, are met.

Exception/Variations

Exceptions/variances (Exceptions) to the Minimum Requirements may be granted by the Planning Director following a legal public notice of an application for an exception or variance, legal public notice of the Planning Director's decision on the application and written findings of fact that documents the Planning Director's determination to grant an exception. The Planning Director shall keep records, including the written finding of fact of all local exceptions to the Minimum Requirements.

Project specific design exceptions based on site specific conditions do not require prior approval of Ecology. The Planning Director must see, prior approval by Ecology for any jurisdiction wide exception.

The Planning Director may grant an exception to the Minimum Requirements if such application imposes a severe and unexpected economic hardship. To determine whether the application imposes a severe and unexpected economic hardship on the project applicant, the Planning Director must consider and document with written findings of fact the following:

- The current (pre-project) use of the site, and
- How the application of the Minimum Requirement(s) restricts the proposed use of the site compared to the restrictions that existed prior to the adoption of the Minimum Requirement; and
- The possible remaining uses of the site if the exception were not granted; and
- The uses of the site that would have been allowed prior to the adoption of the Minimum Requirements; and
- A comparison of the estimated amount and percentage of value loss as a result of the Minimum Requirements versus the estimated amount and percentage of value loss as a result of requirements that existed prior to adoption of the Minimum Requirements; and
- The feasibility for the owner to alter the project to apply the Minimum Requirements.

In addition any exception must meet the following criteria:

- The exception will not increase risk to the public health and welfare, nor be injurious to other properties in the vicinity and/or downstream, and to the quality of water of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

TAB 6 – (MINIMUM REQUIREMENT 6 - RUNOFF TREATMENT)

The project meets or exceeds basic treatment requirements for runoff generated from pollution generating impervious surface areas. Two Modular Wetland systems will be installed that provide enhanced water quality treatment and a single Stormfilter will be installed that provides basic water quality treatment. The minimum treatment required for the project is basic treatment since the runoff discharges to a salt water body per Vol. 1, Appendix 1-C of the DOE Manual.

The project will create 2.805 acres of new plus replaced Pollution Generating Hard Surfaces (PGHS) and provide water quality treatment to 2.809 acres of PGHS.

There are three basins that include project improvements that will not receive water quality treatment due to the minimal new plus replaced PGHS or the elevation of the new or replaced PGHS that won't allow the use of the proposed treatment devices. To mitigate for the new plus replaced PGHS surface areas that won't receive water quality treatment, equivalent existing road surface areas in Market Street and 6th Street that do not currently receive water quality treatment will be treated. The addition of the equivalent surface areas allows the project to provide water quality treatment to an area of PGHS that is greater than the PGHS area proposed with the project.

The following provides a summary of the water quality treatment systems proposed:

Basin 1 – RV Park / Parking Lot:

Runoff from PGHS areas and vegetated surfaces in this basin are collected and routed to a Modular Wetland System (MWS) for treatment. The Modular Wetland System has a General Use Level Designation (GULD) from the Department of Ecology for Enhanced Treatment.

This basin includes the majority of the proposed RV Park and JKL Parking Lot improvement areas

The MWS is designed with the following input parameters:

Water Quality Treatment Basin:	3.348 ac
Water Quality Flowrate:	0.2033 cfs

The WWHM model report “2021.12.01 Onsite WQ” detailing the water quality flowrate for the basin is included in Appendix 8.

The Water Quality Basin exhibit is included in Appendix 5.

Basin 2 – Market Street:

Runoff from PGHS areas and vegetated surfaces in this basin are collected and routed to a Modular Wetland System (MWS) for treatment. The Modular Wetland System has a General Use Level Designation (GULD) from the Department of Ecology for Enhanced Treatment.

This basin includes the proposed Market Street widening as well as existing Market Street pavement areas.

The MWS is designed with the following input parameters:

Water Quality Treatment Basin:	0.849 ac
Water Quality Flowrate:	0.0288 cfs

The WWHM model report “2021.12.01 Market St WQ” detailing the water quality flowrate for the basin is included in Appendix 8.

The Water Quality Basin exhibit is included in Appendix 5.

Basin 6 – 6th Street:

Runoff from PGHS areas in this basin are collected and routed to a Stormfilter treatment system. The Stormfilter as proposed has a General Use Level Designation (GULD) from the Department of Ecology for Basic Treatment.

This basin includes the existing 6th Street improvements.

The Stormfilter manhole includes three 18-inch-tall cartridges filled with ZPG treatment media that meet basic water quality treatment requirements.

Water Quality Treatment Basin:	0.326 ac
Water Quality Flowrate:	0.0172 cfs
Cartridge Treatment Flow Rate:	7.5 GPM (0.0167 cfs)

Number of Cartridges Required: $0.0172 \text{ cfs} / 0.0167 \text{ cfs} = 1.03$ Cartridges = **2 Cartridges Required**

Cartridge treatment flowrates per cartridge used in calculation are based on Ecology's General use Level Designation for Basic Treatment dated April 2017 using 18-inch-tall cartridges.

The WWHM model report "2021.12.06 6th St WQ" detailing the water quality flowrate for the basin is included in Appendix 8.

The Water Quality Basin exhibit is included in Appendix 5.

TAB 7 – (MINIMUM REQUIREMENT 7 – FLOW CONTROL)

Runoff from the project site is conveyed through manmade conveyance systems from the site directly to the Puget Sound, an exempt receiving water. Flow control is not required nor proposed for the project. The following tables provide a summary of the pre-developed and post-developed flowrates for each basin and outfall system.

See the project basin maps in Appendix 5 for a detailed map showing the pre and post developed basin boundaries and area summaries.

Basin 1 – T Avenue North:

The T Avenue North basin was reduced in size and hard surfacing as a result of the project grading and drainage plan. The pre-developed basin totaled 2.025 ac and the post developed basin totals 1.216 ac. The area reduction reduces stormwater flow and volumes routed through the conveyance system to the basin outfall. The following table provides a peak flow summary for varying return periods in the pre-developed and post-developed basin conditions:

RETURN PERIOD	PRE-DEVELOPED (CFS)	POST-DEVELOPED (CFS)
2 year	0.398	0.267
5 year	0.576	0.377
10 year	0.711	0.458
25 year	0.901	0.570
50 year	1.057	0.661
100 year	1.226	0.759

Per the table above, the post-developed site conditions reduce the peak flow rates directed to the basin outfall and do not have an adverse effect on the existing conveyance system. The complete WWHM report “B1 T Ave North” is included in Appendix 8 for reference.

Basin 2 – East Conveyance System:

The East Conveyance System basin was increased in size as a result of the project grading and drainage plan. The pre-developed basin totaled 4.630 ac and the post developed basin totals 4.786 ac. The following table provides a peak flow summary for varying return periods in the pre-developed and post-developed basin conditions:

RETURN PERIOD	PRE-DEVELOPED (CFS)	POST-DEVELOPED (CFS)
2 year	1.112	1.076
5 year	1.587	1.535
10 year	1.941	1.876
25 year	2.436	2.353
50 year	2.840	2.742
100 year	3.274	3.162

The complete WWHM report “B2 East Conveyance” is included in Appendix 8 for reference

Basin 3 – West Conveyance System:

The East Conveyance System basin was increased in size as a result of the project grading and drainage plan. The pre-developed basin totaled 4.035 ac and the post developed basin totals 4.842 ac. The following table provides a peak flow summary for varying return periods in the pre-developed and post-developed basin conditions:

RETURN PERIOD	PRE-DEVELOPED (CFS)	POST-DEVELOPED (CFS)
2 year	1.027	1.136
5 year	1.460	1.604
10 year	1.782	1.950
25 year	2.231	2.431
50 year	2.597	2.821
100 year	2.991	3.240

The complete WWHM report “B3 West Conveyance” is included in Appendix 8 for reference

Basin 4 – Cap Sante Marina:

The Cap Sante Marina basin was reduced in size as a result of the project grading and drainage plan. The pre-developed basin totaled 1.529 ac and the post developed basin totals 1.375 ac. The following table provides a peak flow summary for varying return periods in the pre-developed and post-developed basin conditions:

RETURN PERIOD	PRE-DEVELOPED (CFS)	POST-DEVELOPED (CFS)
2 year	0.216	0.187
5 year	0.325	0.289
10 year	0.411	0.372
25 year	0.538	0.495
50 year	0.646	0.603
100 year	0.767	0.724

The complete WWHM report “B4 Cap Sane Marina” is included in Appendix 8 for reference

TAB 8 – (MINIMUM REQUIREMENT 8 – WETLAND PROTECTION)

Stormwater runoff from the project site is collected and routed through manmade conveyance systems to outfall locations in the Puget Sound. There are no wetlands affected by this project, wetland protection does not apply.

TAB 9 – (MINIMUM REQUIREMENT 9 – OPERATION AND MAINTENANCE)

Attached to this section are the Ecology Maintenance standards and Stormfilter Inspection and Maintenance instructions.

The attached maintenance guidelines cover the following onsite elements:

- Catch Basins
- Manufactured Media Filters
- Contech Stormfilters

The above listed elements shall be inspected and maintained in accordance with the attached documents by the facility owners.

The project is required to record a Drainage BMP Facilities Maintenance Covenant for the Permanent Storm Water Facilities. These maintenance and operations documents shall be included in the recorded document. The City of Anacortes Public Works Engineering Department will draft agreement prior to recording.

No. 5 – Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.	No Trash or debris located immediately in front of catch basin or on grate opening.
		Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe.	No trash or debris in the catch basin.
		Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.	Inlet and outlet pipes free of trash or debris.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (Intent is to make sure no material is running into basin).	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound.	Basin replaced or repaired to design standards.
		Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Pipe is regouted and secure at basin wall.
	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening.	No vegetation blocking opening to basin.
		Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation or root growth present.
	Contamination and Pollution	See "Detention Ponds" (No. 1).	No pollution present.

No. 5 – Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Catch basin cover is closed.
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.

No. 6 – Debris Barriers (e.g., Trash Racks)

Maintenance Components	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash and Debris	Trash or debris that is plugging more than 20% of the openings in the barrier.	Barrier cleared to design flow capacity.
Metal	Damaged/ Missing Bars.	Bars are bent out of shape more than 3 inches.	Bars in place with no bends more than 3/4 inch.
		Bars are missing or entire barrier missing.	Bars in place according to design.
		Bars are loose and rust is causing 50% deterioration to any part of barrier.	Barrier replaced or repaired to design standards.
	Inlet/Outlet Pipe	Debris barrier missing or not attached to pipe	Barrier firmly attached to pipe

No. 15 – Manufactured Media Filters)

Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Below Ground Vault	Sediment Accumulation on Media	Sediment depth exceeds 0.25-inches.	No sediment deposits which would impede permeability of the compost media.
	Sediment Accumulation in Vault	Sediment depth exceeds 6-inches in first chamber.	No sediment deposits in vault bottom of first chamber.
	Trash/Debris Accumulation	Trash and debris accumulated on compost filter bed.	Trash and debris removed from the compost filter bed.
	Sediment in Drain Pipes/Clean-Outs	When drain pipes, clean-outs, become full with sediment and/or debris.	Sediment and debris removed.
	Damaged Pipes	Any part of the pipes that are crushed or damaged due to corrosion and/or settlement.	Pipe repaired and/or replaced.
	Access Cover Damaged/Not Working	Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover.	Cover repaired to proper working specifications or replaced.
	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab	Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.	Vault replaced or repairs made so that vault meets design specifications and is structurally sound.
		Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.	Vault repaired so that no cracks exist wider than 1/4-inch at the joint of the inlet/outlet pipe.
	Baffles	Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person.	Baffles repaired or replaced to specifications.
Below Ground Cartridge Type	Access Ladder Damaged	Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, and misaligned.	Ladder replaced or repaired and meets specifications, and is safe to use as determined by inspection personnel.
	Media	Drawdown of water through the media takes longer than 1 hour, and/or overflow occurs frequently.	Media cartridges replaced.
	Short Circuiting	Flows do not properly enter filter cartridges.	Filter cartridges replaced.

StormFilter Inspection and Maintenance Procedures



Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. Inspection

- Inspection of the vault interior to determine the need for maintenance.

2. Maintenance

- Cartridge replacement
- Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.



In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..



Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered)

1. Sediment loading on the vault floor.
 - a. If $>4"$ of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
 - a. If $>1/4"$ of accumulation, maintenance is required.
3. Submerged cartridges.
 - a. If $>4"$ of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
 - a. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
 - a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
 - a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
 - a. If pronounced scum line (say $\geq 1/4"$ thick) is present above top cap, maintenance is required.



Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

- A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

- B. Remove the used cartridges (up to 250 lbs. each) from the vault.



Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

- C. Set the used cartridge aside or load onto the hauling truck.
- D. Continue steps a through c until all cartridges have been removed.

Method 2:

- A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.
- B. Unscrew the cartridge cap.
- C. Remove the cartridge hood and float.
- D. At location under structure access, tip the cartridge on its side.
- E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.
- F. Set the empty, used cartridge aside or load onto the hauling truck.
- G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Related Maintenance Activities - Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.



Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.



Inspection Report

Date: Personnel:

Location: System Size:

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

Sediment Thickness in Forebay: Date:

Sediment Depth on Vault Floor:

Structural Damage:

Estimated Flow from Drainage Pipes (if available):

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water:

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal:

☐ Minor Structural Repairs:

☐ Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source:

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source:

Erosion of Landscaped Areas: Yes ☐ No ☐ Source:

Items Needing Further Work:

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

List Safety Procedures and Equipment Used: _____

System Observations

Months in Service: _____

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?): _____

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:



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Support

- Drawings and specifications are available at www.conteches.com.
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Stormfilter Inspection and Maintenance Procedures 8/2016

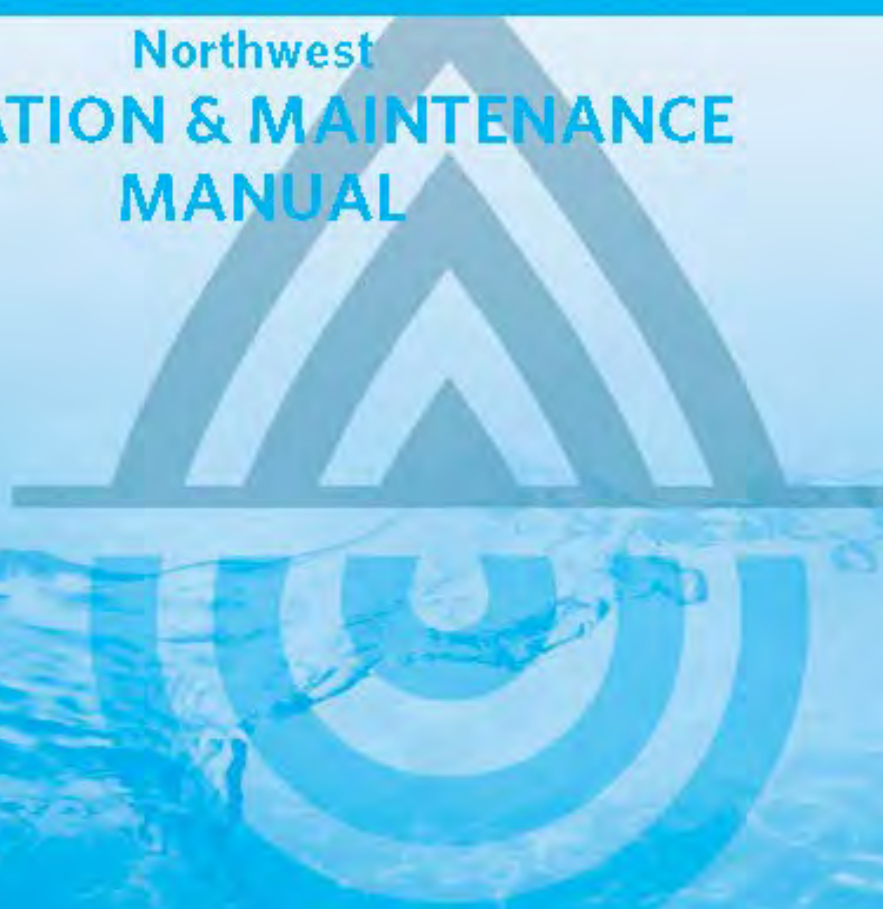
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Modular Wetlands® Linear

A Stormwater Biofiltration Solution

Northwest OPERATION & MAINTENANCE MANUAL



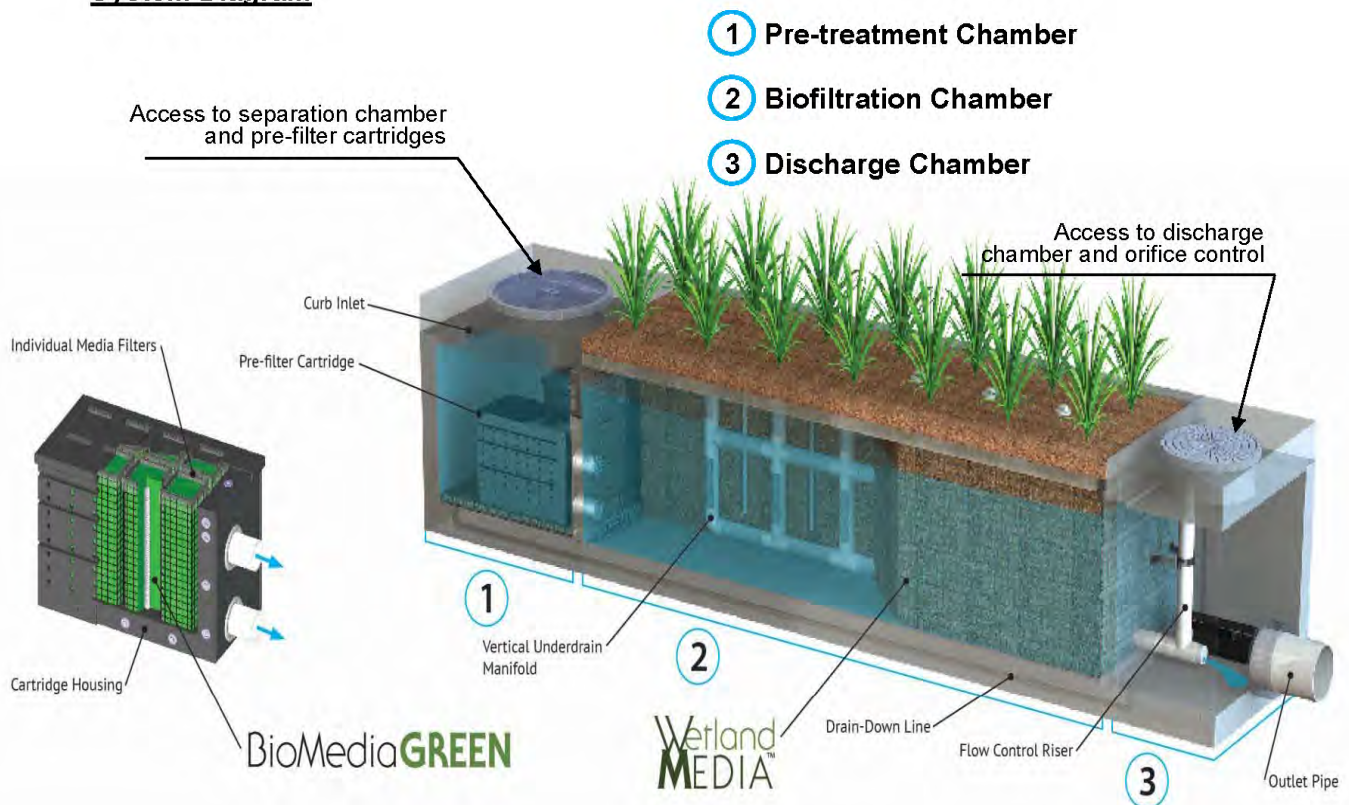


Inspection Guidelines for Modular Wetland System - Linear

Inspection Summary

- Inspect Pre-Treatment, Biofiltration and Discharge Chambers – average inspection interval is 6 to 12 months.
 - *(15 minute average inspection time).*
- NOTE: Pollutant loading varies greatly from site to site and no two sites are the same. Therefore, the first year requires inspection monthly during the wet season and every other month during the dry season in order to observe and record the amount of pollutant loading the system is receiving.

System Diagram



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Inspection Overview

As with all stormwater BMPs inspection and maintenance on the MWS Linear is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the MWS Linear:

- Modular Wetland Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- 7/16" open or closed ended wrench.
- **Large permanent black marker (initial inspections only – first year)**
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.



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Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the MWS Linear are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long term inspection and maintenance interval requirements.

The MWS Linear can be inspected through visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of trash, debris and sediment accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick estimate the amount of trash, debris and sediment in this chamber. Record this depth on the inspection form.

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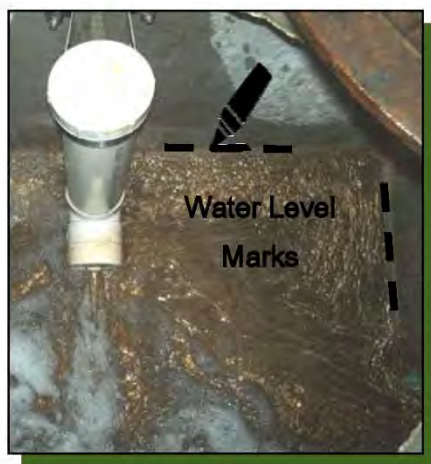
- Through visual observation inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediments on the cartridges, any build-up on the top of the cartridges, or clogging of the holes. Record this information on the inspection form. The pre-filter cartridges can further be inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber – see notes above regarding confined space entry). Record the color of the material. New material is a light green in color. As the media becomes clogged it will turn darker in color, eventually becoming dark brown or black. Using the below color indicator record the percentage of media exhausted.



- The biofiltration chamber is generally maintenance free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection and indicate through visual observation or digital photographs if trimming of the vegetation is needed.
- The discharge chamber houses the orifice control structure and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak HGL). The water level of the flowing water should be compared to the watermark level on the side walls which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form is there is any difference in level from watermark in inches.

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- NOTE: During the first few storms the water level in the outflow chamber should be observed and a 6" long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where a line should be drawn. This line is a reference point for future inspections of the system:



Using a permanent marker draw a 6 inch long horizontal line, as shown, at the higher water level in the MWS Linear discharge chamber.

- Water level in the discharge chamber is a function of flow rate and pipe size. Observation of water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when system is at 100% capacity (water level at maximum level in pre-treatment chamber). If future water levels are below this mark when system is at 100% capacity this is an indicator that maintenance to the pre-filter cartridges may be needed.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

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Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet or outlet.
- Excessive accumulation of floatables in the pre-treatment chamber in which the length and width of the chamber is fully impacted more than 18".



- Excessive accumulation of sediment in the pre-treatment chamber of more than 6" in depth.



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- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pre-filter cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged replacement is required.



- Overgrown vegetation.



- Water level in discharge chamber during 100% operating capacity (pre-treatment chamber water level at max height) is lower than the watermark by 20%.

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Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

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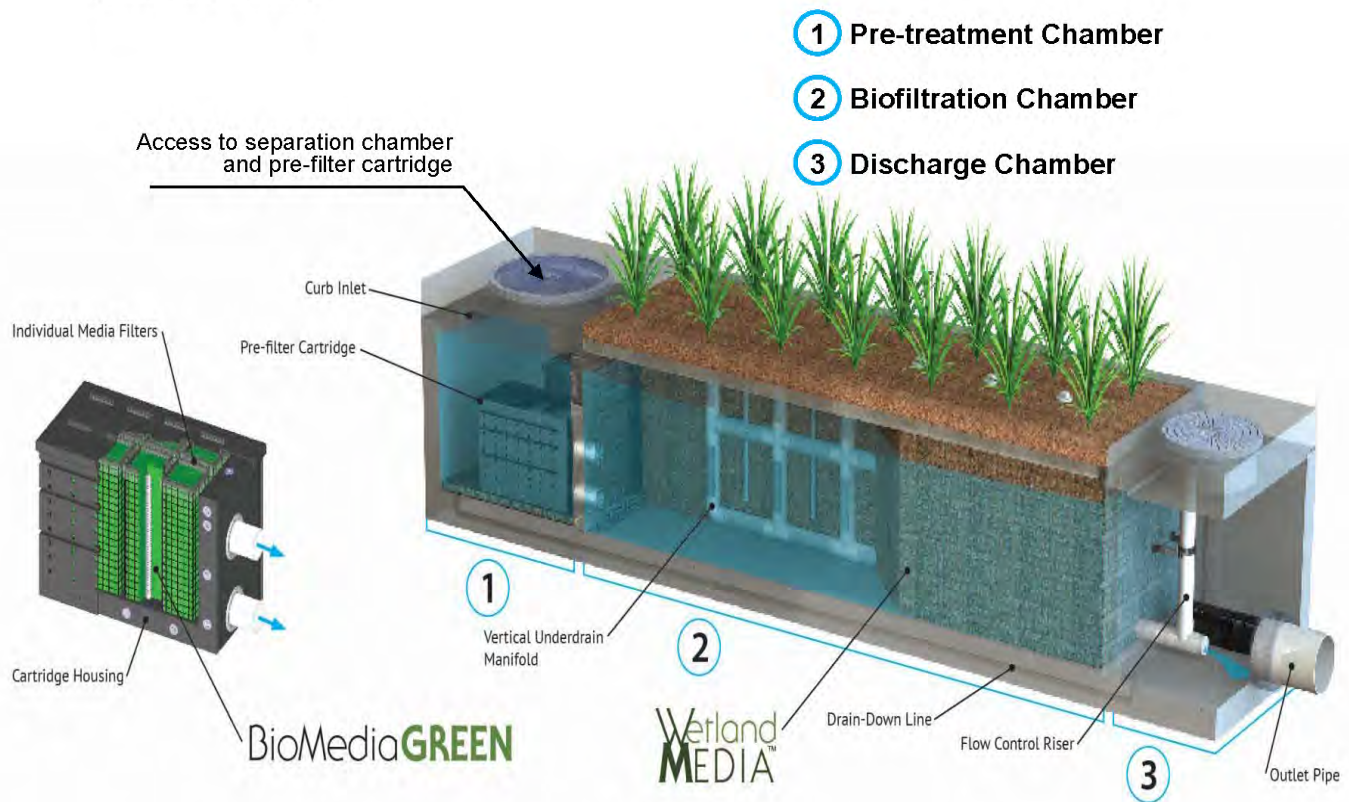


Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Sediment from Pre-Treatment Chamber – average maintenance interval is 12 to 24 months.
 - *(10 minute average service time).*
- Replace Pre-Filter Cartridge Media – average maintenance interval 12 to 24 months.
 - *(10-15 minute per cartridge average service time).*
- Trim Vegetation – average maintenance interval is 6 to 12 months.
 - *(Service time varies).*

System Diagram



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Maintenance Overview

The time has come to maintain your Modular Wetland System Linear (MWS Linear). To ensure successful and efficient maintenance on the system we recommend the following. The MWS Linear can be maintained by removing the access hatches over the systems various chambers. All necessary pre-maintenance steps must be carried out before maintenance occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once traffic control has been set up per local and state regulations and access covers have been safely opened the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepare a pre-checks (OSHA, safety, confined space entry) are performed.

Maintenance Equipment

Following is a list of equipment required for maintenance of the MWS Linear:

- Modular Wetland Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight and eye protection.
- 7/16" open or closed ended wrench.
- Vacuum assisted truck with pressure washer.
- Replacement BioMediaGREEN for Pre-Filter Cartridges if required (order from manufacturer).



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Maintenance Steps

1. Pre-treatment Chamber (bottom of chamber)

- A. Remove access hatch or manhole cover over pre-treatment chamber and position vacuum truck accordingly.
- B. With a pressure washer spray down pollutants accumulated on walls and pre-filter cartridges.
- C. Vacuum out Pre-Treatment Chamber and remove all accumulated pollutants including trash, debris and sediments. Be sure to vacuum the floor until pervious pavers are visible and clean.
- D. If Pre-Filter Cartridges require media replacement move onto step 2. If not, replace access hatch or manhole cover.



Removal of access hatch to gain access below.



Insertion of vacuum hose into separation chamber.



Removal of trash, sediment and debris.



Fully cleaned separation chamber.

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2. Pre-Filter Cartridges (attached to wall of pre-treatment chamber)

- A. After finishing step 1 enter pre-treatment chamber.
- B. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.



Pre-filter cartridges with tops on.



Inside cartridges showing media filters ready for replacement.

- C. Place the vacuum hose over each individual media filter to suck out filter media.



Vacuuming out of media filters.

- D. Once filter media has been sucked use a pressure washer to spray down inside of the cartridge and it's containing media cages. Remove cleaned media cages and place to the side. Once removed the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.

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- E. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture provided refilling tray and place on top of cartridge. Fill tray with new bulk media and shake down into place. Using your hands slightly compact media into each filter cage. Once cages are full removed refilling tray and replace cartridge top ensuring bolts are properly tightened.



Refilling tray for media replacement.



Refilling tray on cartridge with bulk media.



- F. Exit pre-treatment chamber. Replace access hatch or manhole cover.

3. Biofiltration Chamber (middle vegetated chamber)

- A. In general, the biofiltration chamber is maintenance free with the exception of maintaining the vegetation. Using standard gardening tools properly trim back the vegetation to healthy levels. The MWS Linear utilizes vegetation similar to surrounding landscape areas therefore trim vegetation to match surrounding vegetation. If any plants have died replace plants with new ones:



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Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

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Inspection Form



Modular Wetland System, Inc.

P. 760.433-7640

F. 760-433-3176

E. Info@modularwetlands.com

www.modularwetlands.com



Maintenance Report



Modular Wetland System, Inc.

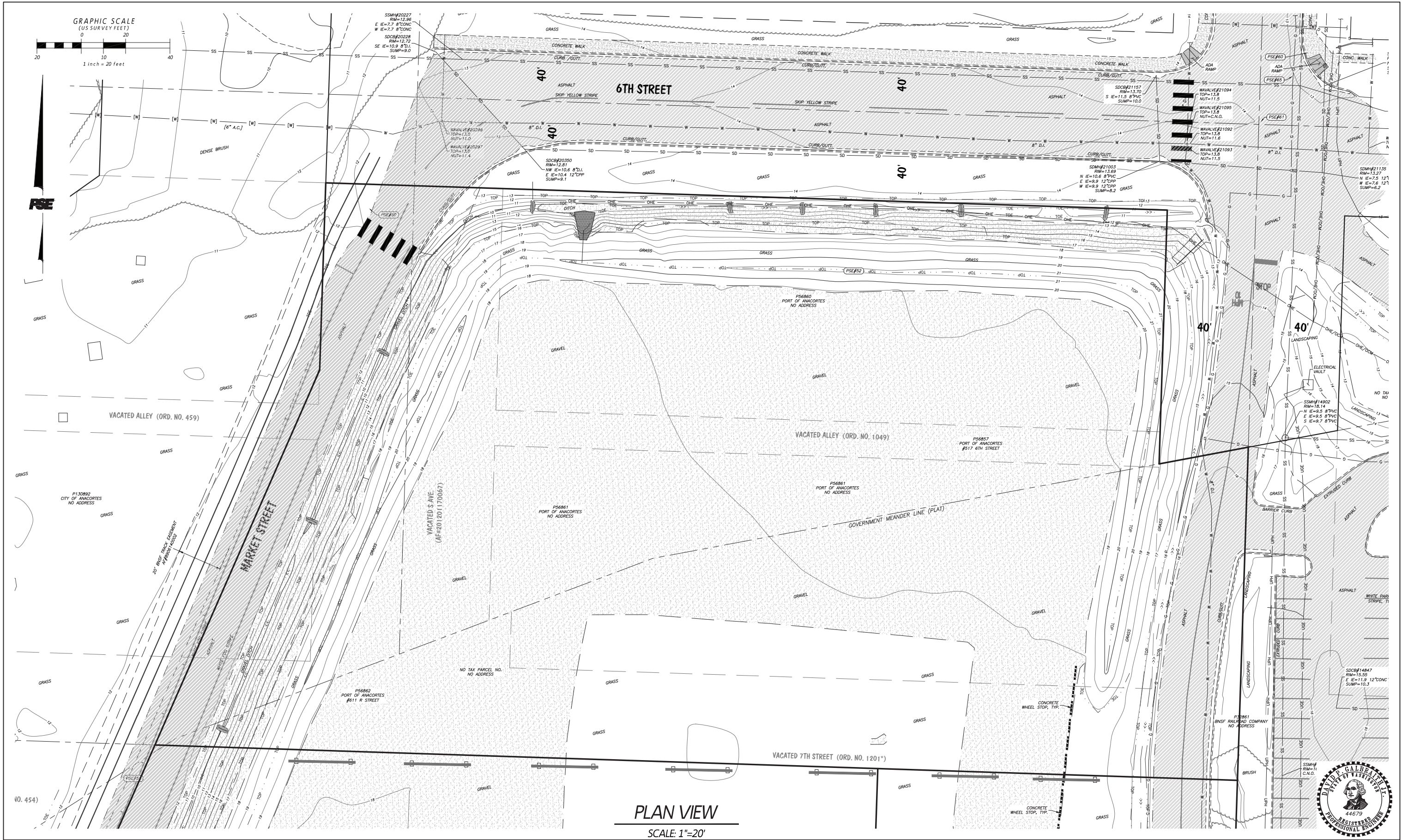
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APPENDIX 1 – Survey performed by a Professional Land Surveyor



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NO.	DATE	BY	REVISION

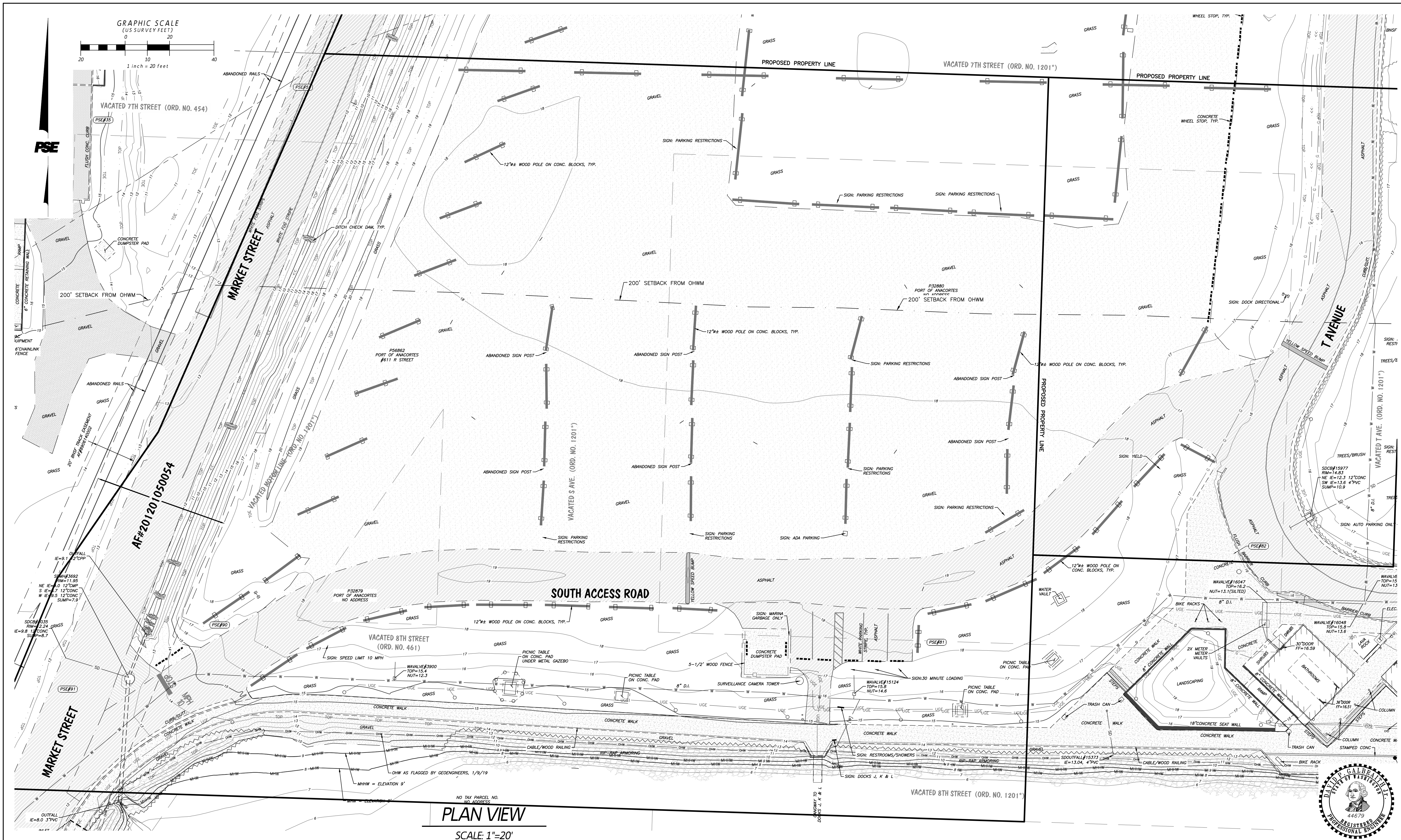


CAP SANTE - RV PARK IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

EXISTING CONDITIONS

DRAWN: JG	PROJECT NO.:2020064
DESIGN: JG	SCALE: 1"=20'
CHECKED: DG	DATE: 12/23/2021
SHEET NO.	

C02 OF 22



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NO.	DATE	BY	REVISION
1.	12/10/21	JG	SHORELINE / SITE PLAN REVIEW



CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

DRAWN: JG PROJECT NO.: 2020064
DESIGN: JG SCALE: 1"=20'
CHECKED: DG DATE: 12/17/2021
SHEET NO.

02 OF 06

**Preliminary Geotechnical Engineering
Services**

Cap Sante Marina North and West Basin
Upland Redevelopment Project
Anacortes, Washington

for
Port of Anacortes

January 10, 2020



600 Dupont Street
Bellingham, Washington 98225
360.647.1510

Preliminary Geotechnical Engineering Services
Cap Sante Marina North and West Basin
Upland Redevelopment Project

File No. 05147-031-00

January 10, 2020

Prepared for:

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Anacortes, Washington 98221

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1.0 INTRODUCTION

This report presents the results of GeoEngineers, Inc.'s (GeoEngineers') preliminary geotechnical engineering services for the planned Cap Sante Marina North and West Basin Upland Redevelopment project to be located in Anacortes, Washington. The redevelopment of this area has been identified as an important future area of development for the Port of Anacortes (Port). The approximate project location is shown in the Vicinity Map (Figure 1) and the existing site conditions relative to surrounding site features are shown in the Site and Exploration Plan (Figure 2).

Our scope of services for this report included reviewing available geotechnical information near the site, drilling 17 geotechnical borings throughout the project site, completing laboratory testing on the samples obtained from the borings, and providing preliminary geotechnical conclusions and recommendations for planning-level design of the proposed development. Our geotechnical engineering services were completed in general accordance with our Agreement for Professional Services Task Order 75-19 dated September 24, 2019, which was authorized by Brenda Treadwell with the Port of Anacortes on October 4, 2019.

2.0 PROJECT DESCRIPTION

As currently envisioned the project will have several different elements in the two project areas, including the following:

West Basin

- A new event center with associated public space and surface parking. The event center is planned to be one-story.
- Extension of the waterfront esplanade.
- Realignment of 9th Street and R Avenue upland from Cap Sante Marina as a new Truck route.

North Basin

- A new recreational vehicle (RV) park.
- Future hotel which is not included in this study.

3.0 SITE DESCRIPTION

3.1. Surface Conditions

The site is located in the marine district east of downtown Anacortes. The North and West Basins were created by filling intertidal areas. Original development included a railroad trestle/embankment across tidal mudflats. Filling was likely accomplished by a variety of methods including placement of dredged material from the adjacent waterway and conventional land-based filling closer to shore.

The West Basin currently consists of a graveled surface and paved parking areas, an active dog park, and manicured lawn. The West Basin is bounded by 9th Street to the north, Cap Sante Marina to the east, 11th Street to the south, and Q Avenue to the west. The existing gravel parking slopes down to the east with a grade change of approximately 4 feet to the historic rail alignment which crosses the basin diagonally.

The area to the east of the historic rail alignment is relatively level with a very slight slope east toward the water.

The North Basin consists of a paved parking area, Port bathroom and laundry facilities, and a large gravel parking lot that is raised above surrounding grades by several feet. The North Basin is bounded by 6th Avenue to the north, paved parking to the east, Cap Sante Marina to the south, and R Avenue to the west. Historical abandoned rail lines are still present at site grades with the western portion of this development area.

The shoreline along both basins is lined with a sidewalk and short retaining walls or rockeries. Most existing structures within the project area were/are supported on pile foundations. The early era structures also typically had/have timber pile foundation support. Most of the piles in the offshore area gain capacity as friction piles.

3.2. Geology

We reviewed a Washington State Department of Natural Resources (DNR) map for the project area, “Geologic Map of The Bellingham 1:100,000 Quadrangle, Washington” by Lapen (2000). The geologic map indicates that the project site is in an area mapped as artificial fill, which generally occurred in the 1950s. The site is a previous beach and intertidal area and therefore the upper native soils are a combination of beach and intertidal deposits. The other known geologic units in increasing age include, glaciomarine drift, glacially consolidated deposits and bedrock. The various geologic units and generalized geotechnical properties interpreted based on review of existing data are discussed below.

Fill in the project vicinity is variable in composition and ranges from sand to clay derived from various marine dredging and upland sources. The fill is generally loose/soft, compressible, and with low shear strength. Granular fill zones can be moderately to highly susceptible to soil liquefaction where located below the water table.

Although not mapped at the site, historical beach/intertidal deposits underlie the fill and consist primarily of loose to medium dense sand and silty sand with interbedded silt or clay layers. The intertidal deposits are moderately compressible, with low shear strength, and the granular zones are highly susceptible to liquefaction.

Glaciomarine drift is mapped west of the site and was encountered underlying artificial fill and/or beach/intertidal deposits and in our explorations as described below. Glaciomarine drift typically consists of unsorted, unstratified silt and clay with varying amounts of sand, gravel, cobbles and occasional boulders. Glaciomarine drift is derived from sediment melted out of floating glacial ice that was deposited on the sea floor during periods of glacial retreat, while the land surface was depressed 500 to 600 feet from previous glaciations. This material locally contains shells, wood and large erratics (boulders), and can be present sporadically or even in a cluster.

Glacially consolidated deposits encountered at the site consisted of very stiff to hard silt with variable sand content. The soil density is due to glacial processes resulting in significant consolidation. This unit has high shear strength and low compressibility characteristics.

Bedrock is mapped at the ground surface east of the site. The bedrock is mapped as part of the Lummi Formation which consists of marine metasedimentary rock. The Lummi Formation is metamorphosed

pebble conglomerate, sandstone, and/or mudstone. The formation was deposited during the early Cretaceous to late Jurassic age (140 to 150 million years before present).

3.3. Field Explorations

Subsurface soil and groundwater conditions were evaluated by completing 17 geotechnical borings, B-1 through B-17, on November 11 through 14, 2019 using a track-mounted drill rig subcontracted to GeoEngineers. The borings were completed to depths of 11½ to 101½ feet below the existing ground surface (bgs). The locations of the explorations are shown in Figure 2. Details of the field exploration program, laboratory testing, and boring logs are presented in Appendix A.

3.4. Subsurface Conditions

3.4.1. Soil Conditions

The general soil profile encountered at the site generally consists of uncontrolled fill overlying a transition zone of possible intertidal/beach or glaciomarine drift deposits, overlying glacially consolidated deposits. Surface conditions varied across the site, generally consisting of 2 to 3 inches of sod, crushed rock, railroad ballast, or asphalt concrete. Generalized cross sections for the West Basin (A-A') and North Basin (B-B') are presented in Figures 3 and 4, respectively.

Fill: Fill soils were encountered in all explorations to depths of approximately 9 to 14 feet bgs. Fill in the project vicinity is variable in composition, ranging from soils derived from dredging and variable silt, sand, gravel, and debris from upland sources. The fill soils encountered in our explorations generally consisted of loose to medium dense sand with variable silt content; soft to medium stiff silt; and clay with variable sand and gravel content; gravel; and spalls. Scattered zones of organic matter, wood shavings, and wood debris were encountered in several of the borings. Occasional debris consisting of bricks, plastic, and shell fragments were also observed in some of the fill. The engineering characteristics of the fill will be variable. The fine-grained portion of the fill is generally loose/soft, compressible, with low shear strength. The granular portions of the fill are loose and moderately to highly susceptible to soil liquefaction below the water table. Borings B-1, B-4, B-7, B-8, and B-9 in the West Basin area, and B-11 through B-17 in the North Basin area, all terminated in the fill unit.

Transition Zone: A transition zone was observed in borings B-2, B-3, B-5, B-6, and B-10 to depths ranging from 18 to 24 feet bgs. The beach/intertidal deposits and glaciomarine drift are the result of a dynamic depositional and historic intertidal environment; therefore, we grouped them together as a “transition zone” unit for purposes of this report. The transition zone generally consisted of medium stiff clay with variable sand, medium dense sand with silt, very loose sandy silt, and stiff silt. Shell fragments were observed in portions of this unit.

Glacially Consolidated Deposits: Glacially consolidated soils were encountered below the transition zone in borings B-2, B-3, B-5, B-6, and B-10. The glacially consolidated deposits encountered in our borings generally consisted of very stiff to hard sandy silt with variable sand content and dense to very dense fine to medium sand with variable silt content. The unit was predominantly homogenous with limited layering or stratification. Each of the explorations that encountered these soils, terminated in this unit.

3.4.2. Groundwater Conditions

Groundwater seepage was encountered in borings B-1 through B-6, B-10, B-13, B-14, B-16, and B-17 at depths ranging from 6.5 to 10 feet bgs. Monitoring wells were installed to monitor groundwater levels in borings B-3 and B-16 and are listed in Table 1 below. Groundwater monitoring was completed with dataloggers and supplemented by manual readings during installation and retrieval of the data loggers. Data plots of water levels, tide levels and precipitation are presented in Figures 5 and 6. Groundwater conditions should be expected to vary as a function of season, precipitation, and other factors including local tides in Fidalgo Bay.

TABLE 1. GROUNDWATER LEVEL MEASUREMENTS

Exploration No.	Date of Groundwater Measurement	Approximate Ground Surface Elevation ¹ (feet)	Measured Depth to Groundwater (feet)	Approximate Groundwater Elevation ¹ (feet)
B-3	December 5, 2019	13	3.34	9.46
	January 6, 2020		2.86	9.94
B-16	December 5, 2019	18	4.63	13.17
	January 6, 2020		3.21	14.59

Notes:

¹ Elevation datum is NAVD88.

3.5. Chemical Analytical Testing

Chemical analytical testing was completed on composite samples collected from drums of soil cuttings derived during the explorations to provide characterization for disposal. The composite samples were placed in laboratory-prepared vials/jars for chemical analytical testing at OnSite Environmental, Inc. (OnSite). Samples were tested for metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), PAHs, gasoline and diesel-range organics and/or lube oil. When detected in the samples, all metals were at or below Model Toxics Control Act (MTCA) Method A or B cleanup levels. Diesel-range organics were also below MTCA Method A cleanup levels. Additional details are provided in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

A summary of the primary site preparation, design, and construction considerations for the proposed project is provided below. The summary is presented for introductory purposes and should only be used in conjunction with the complete recommendations presented in this report.

- A Site Class E in accordance with the 2015 International Building Code (IBC) is appropriate for design.
- Portions of the saturated granular fill are slightly susceptible to liquefaction-induced settlement during a design-level earthquake with estimated 2 to 3 inches of post-seismic settlement following a large design-level earthquake. Lateral spreading varies from a few inches to more than 1 foot along the shoreline. Foundation recommendations provided in this report will mitigate for the seismic hazard.
- We recommend that foundation options be evaluated based on design loads and preliminary cost estimates. Feasible options include.
- Shallow spread footings or grade beams over ground improved soil.

- Structural mat foundation over ground improved soil.
- Pile foundations with ground improvement for lateral support.
- Slab-on-grade may be supported over ground improvement. Existing fill soils are not suitable for slab support.
- Stormwater infiltration is not feasible based on depth to groundwater and variable fine-grained fill material.
- Pavements are feasible with adequate subgrade preparation and pavement section based on intended use such as haul road or parking areas.
- We recommend that where fill is required for the west basin, it be placed as a preload at least 10 weeks in advance of starting hardscape or pavement construction to consolidate the compressible fill and transition soils.
- Existing fill soils in the north basin are not suitable for reuse as structural fill. Grade changes should be optimized to reduce import and export costs.
- Excavations into existing fill soils can generally be completed using conventional earthwork equipment. Although not encountered in our explorations, oversized materials including boulder and cobble sized particles and wood and other construction debris could be encountered in the fill. The contractor should be prepared to handle oversized debris in deeper excavations.
- Dewatering is anticipated to be limited to utility installation.

4.1. Seismic Design Considerations

4.1.1. Seismic Hazards

The Puget Sound region is a seismically active area. The 2018 IBC requires incorporation of structural and/or foundation considerations into the project to adequately mitigate effects of seismic shaking on the proposed structures. We evaluated the site for seismic hazards including liquefaction, lateral spreading, and fault rupture. Our evaluation indicates that some of the saturated fill soils at the site are susceptible to liquefaction as discussed in the following sections.

There is a fault mapped through the middle of the North Basin as shown in Figure 7. The fault is described as “unknown offset – identity and existence certain, location concealed” on the Washington Geologic Information Portal 1:100,000 scale map. Risk of surface rupture should be evaluated further depending on final selected locations of proposed structures in the North Basin area. The risk of fault rupture decreases for structures as the distance from the mapped fault increases. Therefore, the risk is lower for the West Basin.

4.1.2. 2015 International Building Code Seismic Design Information

We anticipate the project will be designed utilizing the 2018 IBC. The 2018 IBC references the 2016 Minimum Design Loads for Buildings and Other Structures (ASCE 7-16). Per ASCE 7-16 Section 11.4.8, a ground motion hazard analysis or site-specific response analysis is required to determine the design ground motions for structures on Site Class E sites with S_1 greater than or equal to 0.2g. For this project, the site is classified as Site Class E with an S_1 value of 0.417g; therefore, this provision applies. Alternatively, the parameters listed in Table 2 below may be used to determine the design ground motions if Exception 2 of Section 11.4.8 of ASCE 7-16 is used. Using this exception, the seismic response coefficient (C_s) is

determined by Equation (Eq.) (12.8-2) for values of $T \leq 1.15T_s$, and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.15T_s$ or Eq. (12.8-4) for $T > T_L$, where T represents the fundamental period of the structure and $T_s=0.71$ sec. If requested, we can complete a site-specific seismic response analysis which might provide reduced seismic demands from the parameters in Table 2 and the requirements for using Exception 2 of Section 11.4.8 in ASCE 7-16.

TABLE 2. MAPPED 2018 IBC SEISMIC DESIGN PARAMETERS

Seismic Design Parameters	Recommended Value ^{1, 2}
Site Class	E
Mapped Spectral Response Acceleration at Short Period (S_s)	1.122g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.398g
Site Modified Peak Ground Acceleration (PGA_M)	0.594g
Site Amplification Factor at 0.2 second period (F_a)	1.2
Site Amplification Factor at 1.0 second period (F_v)	2.4
Design Spectral Acceleration at 0.2 second period (S_{DS})	0.898g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.637g

Note:

¹ Parameters developed based on Latitude 48.513898° and Longitude -122.60954° using the ATC Hazards online tool.

² These values are only valid if the structural engineer utilizes Exception 2 of Section 11.4.8 (ASCE 7-16).

4.1.3. Liquefaction Potential

Liquefaction is a phenomenon where soils experience a rapid loss of internal strength as a consequence of strong ground shaking. Ground settlement, lateral spreading and/or sand boils may result from liquefaction. Structures supported on liquefied soils could suffer foundation settlement or lateral movement that could be severely damaging to the structures. Conditions favorable to liquefaction occur in loose to medium dense, clean to moderately silty sand that is below the groundwater level. Dense soils/bedrock or soils that exhibit cohesion (e.g. clay) are generally considered not to be susceptible to liquefaction.

The fill soils underlying the site include saturated loose to medium dense sand with variable silt content and were observed in the majority of the site explorations. The presence of the saturated, loose sandy soils underlying portions of the site creates a high liquefaction potential at this site.

The evaluation of liquefaction potential is complex and is dependent on numerous site parameters, including soil grain size, soil relative density, site geometry, static stresses, and the magnitude and ground acceleration of the design-level earthquake. Typically, the liquefaction potential of a site is evaluated by comparing the cyclic shear stress ratio (the ratio of the cyclic shear stress to the initial effective overburden stress) induced by an earthquake to the cyclic shear stress ratio required to cause liquefaction. The cyclic shear stress ratio required to cause liquefaction was estimated using an empirical procedure based on the in-situ static ground stresses, the data obtained from the borings, and a design earthquake with a moment magnitude of 7.28 and a peak horizontal ground acceleration of 0.42g. The design earthquake parameters were developed using published hazard maps associated with a maximum credible earthquake (MCE) event that has a 2 percent chance of exceedance in a 50-year period (2,475-year event) as required by IBC.

The subsurface data was evaluated in accordance with methodology presented in Youd and Idriss (2001). Our analysis indicates that portions of the saturated fill have a high potential for liquefaction during the design earthquake. Settlement for an MCE event is predicted to be on the order of 2 to 3 inches at the project site without mitigation. Settlement for a lower level event (LLE) that has a 10 percent probability of exceedance in 50 years (return period of 475 years) is estimated to be about half of the MCE event, or ½ to 1 inch.

4.1.4. Lateral Spreading

In addition to settlements, there is the possibility that lateral spreading of the soils could occur as a result of soil liquefaction. Lateral spreading involves lateral displacement of large, surficial blocks of non-liquefied soil, as well as the liquefied soil itself, as the underlying soil layer liquefies. Lateral spreading generally develops in areas where sloping ground is present or near a free face, such as the Cap Sante Marina. If liquefaction were to occur within the upper soils at the site, we anticipate that there would be a moderate potential for lateral spreading to occur, characterized by movement of the soils towards the marina. During a design earthquake, lateral spread displacements across the site are estimated to range from a few inches at upland portions of the east and west basin to over 1 foot near the marina, without mitigation.

4.1.5. Seismic Mitigation

In nearshore environments such as this site, a combination of overexcavation and replacement, ground improvement technologies, rigid grade-beam or mat foundations, and/or use of pile supported foundations will effectively mitigate the liquefaction seismic hazards.

The upper unsaturated fill soils will provide some separation between the foundations and the liquefaction zone, but may not be sufficient to preserve bearing capacity, especially for large/heavily loaded foundations. Additionally, ground subsidence of the site and surrounding area will likely occur as a result of a large design earthquake. The liquefaction risk can be fully mitigated by either (a) performing ground improvements such as vibroreplacement (stone columns) or (b) pile supporting the structure and implementing some level of ground improvement for lateral pile support especially along the shoreline. The vibroreplacement technique results in densifying the liquefiable sands, provides rigid stone columns for bearing support, and provides rapid drainage paths to dissipate pore pressures.

4.2. Foundation Support

The foundation conditions at the proposed event center were variable but generally included loose/soft fill and soft transition zone overlying hard glacially consolidated silt layer at approximately Elevation -4 to -7 feet. These soils would provide relatively low bearing capacity and be subject to post-construction settlement under static conditions. As previously described, seismic hazard/liquefaction can also result in loss of bearing capacity and additional settlement. Mitigation for these effects will likely require supporting the proposed Event Center on a pile foundation or performing ground improvement prior to construction of a shallow spread footing or mat foundation system.

We are not able to present specific foundation design conclusions and recommendations for the Event Center and other site structures because specific structure, foundation loading, or settlement tolerances have not been developed identified at this stage of design. A discussion of conceptual-level foundation design recommendations are provided in the following sections. Selection of a foundation alternative will require additional analysis, coordination and cost comparisons.

4.2.1. Shallow Foundations

Conventional shallow foundations are not recommended for use in areas of existing compressible and liquefiable fill and transition deposits without mitigation. If shallow foundations are used, they should be constructed directly overlying ground improved soils as discussed in Section 4.3. It is likely that this option will only be feasible for lightly loaded areas with short spans and may or may not require grade beams. Risk of differential settlement between footings and slab-on-grade should be considered evaluated in detail. Larger spans will have larger loads and footing sizes such that a mat foundation would likely be required to reduce bearing pressures, and control total and differential settlements. Allowable bearing pressures for ground improvement will depend on the type and spacing of the improvement; we expect allowable bearing pressures on the order of 3,000 to 4,000 pounds per square foot (psf) could be achieved based on previous experience.

A shallow grade beam foundation over ground improvement with an independent slab-on-grade would result in more conventional construction methods and flexibility of below-grade utilities. Risk of differential settlement after a seismic event could result in damage requiring repairs.

4.2.1.1. Mat Foundations

A mat foundation would be appropriate for structures supported on ground improved soils as discussed in Section 4.3. A mat foundation typically consists of a monolithic, thick concrete slab with multiple layers of steel reinforcement that serves to distribute the column loads and provide support of the lower floor. The purpose of a mat foundation is to tie the foundations into a rigid unit that will distribute foundation loads over a wider area and reduce differential settlement between individual foundation elements. In some instances, a mat foundation can be designed to “float” and bridge expected differential settlement resulting from variable magnitudes of static and liquefaction-induced settlement. The mat foundation is typically thick, 18 to 24 inches or more, with multiple layers of steel reinforcement. The mat foundation will require construction over a uniform subgrade, typically 12 to 24 inches of crushed rock.

Mat foundations require significant coordination during design and construction for below-grade utilities. Additionally, future alterations are difficult due to the thick reinforced concrete that functions as both the foundation and the slab.

4.2.2. Pile Foundations

Pile foundations transfer foundation loads through the compressible and loose/liquefiable soils where present to the hard glacially consolidated silt layer encountered at the site. Pile installation does not stabilize the ground below or around a pile-supported structure, so some settlement below and adjacent to the structure could occur such that the connections to surrounding infrastructure can be compromised during a large earthquake. The incremental increase in cost for a pile foundation relative to a shallow spread footing or mat foundation system can be significant because of the required grade beams and higher lateral load design requirements. We would expect that the bottom floor will also be a structural slab.

Since pile foundations would extend through the potentially liquefiable soils, new pile foundation design must include the effects of downdrag loads. New piles will offer some lateral resistance for the buildings to resist the effects of lateral spreading.

Several pile types would be appropriate at the site including driven steel pipe, driven grout, and augered cast-in-place (“augercast”) pile systems would be appropriate at the site. Driven open-ended steep pipe piles have the ability to confirm adequate bearing by monitoring installation resistance during driving, and do not generate soil cuttings which require disposal. Driven grout piles may also be feasible which would eliminate the need to handle and dispose of soil cuttings. Drilled augercast piles could be used to minimize noise and vibration which are likely considerations for permitting, and are often a cost-effective pile foundation option.

We completed preliminary axial pile capacity analyses based on our borings in the vicinity of the proposed Event Center. For planning and cost comparisons, we have provided the following preliminary pile capacity estimates:

- A 16-inch driven steel pipe pile embedded 5 to 10 feet into the bearing layer would have a capacity on the order of 150 kips.
- A 18-inch augercast pile embedded 10 feet into the hard bearing layer would have an estimated capacity on the order of 100 kips.
- A 18-inch driven grout pile will have an estimated capacity similar to the driven steel pipe pile but would not require handling and disposal of cuttings.

Lateral pile capacity will be a significant component of final design. For the larger structures, it will be necessary to use a sufficient number of piles to resist lateral loads, and/or ground improvement may be required to densify the soil around the piles to provide better lateral resistance during a seismic event.

4.3. Ground Improvement

In absence of pile foundations, ground improvement will likely be required for shallow foundation support of structures in areas of existing fill. The purpose of ground improvement at the site can be four-fold: (1) to improve foundation bearing capacity and reduce settlement under static conditions resulting from soil consolidation under newly imposed structural loads; (2) to reduce settlement resulting from liquefaction of loose saturated foundation soils; (3) to densify loose/soft soils under structures or waterward of structures to improve seismic stability and reduce deformation associated with lateral spreading; and (4) improve soils around pile foundations to provide additional lateral pile resistance.

Numerous methods of ground improvement are available such as vibroreplacement, Rammed Aggregate Piers® (RAPs), timber compaction piles, compaction grouting, soil mixing, deep dynamic compaction, wick drains, and blast densification. Some of these techniques are likely not suitable considering the location, high groundwater table and other factors. For this level of planning, we focused on two common waterfront ground improvement techniques, vibroreplacement and rigid inclusions, that mitigate liquefaction impacts and could be used to provide adequate foundation support for moderately loaded structures. GeoEngineers has successfully used both vibroreplacement and rigid inclusions on other waterfront projects throughout the Puget Sound.

4.3.1. Vibroreplacement Columns

Vibroreplacement columns include stone columns and proprietary systems like the rammed aggregate pier (RAP Geopier® Impact System) are common ground improvement techniques that could be designed to mitigate the seismic hazards at the site. Conventional shallow foundations for lighter low-rise structures

could be supported on the vibroreplacement columns directly, or, for heavily loaded structures, the columns could be used in combination with mat foundations or pile foundations. It may be beneficial and/or necessary to use a ground improvement technique to stiffen the bearing soils for lateral resistance around the pile foundations and/or resist lateral spreading. Vibroreplacement column techniques are typically one of the more cost-effective methods of ground improvement.

Construction of vibroreplacement columns (stone columns or RAPs) involves the displacement of loose/soft soils by installation of vertical columns of compacted stone; no soil cuttings need to be generated with these techniques. Typically, a hollow tube or probe is vibrated, or jetted into the ground to the desired depth for the columns. As the tube or probe is withdrawn, crushed stone is fed to the bottom of the hole and compacted. With RAPs below groundwater, a casing can be used to the bearing depth and then a mandrel is used to compact layers of stone. The end result is a column of dense stone which penetrates through the loose/soft unsuitable soil and is capable of transferring loads into the underlying competent soils. The presence of the column creates a composite material of lower overall compressibility and higher shear strength than the native soil alone. Confinement of the stone is provided by the lateral stress within the densified loose/soft soils. As loads are applied, the stone columns and soft soil move downward together, resulting in transfer of the majority of the load to the stone column.

Additional analyses of stone columns will be required during design to determine the specific amount of ground improvement (replacement ratio and depth) that will be necessary to meet the project needs. When soils are very soft or contain organics, sometimes the designer will include cement grouting in conjunction with the stone columns, due to low confining pressures. This type of ground improvement method is typically satisfactory to mitigate liquefaction and support structures that can then be designed using conventional shallow foundation and slab-on-grade techniques, or structures with mat foundations. A slightly higher allowable bearing pressure can oftentimes be used to help off-set some of the ground improvement costs.

At this site, we would expect the stone columns would extend through the liquefiable fill and transition zone to glacially consolidated soil. For preliminary estimating purposes, we recommend a design elevation of approximately -5 feet. Typically, the area in which stone columns are installed will extend at least 10 to 20 feet (one to two rows) laterally beyond the edges of buildings.

4.3.2. Rigid Inclusions

Rigid inclusions are another ground improvement technique that could be designed to mitigate the seismic hazards at the site. Rigid inclusions are formed by constructing unreinforced lean concrete piles beneath the shallow foundations, typically using the same equipment that installs augercast piles. This type of installation does generate soil cuttings, which may be an archaeological or environmental consideration. The intent of the rigid inclusions is to provide foundation bearing by transferring foundation loads to the underlying dense soil layer when the surrounding soil liquefies during a design earthquake event. Rigid inclusions could likely be used in the same areas as the stone columns; this technique typically results in lower postconstruction settlements and would be used for larger structures.

4.4. Slab-on-Grade Floor Support

The slab-on-grade with or without reinforcement may be supported on ground improvement. A load transfer layer of sand and gravel is common and may or may not include geotextile layers. In all cases, use of a typical capillary break layer below the slab, and sufficient drainage provisions are recommended.

4.5. Utilities

New and existing utilities will experience settlement from liquefaction, likely differential in nature between the ground improved soil under buildings or pile supported buildings and the surrounding soils. Therefore, we recommend critical and rigid utilities such as gas, water, sewer lines and drains be attached to the building via flexible fittings to allow for differential settlement between the building and the surrounding ground supporting the utilities. Also, we recommend that gas and water lines be equipped with automatic shutoff valves that are activated by ground shaking to reduce the potential for gas leaks or water leaks during an earthquake.

4.6. West Basin Site Grading and Settlement Considerations

At the time of this preliminary report, the planned finished grade elevation for the West Basin was approximately Elevation 16 feet. This will require fill placement ranging from less than ½ foot to approximately 4 feet mostly below future parking areas and partly below the proposed Event Center.

The existing fill and transition deposits underlying the project site include compressible silt, and other organic material that will experience settlement under the anticipated fill and structure foundation loads. We recommend that new fill in the West Basin area be placed early on in construction process as a preload. Preloading will significantly reduce postconstruction total and differential settlement and improve long-term pavement performance.

4.6.1. Preload Considerations

Placement of a preload fill at the site will result in elastic and consolidation-related settlement. The purpose of the preload fill is to induce a majority of the expected settlement from new fill placement prior to construction of pavement or hardscapes to improve performance. All fill should be placed and compacted as structural fill.

Based on our preliminary settlement analysis and experience in the project vicinity, we estimate the placement of up to 4 feet of new fill will result in about 2 to 3 inches of elastic and consolidation settlement in the West Basin, and the majority (90 percent) of the settlement should occur within about 2 to 3 months of fill placement. Similar settlement would occur in the North Basin; however, grades are not anticipated to be raised in this area. Based on our experience in the region with similar soil conditions, the settlement magnitude and duration will vary depending on the soil profile and site loading history. Accordingly, we recommend survey monitoring of the preload settlement as described below.

Organic material in the nearshore deposits will continue to decay overtime beyond the time period of the preload program, resulting in long-term secondary settlement. The evaluation of secondary settlement is complex and will depend on the exact thickness and composition of the organic material. For planning purposes, we anticipate that up to 1 inch of additional long-term, secondary settlement may occur during the lifetime of the proposed project as a result of organic decay.

4.6.2. Preload Settlement Monitoring

In order to evaluate the magnitude, rate, and effective time of completion for the preload settlements, we recommend survey monitoring prior to, during and following preload placement.

Settlement plates should be constructed on the prepared ground surface before placing fill on the site. We recommend GeoEngineers be retained to evaluate the settlement data and determine when it is appropriate to end the preload and begin final construction. For planning purposes, we recommend the fill be monitored during fill placement and for a minimum of 10 weeks after achieving full subgrade height, or until settlement marker observations indicate that consolidation of the underlying compressible strata is largely complete.

Additional recommendations for settlement monitoring can be prepared when a final grading plan has been developed.

4.7. North Basin Site Grading and Settlement Considerations

At the time of this preliminary report, it was undecided if the North Basin area would be regraded to a lower elevation. A significant consideration is the potential reuse of existing site soils as structural fill as part of grading for the West Basin. As discussed in more detail in Section 4.10.2, the existing fill soils in the North Basin are not suitable for reuse as structural fill. We have provided some additional considerations regarding grading for the North Basin:

- Based on the soils encountered, we recommend that site grading in the North Basin be optimized as much as possible. Soils excavated due to lowering site grades should be planned to be exported and imported structural fill will be required where site grades are raised.
- Based on the poor quality of existing fill and transition zone soils, placement of new fill will result in settlement of underlying soils. If new fill is placed, we should evaluate the magnitude of resulting settlement based on anticipated fill thickness. A preload will likely be appropriate as discussed in Sections 4.6.1 and 4.6.2 above for the West Basin.
- If existing grades are lowered at the north end of the north basin, the subgrade will be loose/soft and require overexcavation and/or geotextiles to provide adequate support for vehicles for proposed RV Park.

4.8. Stormwater Considerations

Infiltration will not be appropriate at this site because of the high groundwater table encountered 2.8 to 3.2 feet bgs in our monitoring wells, and variable fill consisting of mixed fine-grained soils. Stormwater requirements will need to be evaluated by a civil engineer when specific project elements are better defined. Some limited low impact development (LID) strategies such as rain gardens could be evaluated during design.

We recommend that the ground surface be sloped away from the buildings to the extent practical. Due to the poorly draining site conditions, we recommend that perimeter-footing drains be included around all buildings. The footing drains should be tightlined to the storm drain system or other suitable discharge point. All downspouts should also be tightlined away from the building foundation areas and should be discharged into a stormwater disposal system. Downspouts should not be connected to footing drains. Drainage systems should consider sea-level rise.

4.9. Pavement Considerations

We do not have specific design parameters (traffic data) to develop pavement sections. The owner can choose the pavement section based on the available capital budget for the project and desired pavement

performance. For the proposed new haul route pavement, based on recent experience in Anacortes near the project site, we recommend the following typical heavy pavement section for planning purposes:

- 5 to 6 inches of asphalt concrete pavement (ACP) per 2020 Washington State Department of Transportation (WSDOT) *Standard Specifications for Road, Bridge and Municipal Construction* (hereinafter referred to as WSDOT *Standard Specifications*);
- 6 inches of Crushed Surfacing Base Course (CSBC) per WSDOT *Standard Specifications* 9-03.9(3);
- 14 to 18 inches of sub-base course consisting of Gravel Base in accordance with WSDOT *Standard Specifications* 9-03.10; and
- placement of a woven geotextile over the subgrade with a minimum grab tensile strength (ASTM D 4632) of 200 pounds, such as Mirafi HP270 or equivalent. (Note: The subgrade should be compacted to a dense condition prior to placement of the geotextile fabric and gravel base.)

For planning purposes of new parking lot pavements and light traffic, we recommend the following:

- 2½ to 3 inches of ACP;
- 3 to 4 inches of CSBC;
- 8 to 12 inches of gravel base;
- placement of a woven geotextile over the subgrade.

4.10. Construction Considerations

As previously described, foundation construction will involve installation of piles or ground improvement to mitigate for liquefaction and lateral spreading. These foundation practices are common for buildings located in waterfront developments. Therefore, we conclude that construction for this project would be reasonably conventional.

4.10.1. Soil Excavation

We expect that any site development will likely consist of surface grading and ground improvement or piles. Excavations below present site grades will primarily be limited to installation of new utilities. Project excavations will largely be completed in existing fill soils. The native transition zone and, less likely, glacially consolidated deposits may also be encountered in deeper excavations. The site soils can be excavated with conventional equipment. Large debris can be present in uncontrolled fill, and cobbles and boulders can be encountered in the glacially consolidated soils. The clayey and silty fill soils are highly moisture sensitive and easily susceptible to disturbance by construction equipment during wet weather. The clay/silt fill soils will not support rubber-tired construction equipment during wet conditions. A gravel working surface should be anticipated to support construction equipment.

We did not observe visual evidence of contamination at the site based on the results of our explorations; however, the undocumented nature of the fill always represents a potential for random buried contamination. It may be necessary to perform some chemical testing for disposal of fill soils at the contractor's disposal site.

4.10.2. Suitability of On-site Soils for Reuse as Structural Fill

The on-site soils should generally be considered unsuitable for reuse as structural fill. Existing fill soils with high silt and clay contents are very moisture sensitive and can be difficult to compact to above 90 percent of the maximum dry density (MDD) even at or near their optimum moisture content. Granular silty sands with high moisture content are also difficult to compact to above 90 percent of the MDD without moisture conditions; therefore, soils with very high fines or moisture content should not be reused as structural fill.

The on-site near-surface soils observed in the explorations consists of highly variable uncontrolled fill soils. As discussed, much of the fill observed contains a high percentage of fine-grained soil and are highly moisture sensitive. As the fines content increases in these materials they become more sensitive to changes in moisture content and may not be suitable for use if placed during wet weather. Soils excavated from below the groundwater table have moisture contents well above optimum that will not be suitable for reuse as structural fill without moisture conditioning.

If significant quantities of granular sand and gravel soils above the groundwater are encountered during site excavation, these soils may be suitable for reuse but will require careful separation, moisture conditioning and testing during construction. For planning purposes, we recommend that import soils be used where structural fill is required for the project.

4.10.3. Structural fill Considerations

Materials used to support foundations, structures, and roadways and parking areas are classified as structural fill. Structural fill material quality varies depending upon its use. Based on very limited opportunity for reuse of onsite soils, the structural fill for the project will likely be imported to the site in most instances. Specific materials should generally conform to WSDOT Standard Specifications.

4.10.4. Temporary Slopes

The excavations necessary at the site are anticipated to be limited to general site grading and utility installation and will encounter mixed granular and clayey fill soils. Regardless of the soil type encountered in the excavation, either shoring, trench boxes, or sloped sidewalls will be required for excavations deeper than 4 feet under Washington State Administrative Code (WAC) 296-155, Part N. For planning purposes, the existing fill, is considered a "Type C" soil with a temporary slope at 1.5H:1V. Flatter slopes would be required in areas of seepage. Any excavations below groundwater would need to be dewatered for safety.

4.11. Dewatering Considerations

As previously discussed the groundwater elevation was encountered at approximately Elevation 8.6 to 11.2 feet, and could vary by several feet based on seasonal fluctuation during the winter months and tidal events. Dewatering is only anticipated for installation of new utilities, depending on the depth below groundwater.

Along with the tidal influence, the amount of dewatering necessary will be dependent upon the time of construction, length of time, size and depth of the excavation that will remain open, soil type and other factors. Where dewatering is required, we recommend that groundwater be drawn down at least 2 feet below the base of the excavation so that a suitably stable base is provided for construction. It is anticipated that dewatering at the site can likely be achieved by means of open pumping or wellpoints. A summary of these dewatering methods is provided below.

4.11.1. Open Pumping

This dewatering method involves removing water that has seeped into the excavation by pumping from a sump that has been excavated at one end of the excavation or trench (or a series of sumps along a trench). Drainage ditches that are connected to the sump are typically excavated along the sidewalls at the base of the excavation or trench. The excavation for the sump and the drainage ditches should be backfilled with appropriately sized material to serve as a filter to reduce the amount of erosion and associated sediment in the water pumped from the sump. In our experience, a slotted casing that is installed in the sump backfill provides a suitable housing for a submersible pump. Open pumping will likely be a suitable dewatering method for shallow excavations that encounter minimal groundwater.

The amount of water removed from the excavation by open pumping should be minimized because of high turbidity levels. Temporary storage of dewatering effluent from the sumps in a settlement tank or basin may be required to meet discharge permit requirements and reduce sediment content prior to discharging the water to surface water courses.

4.11.1. Wellpoints

Vacuum wellpoints are effective for dewatering most types of soils, whether pumping small amounts of water from silt or large quantities of water from coarse sand and gravel. The volume of water generated by a wellpoint system is typically less than the volume generated by a corresponding system of pumped wells because the wellpoints are generally completed at a shallower depth. Because of the shallower completion depth, the volume of aquifer that contributes water to a wellpoint system is less than for a comparable deep well system. Wellpoint systems are most suitable for dewatering excavations where the water table must be lowered no more than about 15 to 18 feet bgs or the header surface.

Depending on whether they are utilized for a specific below-grade structure or a linear trench, the wellpoints would likely need to be installed on 10-foot centers or less (typically 4 to 8 feet) to be effective and as close as possible to the edge of the excavation. The wellpoint screens should be appropriately filter packed to improve pumping efficiency and minimize the discharge of turbid water. Wellpoints must be sealed to a depth of at least 3 feet with hydrated bentonite chips forming a surface seal to encourage the development of a partial vacuum around each wellpoint. It has been our experience that the vacuum associated with well points also increases stability of the excavation sidewalls.

4.12. Recommended Additional Geotechnical Services

We recommend project specific geotechnical design studies for any future development within the north and west basin. The site has significant ground modification and complex geology such that the soil-structure interaction and building performance will need to be carefully considered during design in a collaborative effort by the architect, structural and geotechnical engineers.

The subsurface conditions at the site are adequately defined for this level of planning and pre-design effort. However, it may be appropriate to perform additional exploration for individual projects.

5.0 LIMITATIONS

We have prepared this report for use by the Port of Anacortes and members of the design team for use in design of the proposed Cap Sante Marina North and West Basin Upland Redevelopment project in Anacortes, Washington.

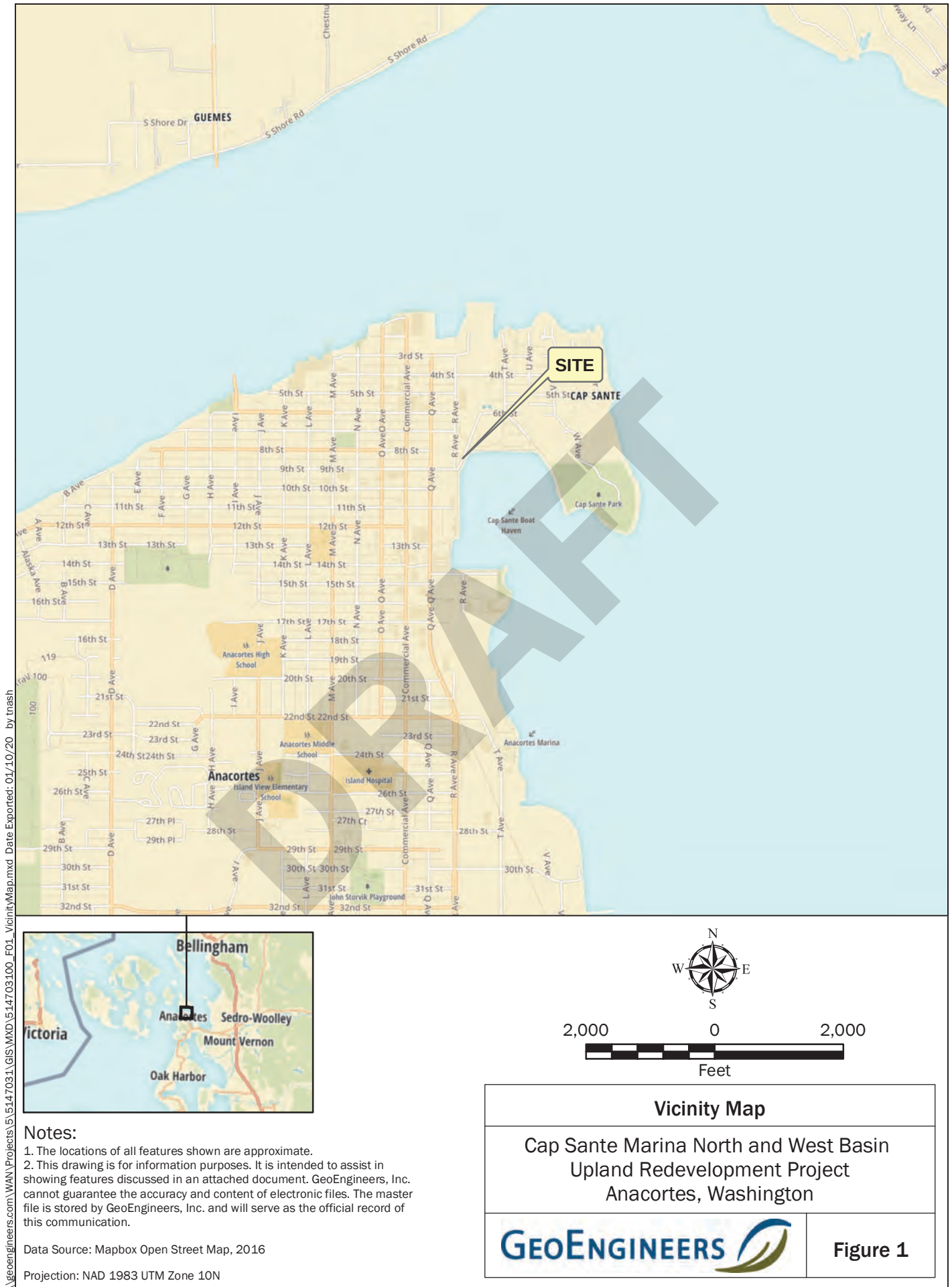
Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

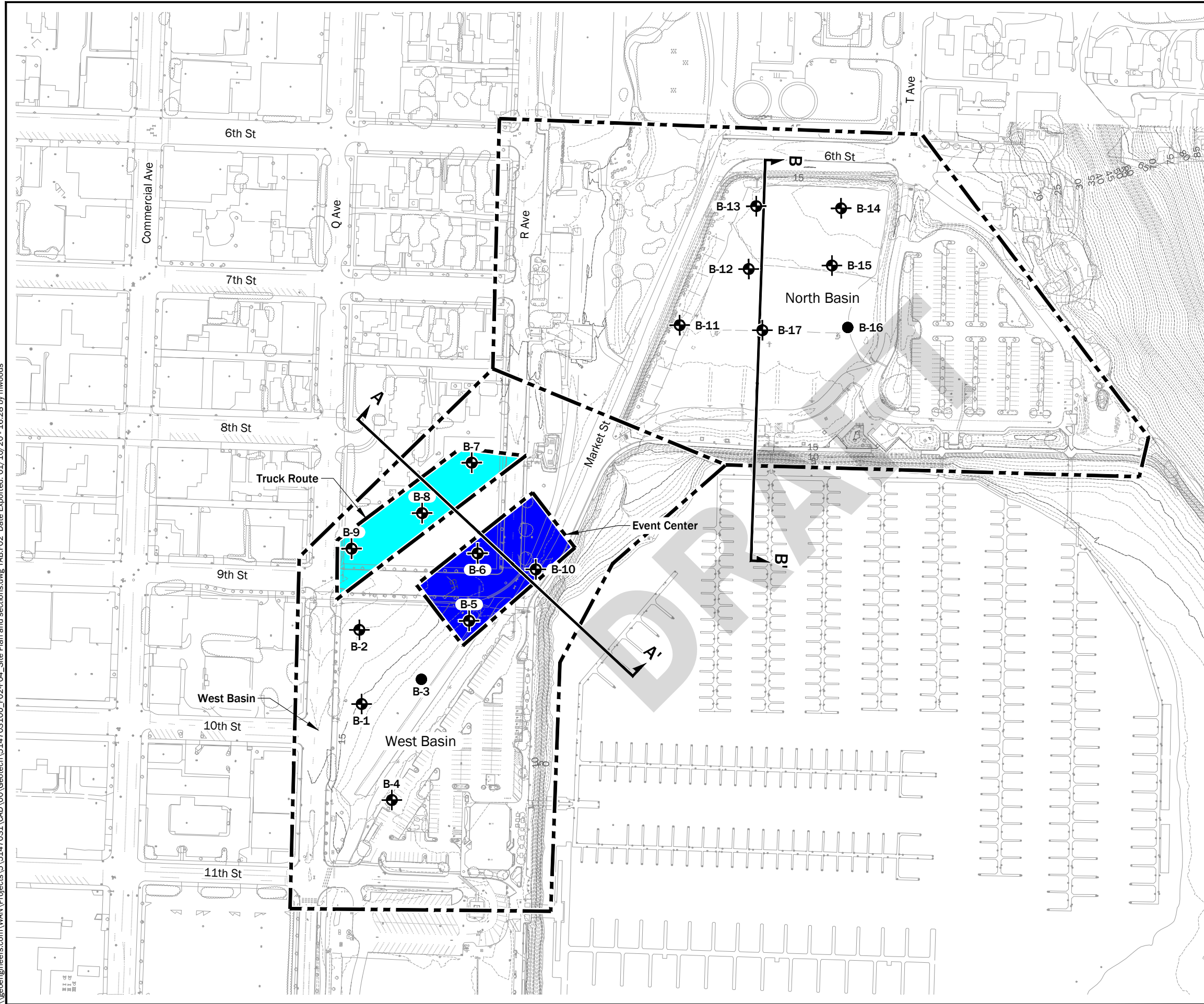
Please refer to Appendix C, "Report Limitations and Guidelines for Use," for additional information pertaining to use of this report.

6.0 REFERENCES

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Legend

B-1 Boring by GeoEngineers, Inc., 2019

B-3 Monitoring Well by GeoEngineers, Inc., 2019

Proposed Project Areas

A A' Cross Section Location

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Survey from Client dated 5/25/09.

Projection: NAD83 Washington State Planes, North Zone, US Foot

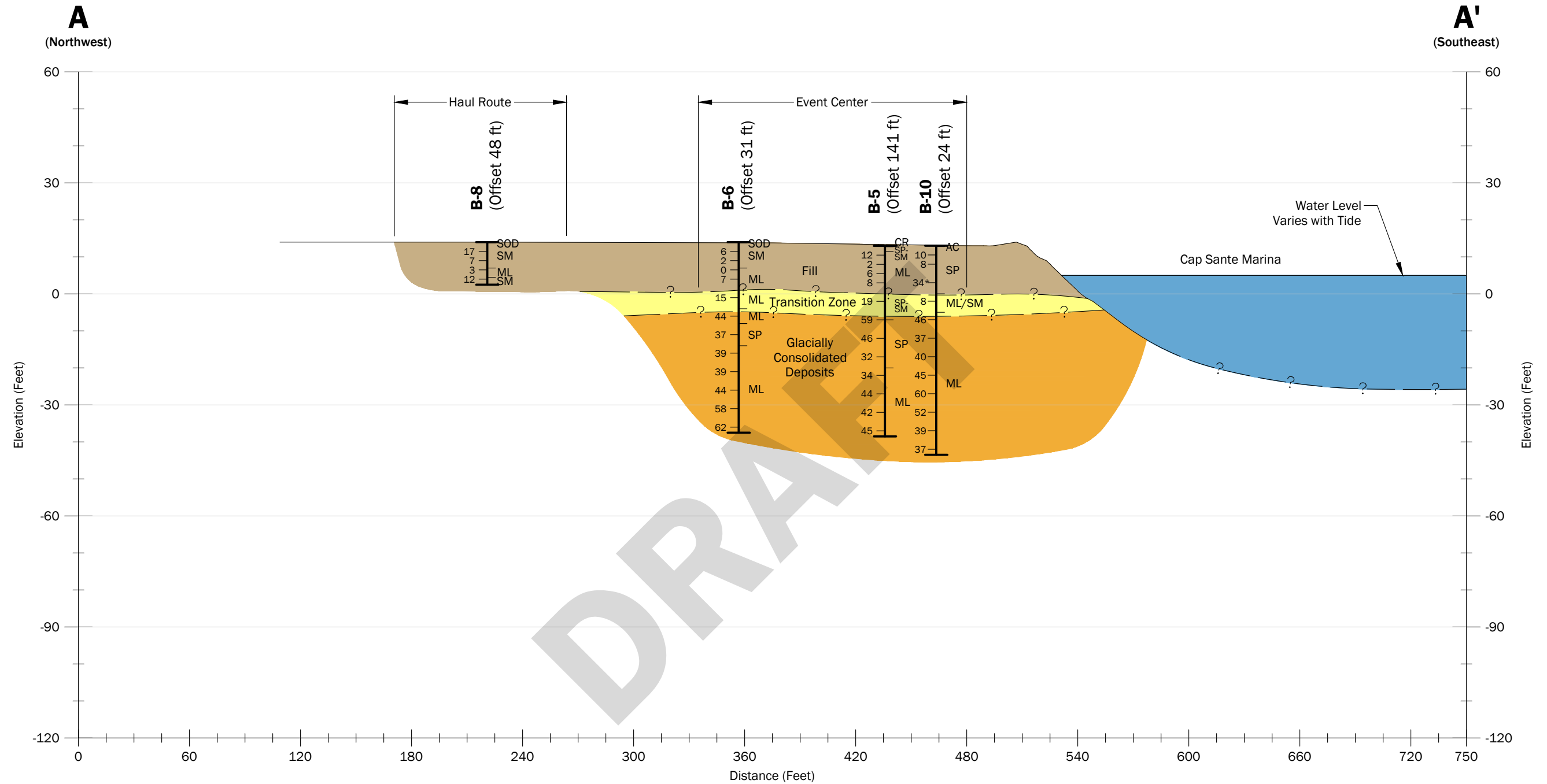
Site Exploration Plan

Cap Sante Marina North and West Basin
Upland Redevelopment Project

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Figure 2

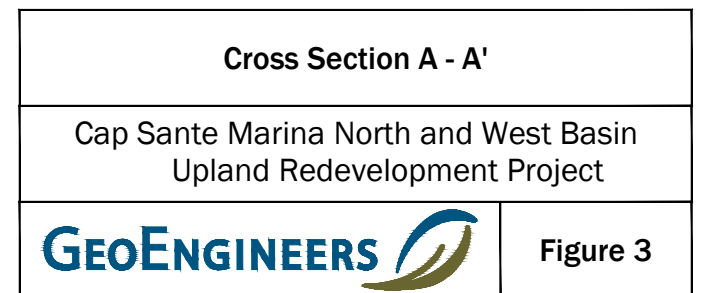
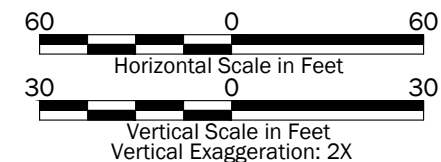
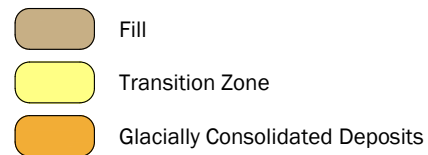
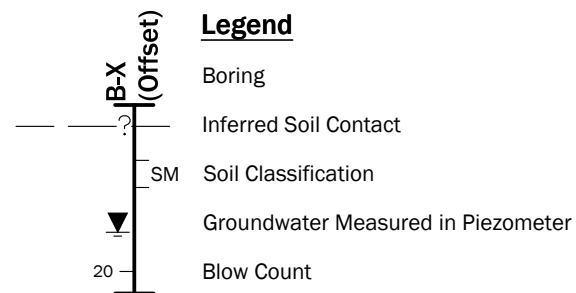
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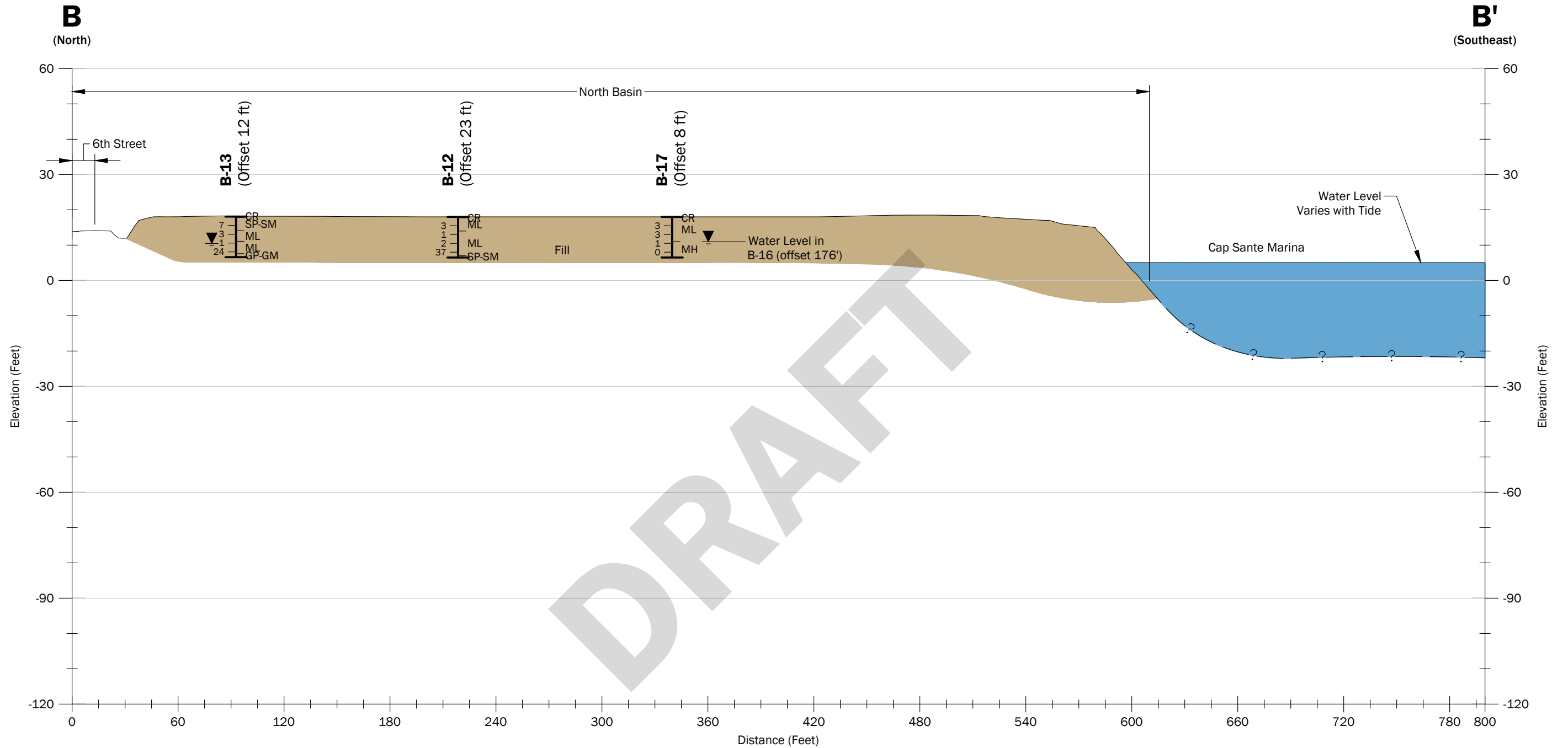
Notes:

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2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

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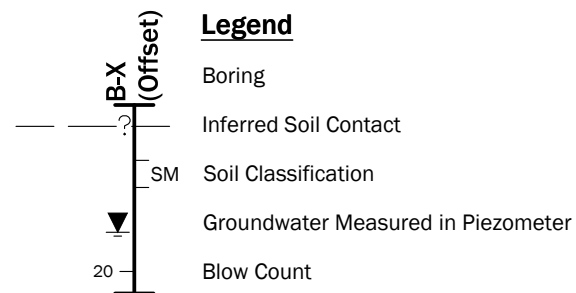
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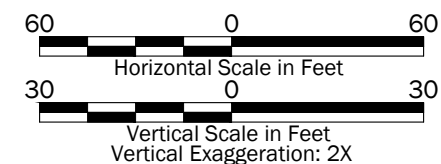
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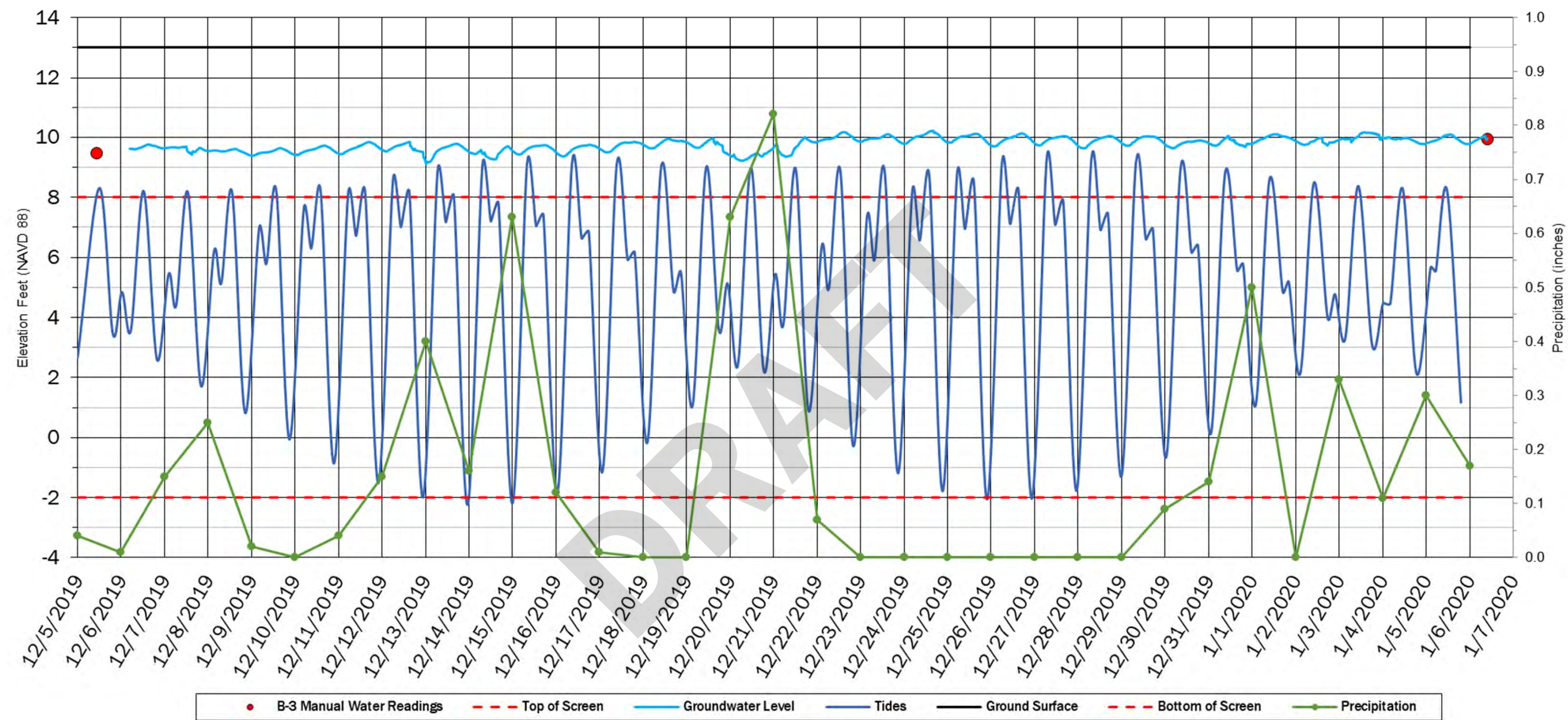


Fill



Cross Section B - B'	
Cap Sante Marina North and West Basin Upland Redevelopment Project	
GEOENGINEERS	Figure 4

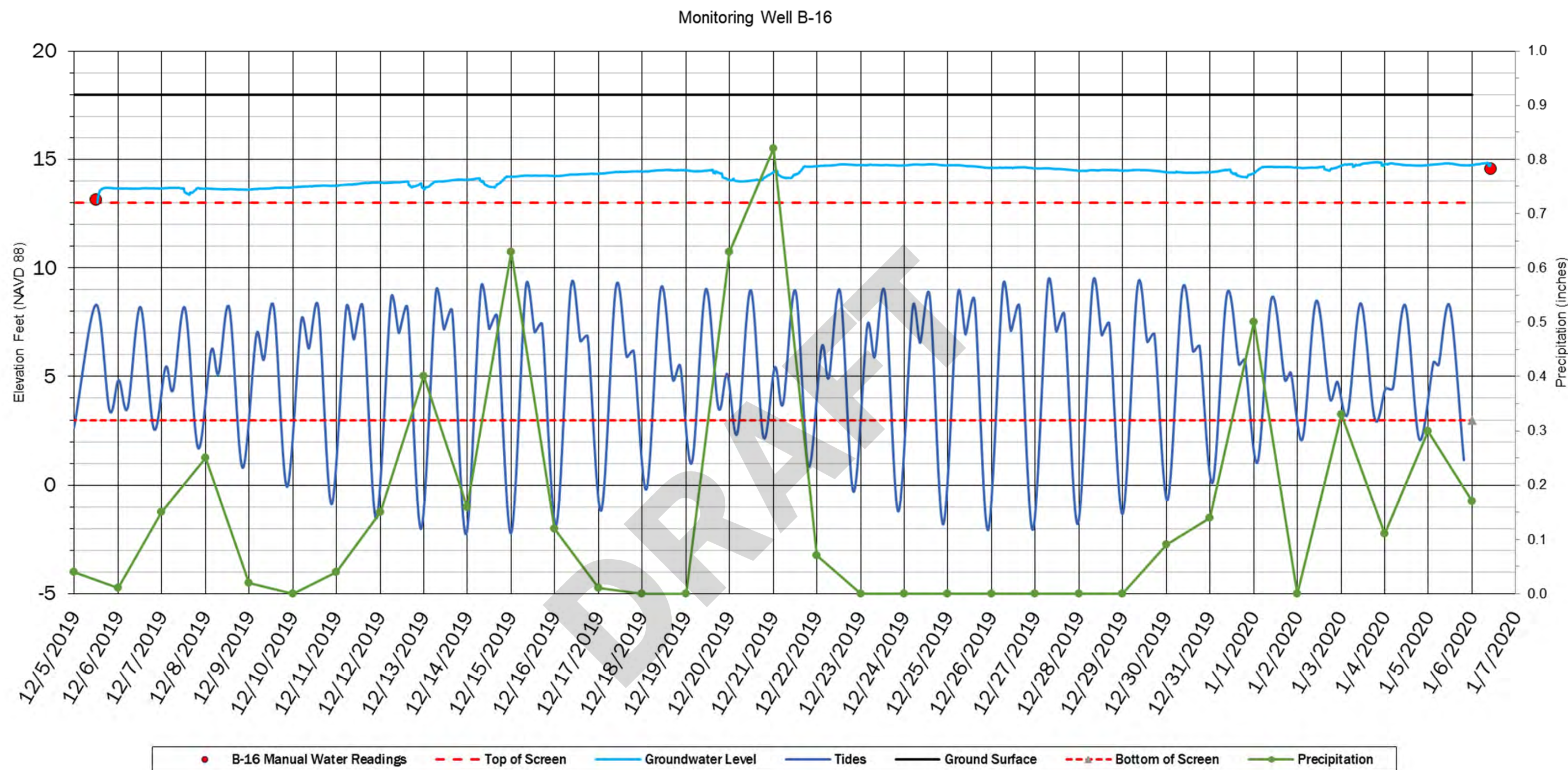
Monitoring Well B-3



Notes:

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Groundwater Monitoring Data B-3	
Cap Sante Marina North and West Basin Upland Redevelopment Project Anacortes, Washington	
	Figure 5



Notes:

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Groundwater Monitoring Data B-16	
Cap Sante Marina North and West Basin Upland Redevelopment Project Anacortes, Washington	
	Figure 6



Notes:

1. The locations of all features shown are approximate.

2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

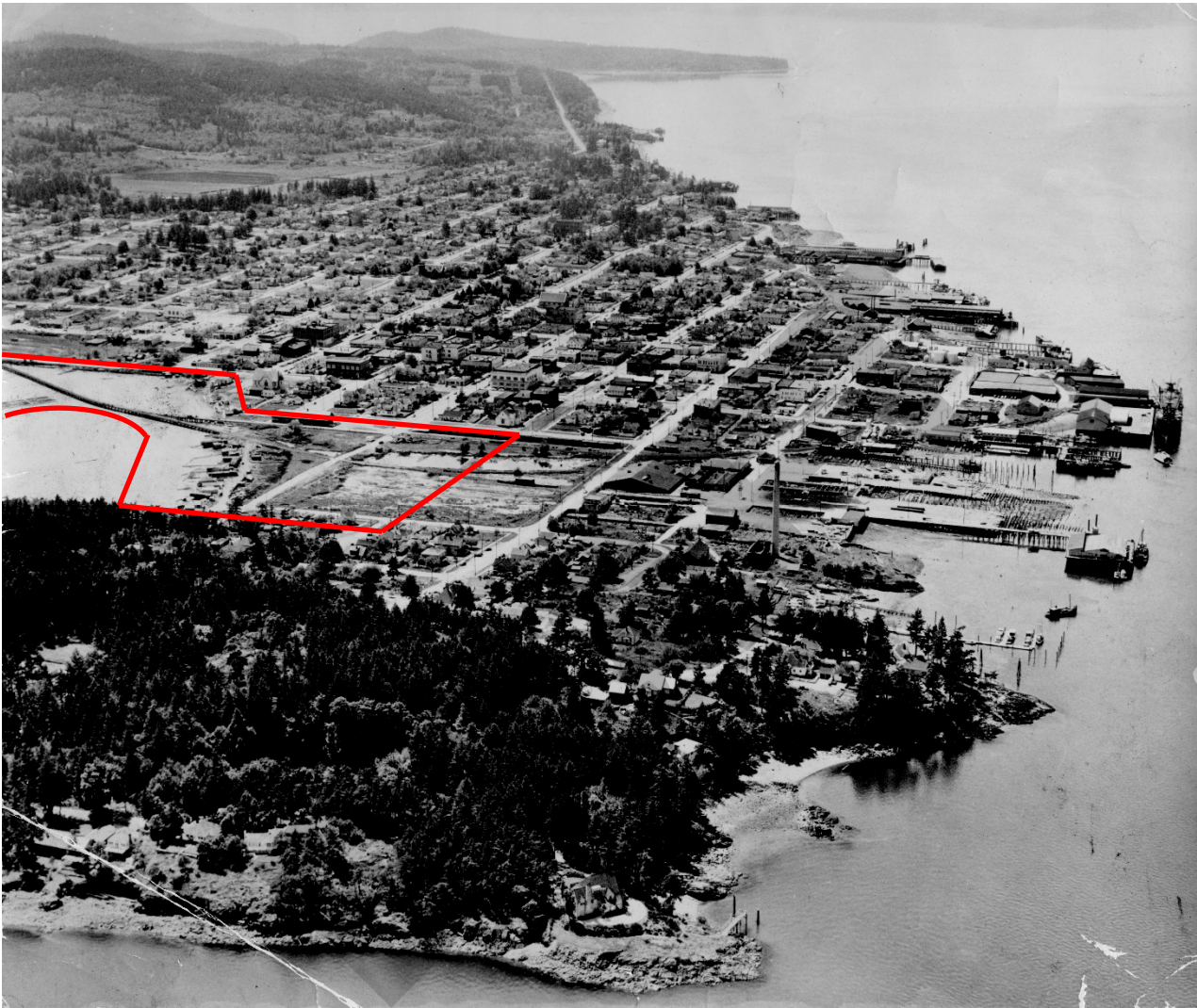
Data Source: Slope generated from North Puget Sound Lidar, 2017. Fault from Wa DNR 100K Geology. Liquefaction from Skagit County. Tsunami inundation area from NOAA and WDNr, June 2018, <https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/geologic-hazard-maps#tsunami-inundation>

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Site Boundary
- Fault - Location Concealed
- Slope >35%
- High Liquefaction Susceptibility
- Generalized Tsunami Inundation Approximate Area

Geologic Hazards	
Cap Sante Marina North and West Basin Upland Redevelopment Project Anacortes, Washington	
	Figure 7



Facing West

Legend:

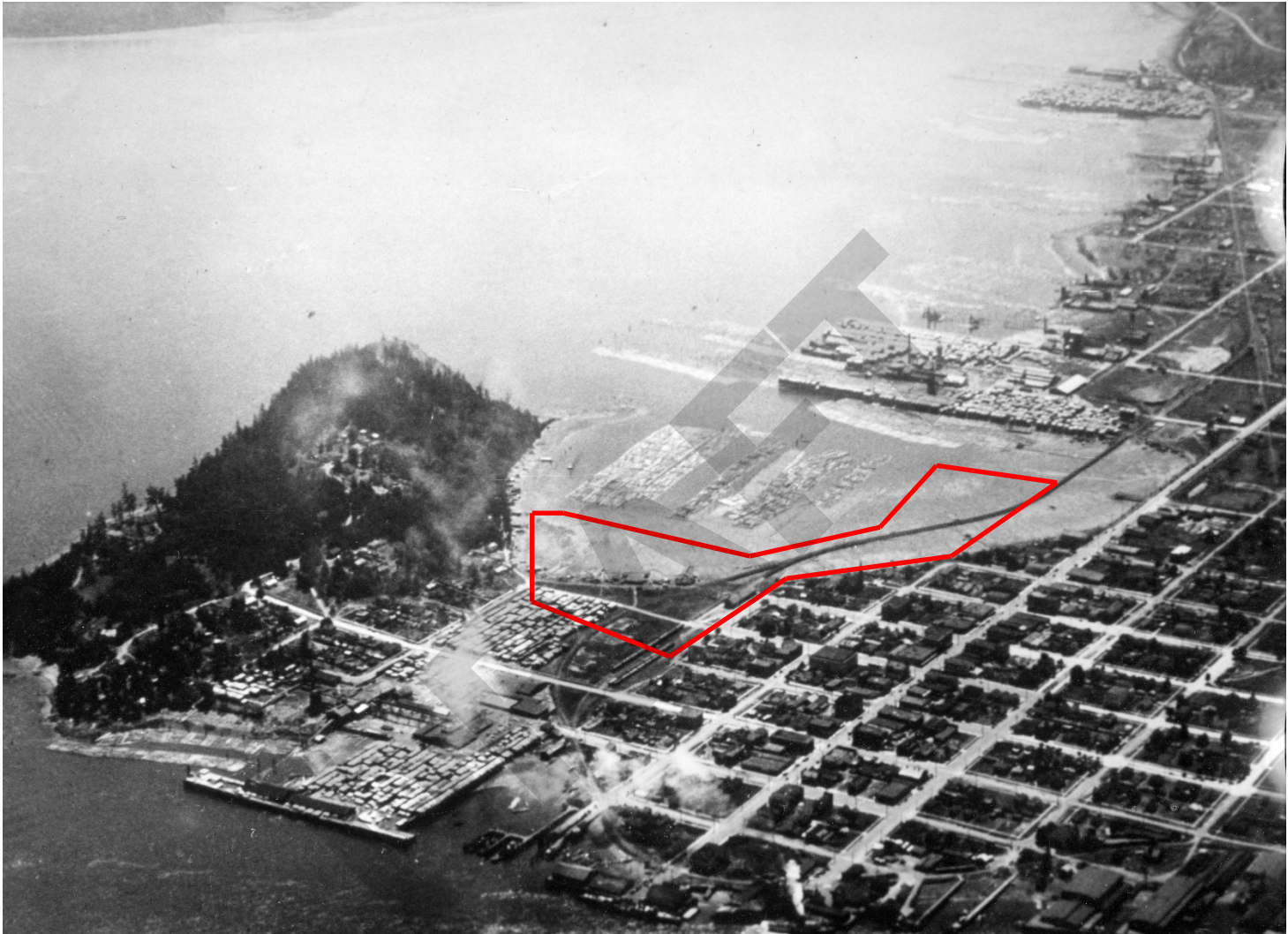
— Approximate project site boundary

Notes:

- 1. The locations of all features shown are approximate.
- 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Photograph Courtesy of the Anacortes Museum. D.X.092 Anacortes aerial across Cap Sante to Ship Harbor, c. 1940

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
GEOENGINEERS 	Figure 8



Facing Southeast

Legend:

— Approximate project site boundary

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Photograph Courtesy of the Anacortes Museum. D.X.104 Aerial view of Cap Sante and Anacortes Business District.

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure 9



Aerial Photo

Legend:

— Approximate project site boundary

Notes:

- 1. The locations of all features shown are approximate.
 - 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
- GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Photograph Courtesy of the Anacortes Museum, Wallie Funk Collection. WF 5597.A, B – Aerial View of Morrison Mill, Cap Sante Marina.

Historical Photographs	
Cap Sante Marina North and West Basin Upland Redevelopment Anacortes, Washington	
	Figure 10

APPENDIX A
Field Explorations and Laboratory Testing

DRAFT

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

GeoEngineers explored subsurface conditions at the site by completing 17 geotechnical borings on November 11 through 14, 2019. The borings were completed using a track-mounted drill rig subcontracted to GeoEngineers. The explorations were advanced using both hollow-stem auger and mud rotary drilling techniques. The approximate locations of the explorations are shown in the Site and Exploration Plan, Figure 2. The locations of the explorations were determined by recreational grade global positions system (GPS) in the field; therefore, the locations shown in Figure 2 should be considered approximate.

Soil samples from the borings were obtained using the Standard Penetration Test (SPT) method. This method involves driving a split spoon sampler a total of 18 inches using a 140-pound automatic hammer free falling 30 inches. Samples were also obtained using a 3.0-inch outside diameter modified California sampler driven into the soil with a 140-pound hammer free-falling 30 inches. For both sampler types, the number of blows required for each 6 inches of penetration was recorded. The number of blows required to drive the sampler the last 12 inches are recorded in the boring logs. The samples were placed in plastic bags to maintain the moisture content and transported back to our laboratory for analysis and testing.

The explorations were continuously monitored by a geological engineer or geologist from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each boring. Soils encountered were classified visually in general accordance with ASTM International (ASTM) D-2488-90, which is described in Figure A-1. An explanation of our boring log symbols is also shown in Figure A-1.

The boring logs are presented in Figures A-2 through A-18. The exploration logs are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered. It also indicates the depths at which these soils or their characteristics change, although the change might actually be gradual. If the change occurred between samples in the boring, it was interpreted.

Laboratory Testing

Soil samples obtained from the borings were transported to our laboratory and examined to confirm or modify field classifications, as well as to evaluate index properties of the soil samples. Representative samples were selected for laboratory testing consisting of the determination of the moisture content, percent fines content, and sieve analysis. The tests were performed in general accordance with test methods of ASTM or other applicable procedures.

Moisture Content Testing

The natural moisture contents of selected soil samples obtained from the test pits were determined in general accordance with ASTM D 2216 test procedures. The results from the moisture content determinations are displayed in the column labeled "Moisture Content %" adjacent to the corresponding samples on the summary logs.

Percent Passing U.S. No. 200 Sieve

Selected samples were “washed” through the U.S. No. 200 mesh sieve to determine the relative percentage of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted in general accordance with ASTM D 1140. The results from the percent fines determinations are displayed in the column labeled “Fines Content (%)” adjacent to the corresponding samples on the summary exploration logs.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 422 to determine the sample grain size distribution. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, classified in general accordance with the Unified Soil Classification System (USCS), and are presented in Figure A-19.

Atterberg Limits

Atterberg limit tests were completed for two soil samples. The tests were used to classify the soil as well as to aid in evaluating index properties and consolidation characteristics of the fine-grained soil deposits. The liquid limit and the plastic limit were obtained in general accordance with ASTM D 4318. The results of the Atterberg limits are summarized in Figure A-20.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		CLEAN SANDS (LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	2.4-inch I.D. split barrel
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab
	Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Measured free product in well or piezometer

Graphic Log Contact



Distinct contact between soil strata



Approximate contact between soil strata

Material Description Contact



Contact between geologic units



Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point lead test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

Key to Exploration Logs



Figure A-1

Start Drilled 11/11/2019	End 11/11/2019	Total Depth (ft) 11.5	Logged By Checked By NBD AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 15 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209666 557381		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
0		6			1	Gray fine to coarse sand with gravel (medium dense, moist) (fill)			
		4	8		2 %F		5	6	
5		18	3		3 MC	Gray clay with occasional sand and gravel, 1- to 2-inch layer of black clay (soft, moist)	34		
		2	11		4	Gray sandy gravel with organic matter and plastic debris (loose to medium dense, wet)			Groundwater observed at 7½ feet at time of drilling
10		4	7		5 MC	Gray-black clay with gravel and occasional sand with shell fragments and woody debris (2- to 3-inch layer of wood) (medium stiff, wet)	44		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-1



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-2
Sheet 1 of 1

Start Drilled	11/11/2019	End 11/12/2019	Total Depth (ft)	101.5	Logged By Checked By	NBD AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft) Vertical Datum	17 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209662 557529				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0	6			1		GP-GW	4 to 6 inches gravel surfacing			
15	2	9		2 MC		CL	Brown clay with gravel and organic matter (medium stiff, wet) (fill)	72		
5	1	4		3 MC			Becomes with occasional sand, soft and increased organic content	231		
10	6	3		4 MC		GM	Gray gravel with silty clay, shell fragments and occasional sand (plastic) (loose, wet)	25		Groundwater observed at 7½ feet at time of drilling
10	6	2		5 %F				25	18	
15	12	30		6 MC		CL	Gray clay with sand, shell fragments and occasional gravel very stiff, wet) (transition zone)	29		
20		37		7						
25		49		8 MC		ML	Gray sandy silt with clayey fine to medium sand (very stiff, wet) (glacially consolidated deposits)	25		
30		26		9 MC				29		
35										

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-2



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-3
Sheet 1 of 3

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147\031\GINT\5147\031\00.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEOTECH_STANDARD_SF_NO.GW

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
35										
38			38	10 MC				27		
40			34	11 MC		ML	Gray sandy silt (hard, moist)	33		
45			48	12 MC				32		
50			42	13 MC				37		
55			52	14 MC				32		
60			49	15 MC				27		
65			51	16 MC				35		
70			59	17 MC				29		
75			54	18 %F				33	97	

Log of Boring B-2 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Figure A-3
 Sheet 2 of 3

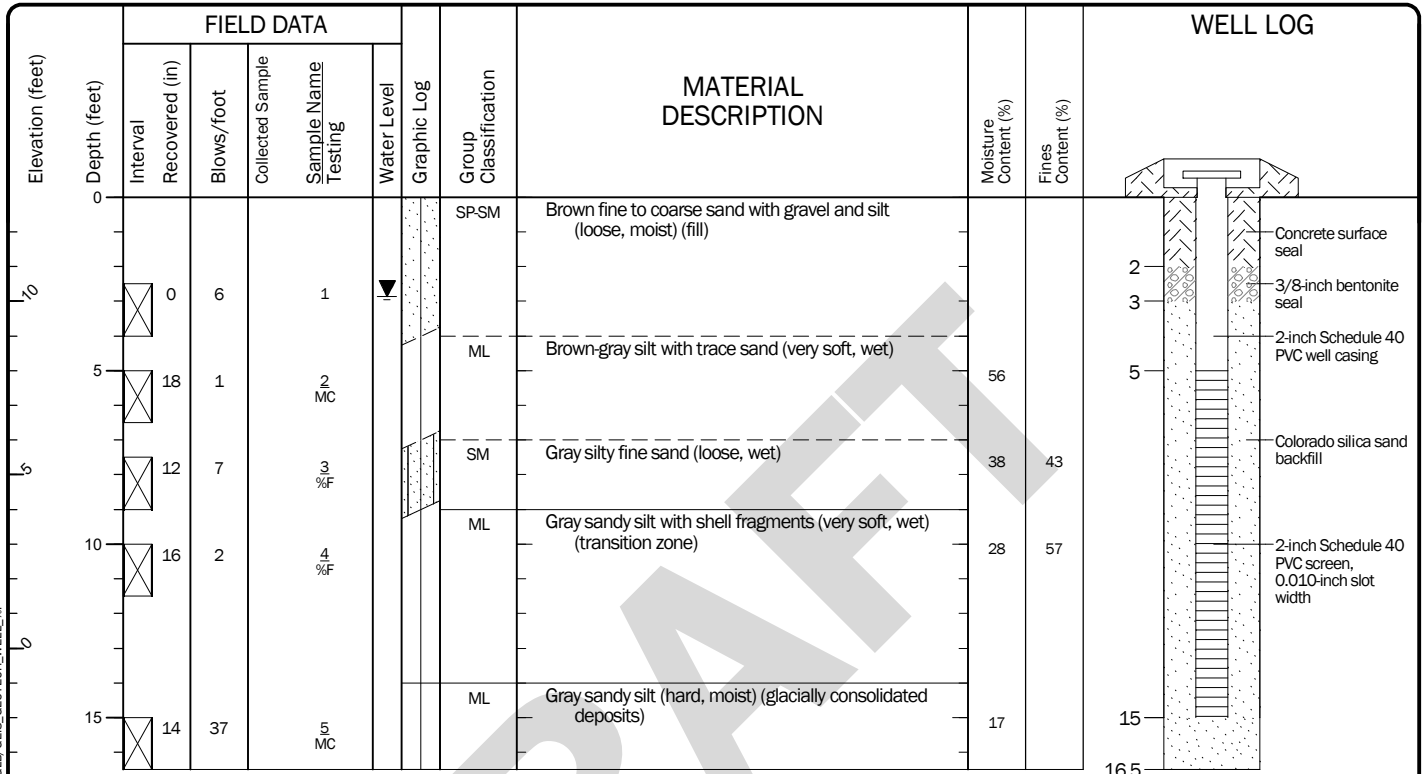
Log of Boring B-2 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
 Project Location: Anacortes, Washington
 Project Number: 5147-031-00

Figure A-3
Sheet 3 of 3

Start Drilled 11/13/2019		End 11/13/2019		Total Depth (ft)	16.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment		Diedrich D-50 Turbo Track Rig		DOE Well I.D.: BLU266 A 2-in well was installed on 11/13/2019 to a depth of 15 ft.	
Surface Elevation (ft) Vertical Datum		13 NAVD88				Top of Casing Elevation (ft)		12.80			
Easting (X) Northing (Y)		1209786 557431				Horizontal Datum		WA State Plane North NAD83 (feet)			
		Groundwater Date Measured		1/6/2020		Depth to Water (ft)		2.86		Elevation (ft) 9.94	
Notes:											



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring with Monitoring Well B-3



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-4
Sheet 1 of 1

Start Drilled	11/13/2019	End 11/13/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	14 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209727 557190				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Interval Depth (feet)	Recovered (in)	Blows/foot	Collected Sample Sample Name Testing					
0					AC	Approximately 2½ inches asphalt concrete			
					GW/GP	Approximately 4 inches brown gravel with sand and silt / (dense, moist) (gravel base/fill)			
					ML	Gray brown silt with trace sand (medium stiff, moist) (fill)	63		
5	14	4	1	MC		Becomes soft to very soft	70		
	14	2	2	MC					
	0	14	3		SPSM	Gray fine to coarse sand with gravel and silt (medium dense, wet)			Groundwater observed at 6½ feet during drilling Driller indicated gravelly conditions during drilling
10	0	3	4	5		Grades to very loose	14	6	California sampler
		8		%F					

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-4



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-5
Sheet 1 of 1

Start Drilled	11/12/2019	End 11/12/2019	Total Depth (ft)	51.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft) Vertical Datum	13 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209881 557547				System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	Approximately 3 inches crushed rock			
						SP-SM	Gray and brown fine to coarse sand with gravel and silt (dense, moist) (fill)			
						ML	Brown and gray silt with sand (stiff, moist)	17		
5		6	12	1		MC				
							Becomes very soft to soft			
5		0	2	2						
							Becomes medium stiff, wet	36	29	Groundwater observed at 7½ feet at time of drilling
10		6	6	3		%F				
10		0	8	4						
15		6	19	5		SA	Gray fine to medium sand with silt to silty sand (medium dense, wet) (transition zone)	25	15	Chatter during drilling indicated small gravel layers at intervals approximately 1 to 3 feet apart
20		18	59	6		SA	Gray silty fine to medium sand (very dense, wet) (glacially consolidated deposits)	22	30	
						SP				
25		18	46	7		MC	Grades to dense	24		
30		18	32	8		MC		27		
35						ML	Gray silt with sand (hard, wet)			

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-5



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-6
Sheet 1 of 2

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147\031\GINT\5147\031\00.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEO TECH_STANDARD_SF_NO_0W

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
35		18	34		9 MC		31		
30		18	44		10 AL		30		AL (LL = 23, PI = 3)
35		18	42		11 MC		26		
50		18	45		12 MC		31		

Log of Boring B-5 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-6
Sheet 2 of 2

Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 51.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Mud Rotary
Surface Elevation (ft) Vertical Datum 14 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209898 557682		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)			
5		4	6	1			Grades to very loose			
		0	2	2						
10		0	0	3		ML	Gray silt with sand and shell fragments (very soft, wet)			
		6	7	4			Grades to medium stiff	42		
				MC						
15		8	15	5		ML	Gray silt (stiff, wet) (transition zone)	31	84	
				%F						
20		18	44	6		ML	Gray silt interbedded with gray fine sand with silt (hard, wet) (glacially consolidated deposits)	29	81	
				%F						
25		18	37	7		SP-SM	Gray fine to medium sand with silt (dense, wet)	22	6	
				SA						
30		18	39	8		ML	Gray sandy silt (hard, wet)	26		
				MC						

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-6



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-7
Sheet 1 of 2

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147\031\GINT\5147\031\00.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEOTECH_STANDARD_SF_NO_0W

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
35									
35									
40									
40									
45									
45									
50									
50									

Log of Boring B-6 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-7
Sheet 2 of 2

Start Drilled	11/13/2019	End 11/13/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	14 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1209886 557863				System Datum	WA State Plane North NAD83 (feet)			Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						GP	Gray and brown gravel with sand, silt and debris (tiny brick or concrete fragments and whole large brick pieces) (loose to medium dense, moist) (fill)			Heavy chatter from rig at approximately 6 inches, whole brick in cuttings *Blow counts overstated
5		4	15*	1						
						SM	Gray brown silty fine to coarse sand with gravel (loose, moist)	21		
		4	5	2						
		2	26*	3						
10		12	2	4		ML	Dark gray silt with sand and trace organic matter (decayed small wood fragments) (soft, moist)	55		*Rock in shoe; blow counts overstated due to gravel

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-7



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-8
Sheet 1 of 1

Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 14 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209787 557762		System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						SOD	Approximately 3 inches sod			
						SM	Dark brown silty fine to coarse sand with gravel (medium dense, moist) (fill)	11		
10		10	17	1 MC						
5		14	7	2 MC			Becomes loose	27		
		18	3	3 MC		ML	Brown silt with sand and organic matter (soft, moist)	71		
10		18	12	4 MC		SM	Gray silty fine to medium sand with shell fragments and layers of decayed organic matter (approximately 1/2 inch thick) (medium dense, moist)	60		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-8



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-9
Sheet 1 of 1

Start Drilled 11/11/2019	End 11/11/2019	Total Depth (ft) 11.5	Logged By Checked By NBD AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 14 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1209646 557691		System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	FIELD DATA					Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					
0		6			1	SOD	3 inches sod			
						SM	Gray silty fine to coarse sand with occasional gravel (medium dense, moist)	31		
5		6	14		2 MC					
		8	8		3 MC	CL	Brown clay with rootlets (medium stiff, moist)	27		
		8	8		4 MC			50		
10		8	49*		5	SM	1- to 2-inch layer of broken rock/gravel Gray silty sand with gravel and clay and broken rock/cobble fragments (medium dense, moist)			*Blowcounts overstated due to rocks/gravel

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-9



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-10
Sheet 1 of 1

Start Drilled	11/12/2019	End 11/12/2019	Total Depth (ft)	56.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft)				13	Hammer			Autohammer	Drilling	
Vertical Datum				NAVD88	Data			140 (lbs) / 30 (in) Drop	Equipment	
Diedrich D-50 Turbo Track Rig										
Easting (X)				1210014	System			WA State Plane North	See "Remarks" section for groundwater observed	
Northing (Y)				557650	Datum			NAD83 (feet)		
Notes:										

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						AC	Approximately 3 inches asphalt concrete			
10		4	10	1		SP	Brown fine to medium sand with gravel and angular cobbles (spalls) (dense, moist) (fill)			
5		3	8	2						
10		0	34*	3			Becomes wet			
15		8	8	4		ML/SM	Gray silt with sand and shell fragments interbedded with silty fine sand (medium stiff/loose, wet) (transition zone)			
20		12	46	5 %F		ML	Gray silt with sand (hard, wet) (glacially consolidated deposits)	25	64	
25		18	37	6 MC				33		
30		18	40	7 MC				30		

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-10



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-11
Sheet 1 of 2

Date: 1/10/20 Path: \\GEOENGINEERS.COM\WAN\PROJECTS\5147031\GINT\514703100.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEB8_GEO TECH_STANDARD_SF_NO_0W

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
35		18	45		8 %F				29	97	
30		18	60		9 MC				31		
35		8	52		10 MC				27		
40		18	39		11 MC				33		
45		18	37		12 %F				29	93	

Log of Boring B-10 (continued)



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-11
Sheet 2 of 2

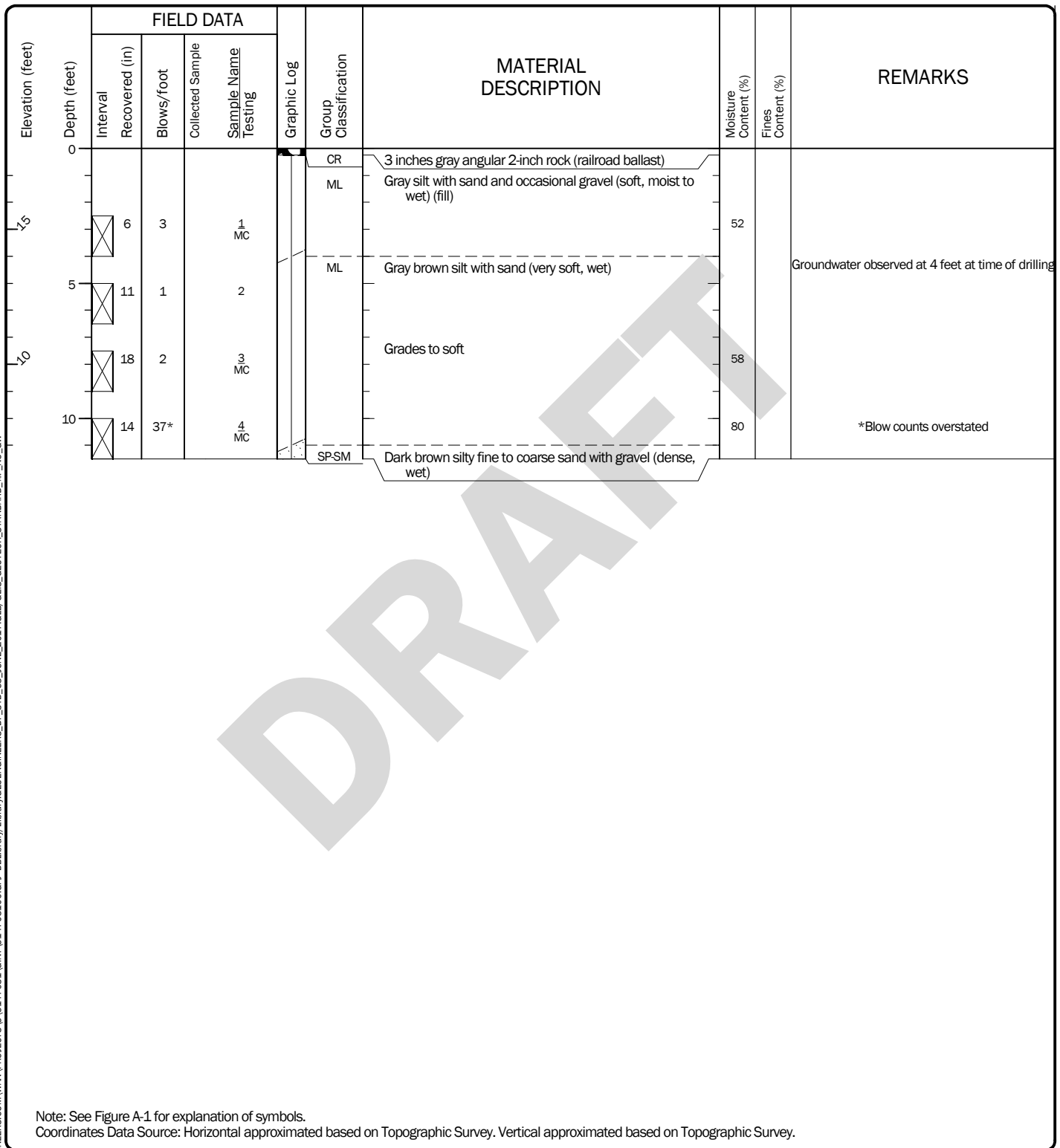
Start Drilled	11/14/2019	End 11/14/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	18 NAVD88			Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y)	1210301 558137			System Datum	WA State Plane North NAD83 (feet)			Groundwater not observed at time of exploration		
Notes:										

Elevation (feet)	FIELD DATA				Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Interval Depth (feet)	Blows/foot Recovered (in)	Collected Sample	Sample Name Testing					
0					CR	2 inches gray angular gravel (railroad ballast)			
2.5	12	5		1 MC	SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)	40		
5	12	8		2 MC			23		
7.5	12	4		3 MC	ML	Dark brown silt with sand and organic matter (horizontal oriented wood pieces) (medium stiff, moist)	61		
10	12	7		4 MC		Increasing sand, smaller wood fragments, brick fragments	76		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-11	
	Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
	Project Location: Anacortes, Washington
	Project Number: 5147-031-00
Figure A-12 Sheet 1 of 1	

Start Drilled 11/13/2019	End 11/13/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1210439 558249		System Datum WA State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					



Log of Boring B-12	
	Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
	Project Location: Anacortes, Washington
	Project Number: 5147-031-00
Figure A-13 Sheet 1 of 1	

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 18 NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y) 1210454 558375		System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	
Notes:					

Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample						
0						CR	2 inches gray angular approximately 2 inch rock (railroad ballast)			
2.5		2	7			SM	Brown silty fine to coarse sand with gravel (loose, moist) (fill)	6	13	
5		6	3			ML	Brown silt with sand (soft, moist)	63		
7.5		12	1			ML	Gray brown silt with sand and shell fragments (very soft, wet)	29		Groundwater observed at 7 feet during drilling
10		12	24			GP-GM	Dark gray angular gravel with sand and silt (medium dense, wet)	56		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-13



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-14
Sheet 1 of 1

Start Drilled 11/14/2019	End 11/14/2019	Total Depth (ft) 11.5	Logged By Checked By EAW AJH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger
Surface Elevation (ft) Vertical Datum 19 NAVD88			Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y) 1210623 558370			System Datum WA State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed
Notes:					

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing				
0						CR			
						SP-SM			
15		4	3		1 MC	2 inches gray angular 2-inch rock (railroad ballast)	30		
5		10	9		2 %F	Gray fine to coarse sand with silt and gravel (very loose, moist) (fill)	29	40	
10		0	8		3	SM			
		18	6		4 MC	Gray silty fine to medium sand with occasional gravel and shell fragments (loose, wet)	31		Groundwater observed at 6 feet at time of drilling

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-14



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-15
Sheet 1 of 1

Start Drilled	11/14/2019	End 11/14/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	18 NAVD88				Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig
Easting (X) Northing (Y)	1210605 558256				System Datum	WA State Plane North NAD83 (feet)			Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	FIELD DATA				Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					
0					CR	2 inches gray angular 2-inch rock (railroad ballast)			
					SM	Gray silty fine to coarse sand with gravel (loose, moist) (fill)	51		
5	10	4		1 MC					
	10	3		2 MC	ML	Gray silt with sand and occasional shell fragments (soft, moist)	58		
10	18	2		3 MC		Decreased sand content	32		
	18	1		4 MC		Becomes very soft	44		

Note: See Figure A-1 for explanation of symbols.

Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

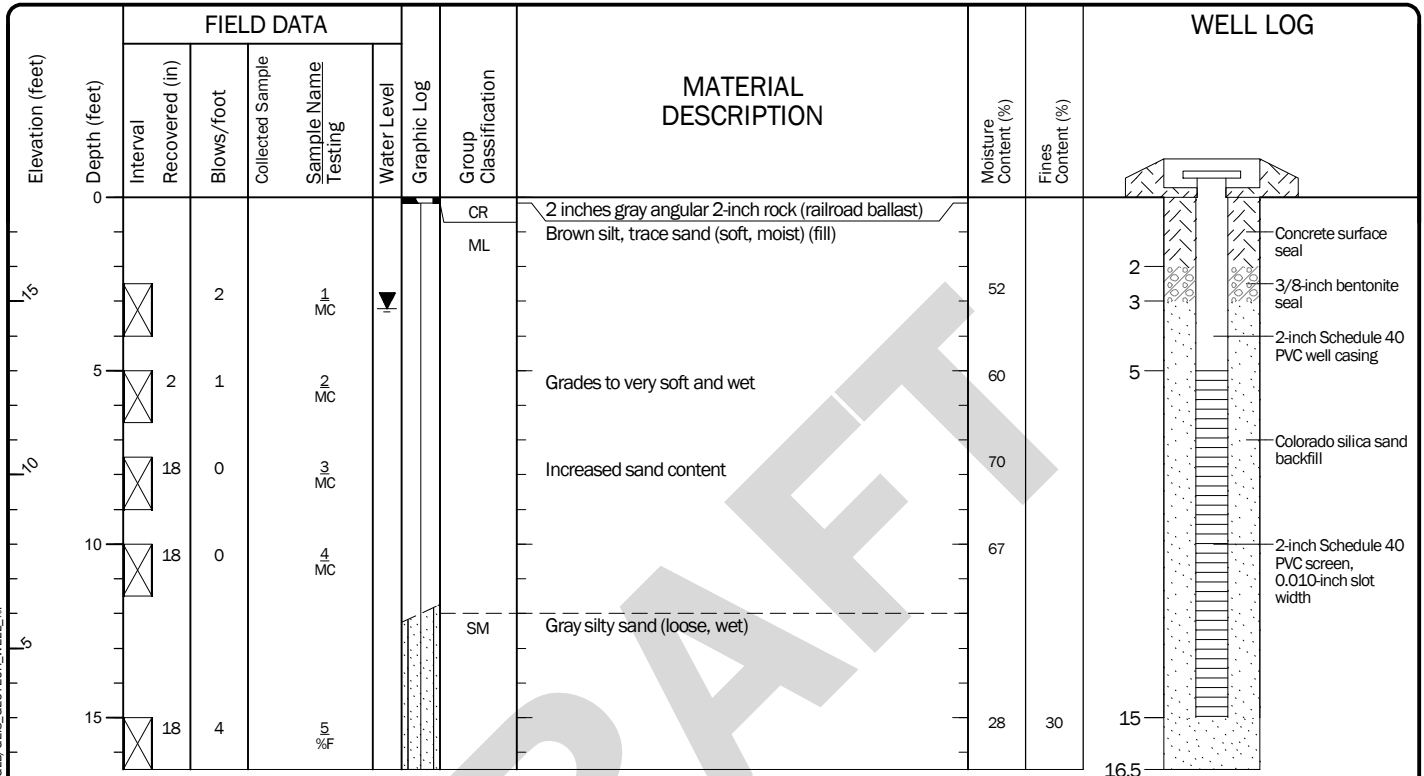
Log of Boring B-15



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-16
Sheet 1 of 1

Start Drilled 11/14/2019		End 11/14/2019		Total Depth (ft)	16.5	Logged By Checked By	EAJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment		Diedrich D-50 Turbo Track Rig		A 2-in well was installed on 11/14/2019 to a depth of 16.5 ft.	
Surface Elevation (ft) Vertical Datum		18 NAVD88		Top of Casing Elevation (ft)		17.80		Groundwater Date Measured		Depth to Water (ft) Elevation (ft)	
Easting (X) Northing (Y)		1210636 558133		Horizontal Datum		WA State Plane North NAD83 (feet)		1/6/2020		3.21 14.59	
Notes:											



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring with Monitoring Well B-16



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-17
Sheet 1 of 1

Start Drilled	11/14/2019	End 11/14/2019	Total Depth (ft)	11.5	Logged By Checked By	EAW AJH	Driller	Holocene Drilling, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	18 NAVD88			Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop			Drilling Equipment	Diedrich D-50 Turbo Track Rig	
Easting (X) Northing (Y)	1210466 558127			System Datum	WA State Plane North NAD83 (feet)			See "Remarks" section for groundwater observed		
Notes:										

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification		
0							CR		
							ML		
5		0	3		1				
		6	3		2 MC			51	Groundwater observed at 5 feet at time of drilling
10		18	1		3 AL		OH	80	AL (LL = 59, PI = 16)
		18	0		4 MC			77	

Note: See Figure A-1 for explanation of symbols.

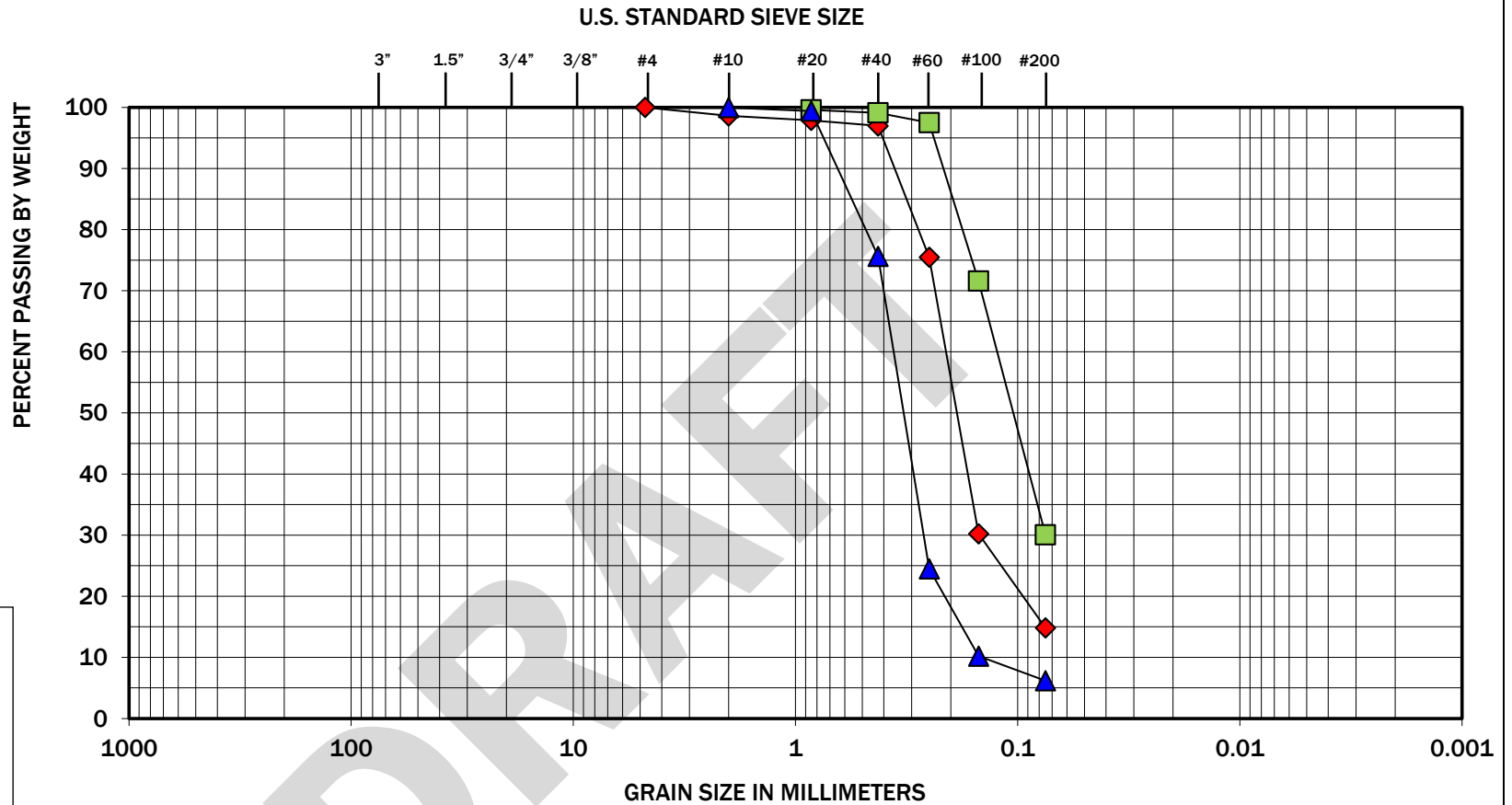
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Boring B-17



Project: Cap Sante Marina North and West Basin Upland Redevelopment Project
Project Location: Anacortes, Washington
Project Number: 5147-031-00

Figure A-18
Sheet 1 of 1



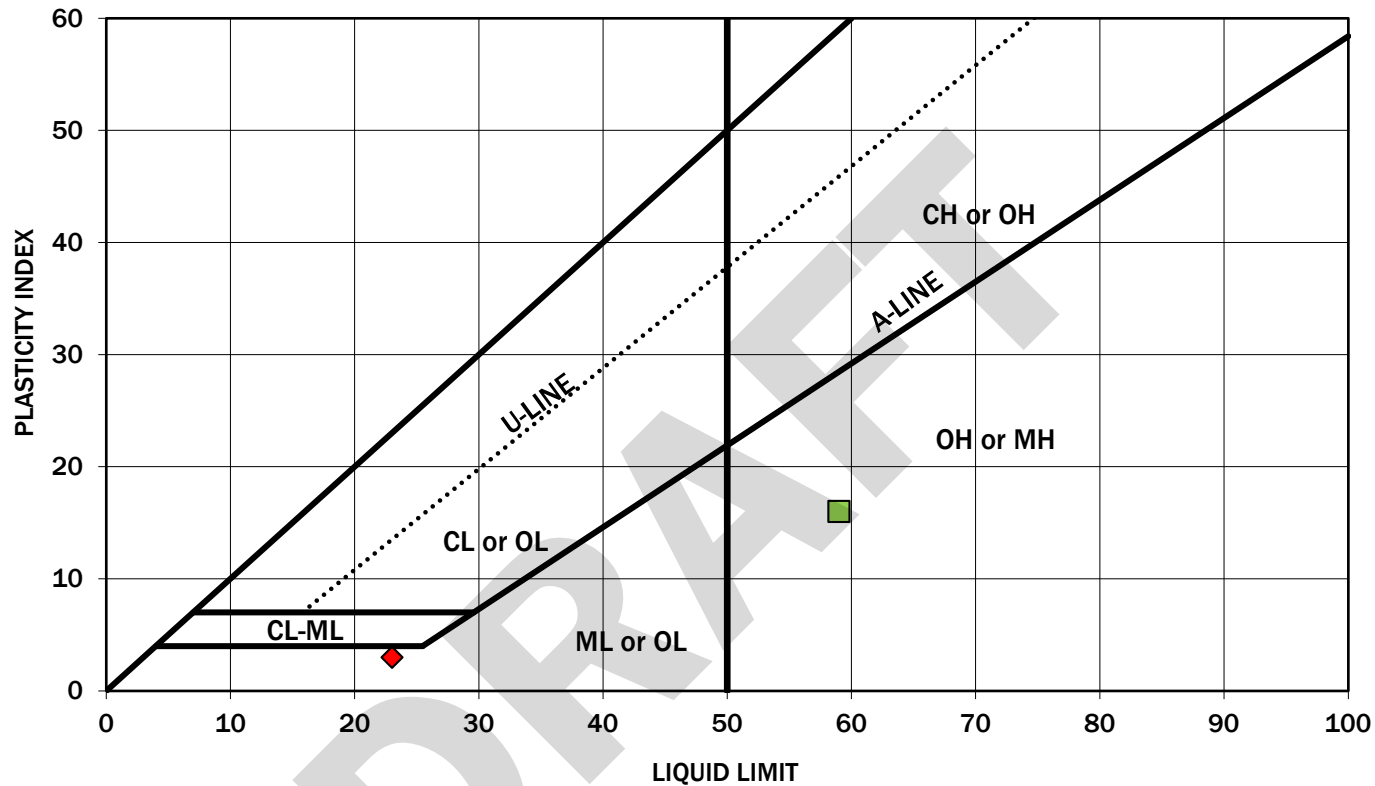
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	B-5	15	25	Silty fine sand (SM)
■	B-5	20	22	Silty fine sand (SM)
▲	B-6	25	22	Fine to medium sand with silt (SP-SM)

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The grain size analysis results were obtained in general accordance with ASTM D 6913. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

PLASTICITY CHART



Symbol	Boring Number	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Description
◆	B-5	40	30	23	3	Sandy silt (ML)
■	B-17	7.5	80	59	16	Silt with occasional sand (OH)

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Atterberg Limits Test Results

Cap Sante Marina North and West Basin
Upland Redevelopment Project
Anacortes, Washington



Figure A-20

APPENDIX B
Chemical Analytical Lab Reports

DRAFT

APPENDIX B CHEMICAL ANALYTICAL PROGRAM

Soil Sampling

Chemical analytical testing was conducted on four composited soil samples obtained from the drill cuttings for waste disposal characterization. Composite soil samples representative of the drilling cuttings generated from the Events Center, Dog Park, West Basin and North Basin investigation areas were placed in laboratory-prepared vials/jars and placed in a cooler with ice for transport to OnSite Environmental, Inc. (OnSite) of Redmond, Washington, for the following chemical analytical testing:

- gasoline-range petroleum hydrocarbons by NWTPH-G;
- diesel and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- volatiles including benzene, ethylbenzene, toluene and xylenes (BETX) by Environmental Protection Agency (EPA) Method 8260
- polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270SIM; and;
- RCRA 8 metals by EPA Methods 6000/7000 series.

Petroleum hydrocarbons and metals were not detected in the soil samples, with the following exceptions:

- Lube oil was detected in the composite drum sample from the North Basin at 76 mg/kg (parts per million [ppm]). **The detected concentrations are less than the MTCA Method A or B cleanup level of 2000 mg/kg (ppm).**
- Barium and chromium were detected in each of the four drum samples with lead detected in three of the drum samples; **the detected concentrations were less than the MTCA Method A or B cleanup levels.** The detected metals levels are as shown in Table B-1.

TABLE B-1. SUMMARY OF DETECTED METAL RESULTS

Boring and Sample	Barium (mg/kg) ¹	Chromium (mg/kg) ²	Lead (mg/kg) ³
Event center	88	26	ND
Dog Park	81	34	11
South Basin (West Basin)	45	35	9.2
North Basin	44	35	9.4

Notes:

¹ The Model Toxics Control Act (MTCA) Method B cleanup level for barium is 16,000 milligrams per kilogram (mg/kg).

² The MTCA Method A cleanup level for chromium III is 2,000 mg/kg.

³ The MTCA Method A cleanup level for Lead is 250 mg/kg.

ND = Not detected

The results of the analytical testing are provided in the attached OnSite Environmental, Inc. report. Based on a review of the waste disposal characterization test result, drill cutting generated by the Cap Sante Marina North and West Basin Upland Redevelopment project were transferred from the site for permitted disposal at Cadman's Everett, Washington, solid waste landfill.



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 25, 2019

Aaron Hartvigsen
GeoEngineers, Inc.
600 Dupont Street
Bellingham, WA 98225

Re: Analytical Data for Project 5147-031-00
Laboratory Reference No. 1911-163

Dear Aaron:

Enclosed are the analytical results and associated quality control data for samples submitted on November 15, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", followed by a horizontal line.

David Baumeister
Project Manager

Enclosures



Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

Case Narrative

Samples were collected on November 14, 2019 and received by the laboratory on November 15, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

DRAFT



Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Convention Center	11-163-01	Soil	11-14-19	11-15-19	
Dog Park	11-163-02	Soil	11-14-19	11-15-19	
South Basin	11-163-03	Soil	11-14-19	11-15-19	
North Basin	11-163-04	Soil	11-14-19	11-15-19	

DRAFT



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID:	11-163-01					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.077	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.7	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	89	58-129				
Client ID: Dog Park						
Laboratory ID:	11-163-02					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.073	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.3	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	84	58-129				
Client ID: South Basin						
Laboratory ID:	11-163-03					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.071	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	7.1	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	68	58-129				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-20-19	
Toluene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
Ethyl Benzene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
m,p-Xylene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
o-Xylene	ND	0.088	EPA 8021B	11-19-19	11-20-19	
Gasoline	ND	8.8	NWTPH-Gx	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	75	58-129				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Convention Center					
Laboratory ID:	11-163-01					
Diesel Range Organics	ND	34	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	69	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	Dog Park					
Laboratory ID:	11-163-02					
Diesel Range Organics	ND	33	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	67	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Client ID:	South Basin					
Laboratory ID:	11-163-03					
Diesel Range Organics	ND	31	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	62	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Diesel Range Organics	ND	33	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	76	67	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID: 11-163-01						
Naphthalene	0.030	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	0.010	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[j,k]fluoranthene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0091	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	78	40 - 111				
Pyrene-d10	78	40 - 110				
Terphenyl-d14	80	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		Dog Park				
Laboratory ID:		11-163-02				
Naphthalene	0.025	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	0.010	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	0.0094	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	0.010	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	83	40 - 111				
Pyrene-d10	75	40 - 110				
Terphenyl-d14	80	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		South Basin				
Laboratory ID:		11-163-03				
Naphthalene	0.025	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
2-Methylnaphthalene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
1-Methylnaphthalene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthylene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Fluorene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Phenanthrene	0.011	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Fluoranthene	0.0093	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Pyrene	0.010	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Chrysene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[b]fluoranthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo(j,k)fluoranthene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]pyrene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Dibenz[a,h]anthracene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[g,h,i]perylene	ND	0.0082	EPA 8270E/SIM	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	80	40 - 111				
Pyrene-d10	85	40 - 110				
Terphenyl-d14	91	45 - 122				



Date of Report: November 25, 2019
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 Project: 5147-031-00

PAHs EPA 8270E/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		North Basin				
Laboratory ID:		11-163-04				
Naphthalene	0.055	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
2-Methylnaphthalene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
1-Methylnaphthalene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthylene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Acenaphthene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Fluorene	0.012	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Phenanthrene	0.029	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Anthracene	0.0091	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Fluoranthene	0.043	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Pyrene	0.044	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]anthracene	0.017	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Chrysene	0.020	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[b]fluoranthene	0.021	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[a]pyrene	0.018	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Indeno(1,2,3-c,d)pyrene	0.011	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Benzo[g,h,i]perylene	0.011	0.0089	EPA 8270E/SIM	11-19-19	11-20-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	79	40 - 111				
Pyrene-d10	78	40 - 110				
Terphenyl-d14	85	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

TOTAL METALS
EPA 6010D/7471B

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: Convention Center						
Laboratory ID: 11-163-01						
Arsenic	ND	14	EPA 6010D	11-20-19	11-21-19	
Barium	88	3.4	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.68	EPA 6010D	11-20-19	11-21-19	
Chromium	26	0.68	EPA 6010D	11-20-19	11-21-19	
Lead	ND	6.8	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.34	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	14	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.4	EPA 6010D	11-20-19	11-21-19	
Client ID: Dog Park						
Laboratory ID: 11-163-02						
Arsenic	ND	13	EPA 6010D	11-20-19	11-21-19	
Barium	81	3.3	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.67	EPA 6010D	11-20-19	11-21-19	
Chromium	34	0.67	EPA 6010D	11-20-19	11-21-19	
Lead	11	6.7	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.33	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	13	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.3	EPA 6010D	11-20-19	11-21-19	
Client ID: South Basin						
Laboratory ID: 11-163-03						
Arsenic	ND	12	EPA 6010D	11-20-19	11-21-19	
Barium	45	3.1	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.62	EPA 6010D	11-20-19	11-21-19	
Chromium	35	0.62	EPA 6010D	11-20-19	11-21-19	
Lead	9.2	6.2	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.31	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	12	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.2	EPA 6010D	11-20-19	11-21-19	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**TOTAL METALS
 EPA 6010D/7471B**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	North Basin					
Laboratory ID:	11-163-04					
Arsenic	ND	13	EPA 6010D	11-20-19	11-21-19	
Barium	44	3.3	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.67	EPA 6010D	11-20-19	11-21-19	
Chromium	35	0.67	EPA 6010D	11-20-19	11-21-19	
Lead	9.4	6.7	EPA 6010D	11-20-19	11-21-19	
Mercury	ND	0.33	EPA 7471B	11-20-19	11-20-19	
Selenium	ND	13	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.3	EPA 6010D	11-20-19	11-21-19	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1119S1					
Benzene	ND	0.020	EPA 8021B	11-19-19	11-19-19	
Toluene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
Ethyl Benzene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
m,p-Xylene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
o-Xylene	ND	0.050	EPA 8021B	11-19-19	11-19-19	
Gasoline	ND	5.0	NWTPH-Gx	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	96	58-129				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-160-04							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	30	
Toluene	ND	ND	NA	NA	NA	NA	30	
Ethyl Benzene	ND	ND	NA	NA	NA	NA	30	
m,p-Xylene	ND	ND	NA	NA	NA	NA	30	
o-Xylene	ND	ND	NA	NA	NA	NA	30	
Gasoline	ND	ND	NA	NA	NA	NA	30	
Surrogate:								
Fluorobenzene				101	99	58-129		

SPIKE BLANKS

Laboratory ID:	SB1119S1							
	SB	SBD	SB	SBD	SB	SBD		
Benzene	0.985	0.991	1.00	1.00	99	99	69-109	1 10
Toluene	0.998	1.01	1.00	1.00	100	101	67-112	1 10
Ethyl Benzene	1.01	1.02	1.00	1.00	101	102	67-113	1 10
m,p-Xylene	1.01	1.02	1.00	1.00	101	102	66-114	1 11
o-Xylene	0.984	0.998	1.00	1.00	98	100	68-112	1 11
Surrogate:								
Fluorobenzene					99	100	58-129	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1120S1					
Diesel Range Organics	ND	25	NWTPH-Dx	11-20-19	11-20-19	X1
Lube Oil Range Organics	ND	50	NWTPH-Dx	11-20-19	11-20-19	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i>-Terphenyl	89	50-150				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	11-176-05									
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						77	80	50-150		



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1119S1					
Naphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
2-Methylnaphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
1-Methylnaphthalene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthylene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Acenaphthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Fluorene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Phenanthrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Chrysene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[a]pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Benzo[g,h,i]perylene	ND	0.0067	EPA 8270E/SIM	11-19-19	11-19-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	92	40 - 111				
Pyrene-d10	88	40 - 110				
Terphenyl-d14	96	45 - 122				



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES								
Laboratory ID:	11-160-03							
	MS	MSD	MS	MSD	MS	MSD		
Naphthalene	0.0734	0.0703	0.0833	0.0833	ND	88 84	44 - 111	4 21
Acenaphthylene	0.0765	0.0711	0.0833	0.0833	ND	92 85	47 - 122	7 24
Acenaphthene	0.0790	0.0695	0.0833	0.0833	ND	95 83	46 - 122	13 24
Fluorene	0.0787	0.0715	0.0833	0.0833	ND	94 86	53 - 118	10 23
Phenanthrene	0.0770	0.0706	0.0833	0.0833	ND	92 85	41 - 124	9 24
Anthracene	0.0790	0.0724	0.0833	0.0833	ND	95 87	53 - 119	9 21
Fluoranthene	0.0779	0.0721	0.0833	0.0833	ND	94 87	39 - 135	8 32
Pyrene	0.0761	0.0720	0.0833	0.0833	ND	91 86	39 - 134	6 34
Benzo[a]anthracene	0.0887	0.0814	0.0833	0.0833	ND	106 98	53 - 131	9 23
Chrysene	0.0815	0.0759	0.0833	0.0833	ND	98 91	46 - 126	7 24
Benzo[b]fluoranthene	0.0815	0.0744	0.0833	0.0833	ND	98 89	45 - 127	9 25
Benzo[j,k]fluoranthene	0.0810	0.0751	0.0833	0.0833	ND	97 90	52 - 122	8 21
Benzo[a]pyrene	0.0795	0.0727	0.0833	0.0833	ND	95 87	51 - 126	9 24
Indeno(1,2,3-c,d)pyrene	0.0775	0.0708	0.0833	0.0833	ND	93 85	48 - 127	9 23
Dibenz[a,h]anthracene	0.0786	0.0721	0.0833	0.0833	ND	94 87	51 - 124	9 22
Benzo[g,h,i]perylene	0.0810	0.0740	0.0833	0.0833	ND	97 89	50 - 120	9 22
Surrogate:								
2-Fluorobiphenyl						90 87	40 - 111	
Pyrene-d10						91 86	40 - 110	
Terphenyl-d14						97 86	45 - 122	



Date of Report: November 25, 2019
 Samples Submitted: November 15, 2019
 Laboratory Reference: 1911-163
 Project: 5147-031-00

**TOTAL METALS
 EPA 6010D/7471B
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1120SH1					
Arsenic	ND	10	EPA 6010D	11-20-19	11-21-19	
Barium	ND	2.5	EPA 6010D	11-20-19	11-21-19	
Cadmium	ND	0.50	EPA 6010D	11-20-19	11-21-19	
Chromium	ND	0.50	EPA 6010D	11-20-19	11-21-19	
Lead	ND	5.0	EPA 6010D	11-20-19	11-21-19	
Selenium	ND	10	EPA 6010D	11-20-19	11-21-19	
Silver	ND	1.0	EPA 6010D	11-20-19	11-21-19	

Laboratory ID:	MB1120S1					
Mercury	ND	0.25	EPA 7471B	11-20-19	11-20-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-163-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	20	
Barium	64.3	68.3	NA	NA	NA	6	20	
Cadmium	ND	ND	NA	NA	NA	NA	20	
Chromium	18.8	19.9	NA	NA	NA	6	20	
Lead	ND	ND	NA	NA	NA	NA	20	
Selenium	ND	ND	NA	NA	NA	NA	20	
Silver	ND	ND	NA	NA	NA	NA	20	

Laboratory ID:	11-197-02							
Mercury	0.322	0.324	NA	NA	NA	NA	1	20

MATRIX SPIKES

Laboratory ID:	11-163-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	98.9	99.0	100	100	ND	99	99	75-125	0	20
Barium	159	156	100	100	64.3	95	92	75-125	2	20
Cadmium	45.6	45.4	50.0	50.0	ND	91	91	75-125	0	20
Chromium	113	110	100	100	18.8	94	91	75-125	2	20
Lead	225	226	250	250	ND	90	90	75-125	0	20
Selenium	97.7	96.8	100	100	ND	98	97	75-125	1	20
Silver	22.7	22.8	25.0	25.0	ND	91	91	75-125	0	20

Laboratory ID:	11-197-02									
Mercury	0.788	0.791	0.500	0.500	0.322	93	94	80-120	0	20



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 25, 2019
Samples Submitted: November 15, 2019
Laboratory Reference: 1911-163
Project: 5147-031-00

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
Convention Center	11-163-01	27	11-18-19
Dog Park	11-163-02	25	11-18-19
South Basin	11-163-03	19	11-18-19
North Basin	11-163-04	25	11-18-19

DRAFT





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



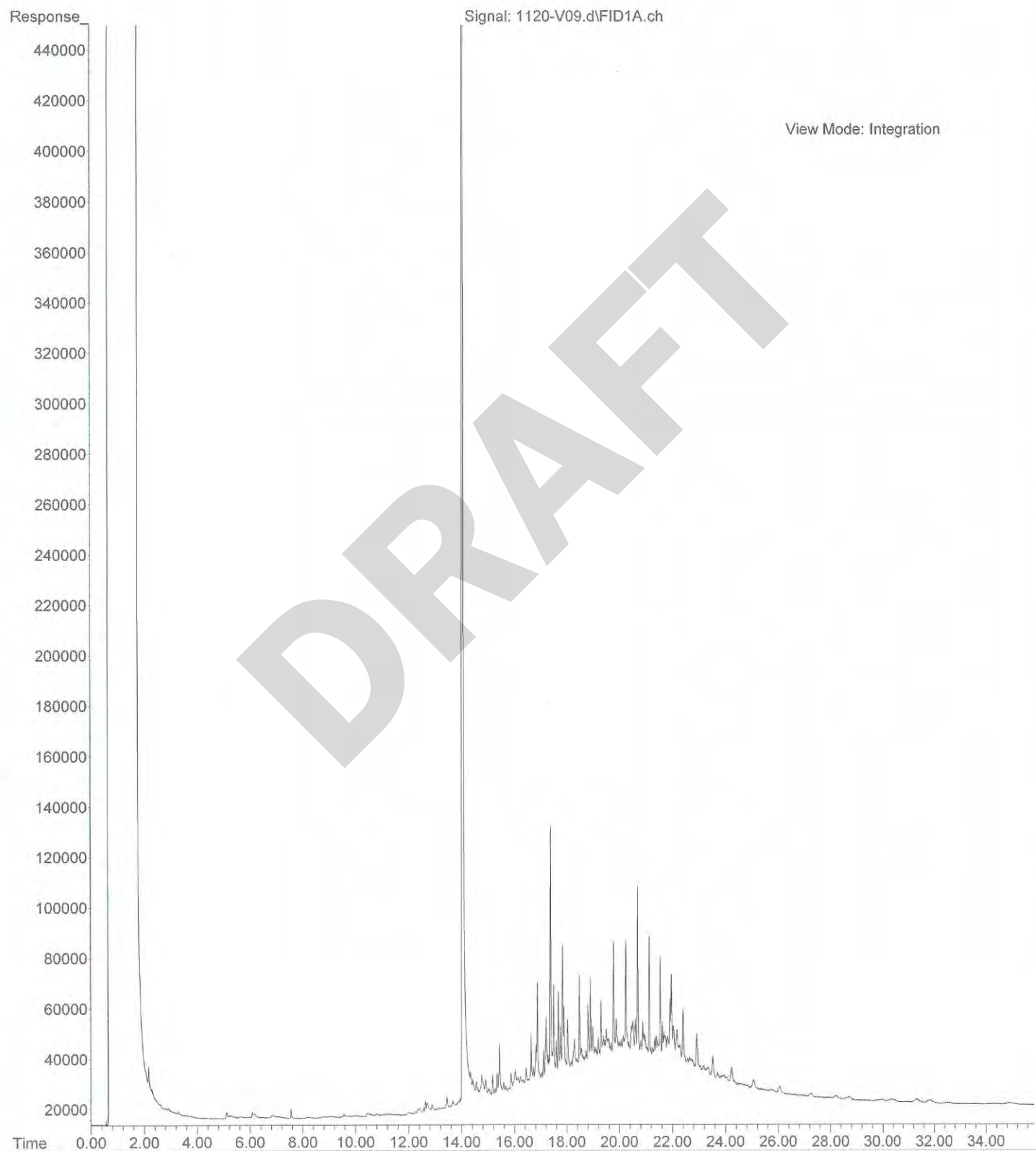


Company:	GeoEngineers
Project Number:	5147-031-00
Project Name:	Cap Sante Marina N+S Basins
Project Manager:	Aaron Hartvigsen Robert Trahan
Sampled by:	EAW

Page 1 of 1

[illegible]

File :X:\DIESELS\VIGO\DATA\V191120\1120-V09.d
Operator : JT
Acquired : 20 Nov 2019 13:01 using AcqMethod V180601F.M
Instrument : Vigo
Sample Name: 11-163-04 ACU REX
Misc Info :
Vial Number: 9



APPENDIX C

Report Limitations and Guidelines for Use

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APPENDIX C

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services are Performed for Specific Purposes, Persons and Projects

This report has been prepared for use by the Port of Anacortes and members of the design team for use in the design of this project. This report may be made available to prospective contractors for bidding or estimating purposes; but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. No one except the Port of Anacortes and members of the design team should rely on this report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed Cap Sante Marina North and West Basin Upland Redevelopment project in Anacortes, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

¹ Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Environmental Concerns are Not Covered

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings are Professional Opinions

Our interpretations of subsurface conditions are based on the boring results completed at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted. GeoEngineers reviewed historic field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, or assessment of the presence of Biological Compounds which are Pollutants in or around any structure. Accordingly, this report includes no interpretations, recommendations, findings, or conclusions for the purpose of detecting, assessing, or abating Biological Pollutants. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

APPENDIX 3 – Model Soil Management Plan for BMP T5.13

Note: Document is provided under Minimum Requirement 5 in this document and shall be provided by the contractor as a deferred submittal for the project.

APPENDIX 4 – Determining Construction Site Sediment Damage Potential (Appendix 7 – NPDES Phase II Permit)

Note: See attached

i. **APPENDIX 7 – Determining Construction Site Sediment Damage Potential**

The following rating system allows objective evaluation of a particular development site's potential to discharge sediment. Permittees may use the rating system below or develop alternative process designed to identify site-specific features which indicate that the site must be inspected prior to clearing and construction. Any alternative evaluation process must be documented and provide for equivalent environmental review.

Step one is to determine if there is a sediment/erosion sensitive feature downstream of the development site. If there is such a site downstream complete step two, assessment of hydraulic nearness. If there is a sediment/erosion sensitive feature and it is hydraulically near the site then go to step three to determine the construction site sediment transport potential.

ii. **STEP 1 – Sediment/Erosion Sensitive Feature Identification**

Sediment/erosion sensitive features are areas subject to significant degradation due to the effect of sediment deposition or erosion. Special protection must be provided to protect them.

Sediment/erosion sensitive features include but are not limited to:

- i. Salmonid bearing fresh water streams and their tributaries or freshwater streams that would be Salmonid bearing if not for anthropogenic barriers;
- ii. Lakes;
- iii. Category I, II, and III wetlands;
- iv. **Marine near-shore habitat;**
- v. Sites containing contaminated soils where erosion could cause dispersal of contaminants; and
- vi. Steep slopes (25% or greater) associated with one of the above features.

Identify any sediment/erosion sensitive features, and proceed to step two. If there are none the assessment is complete.

iii. **STEP 2 – Hydraulic Nearness Assessment**

Sites are hydraulically near a feature if the pollutant load and peak quantity of runoff from the site will not be naturally attenuated before entering the feature. The conditions that render a site hydraulically near to a feature include, but are not limited to, the following:

- i. **The feature or a buffer to protect the feature is within 200 feet downstream of the site.**
- ii. Runoff from the site is tight-lined to the feature or flows to the feature through a channel or ditch.

A site is not hydraulically near a feature if one of the following takes place to provide attenuation before runoff from the site enters the feature:

- iv. Sheet flow through a vegetated area with dense ground cover
- v. Flow through a wetland not included as a sensitive feature
- vi. Flow through a significant shallow or adverse slope, not in a conveyance channel, between the site and the sensitive feature.

Identify any of the sediment/erosion sensitive features from step one that are hydraulically near the site, and proceed to step three. If none of the sediment/erosion sensitive features are hydraulically near the site, the assessment is complete.

vii. **STEP 3 – Construction Site Sediment Transport Potential**

Using the worksheet below, determine the total points for each development site. Assign points based on the most critical condition that affects 10% or more of the site.

If soil testing has been performed on site, the results should be used to determine the predominant soil type on the site. Otherwise, soil information should be obtained from the county soil survey to determine Hydrologic Soil Group (Table of Engineering Index Properties for step 1.D) and Erosion Potential (Table of Water Features for step 1.E)

When using the county soil survey, the dominant soil type may be in question, particularly when the site falls on a boundary between two soil types or when one of two soil types may be present on a site. In this case, the soil type resulting in the most points on the rating system will be assumed unless site soil tests indicate that another soil type dominates the site.

Use the point score from Step 3 to determine whether the development site has a high potential for sediment transport off of the site.

<u>Total Score</u>	<u>Transport Rating</u>
<100	Low
>100	High

A high transport rating indicates a higher risk that the site will generate sediment contaminated runoff.

Construction Site Sediment Transport Potential Worksheet

A. <u>Existing slope of site (average, weighted by aerial extent):</u>	
Points 2% or less	0
>2-5%	5
>5-10%	15
>10-15%	30
>15%	50
B. <u>Site Area to be cleared and/or graded:</u>	
<5,000 sq. ft	0
5,000 sq. ft. – 1 acre.....	30
>1 acres.....	50
C. <u>Quantity of cut and/or fill on site:</u>	
<500 cubic yards	0
500 – 5,000 cubic yards.....	5
>5,000 – 10,000 cubic yards.....	10
>10,000 – 20,000 cubic yards.....	25
>20,000 cubic yards	40
D. <u>Runoff potential of predominant soils (Natural Resources Conservation Service):</u>	
Hydrologic soil group A	0
Hydrologic soil group B.....	10
Hydrologic soil group C.....	20
Hydrologic soil group D.....	40
E. <u>Erosion Potential of predominant soils (Unified Classification System):</u>	
GW, GP, SW, SP soils.....	0
Dual classifications (GW-GM, GP-GM, GW-GC, GP-GC, SW-SM, SW-SC, SP-SM, SP-SC)	10
GM, GC, SM, SC soils	20
ML, CL, MH, CH soils.....	40
F. <u>Surface or Groundwater entering site identified and intercepted¹:</u>	
Yes.....	0
No	25
G. <u>Depth of cut or height of fill >10 feet:</u>	
Yes.....	25
No.....	0
H. <u>Clearing and grading will occur in the wet season (October 1 – May 1):</u>	
Yes.....	50
No.....	0

TOTAL POINTS..... 140

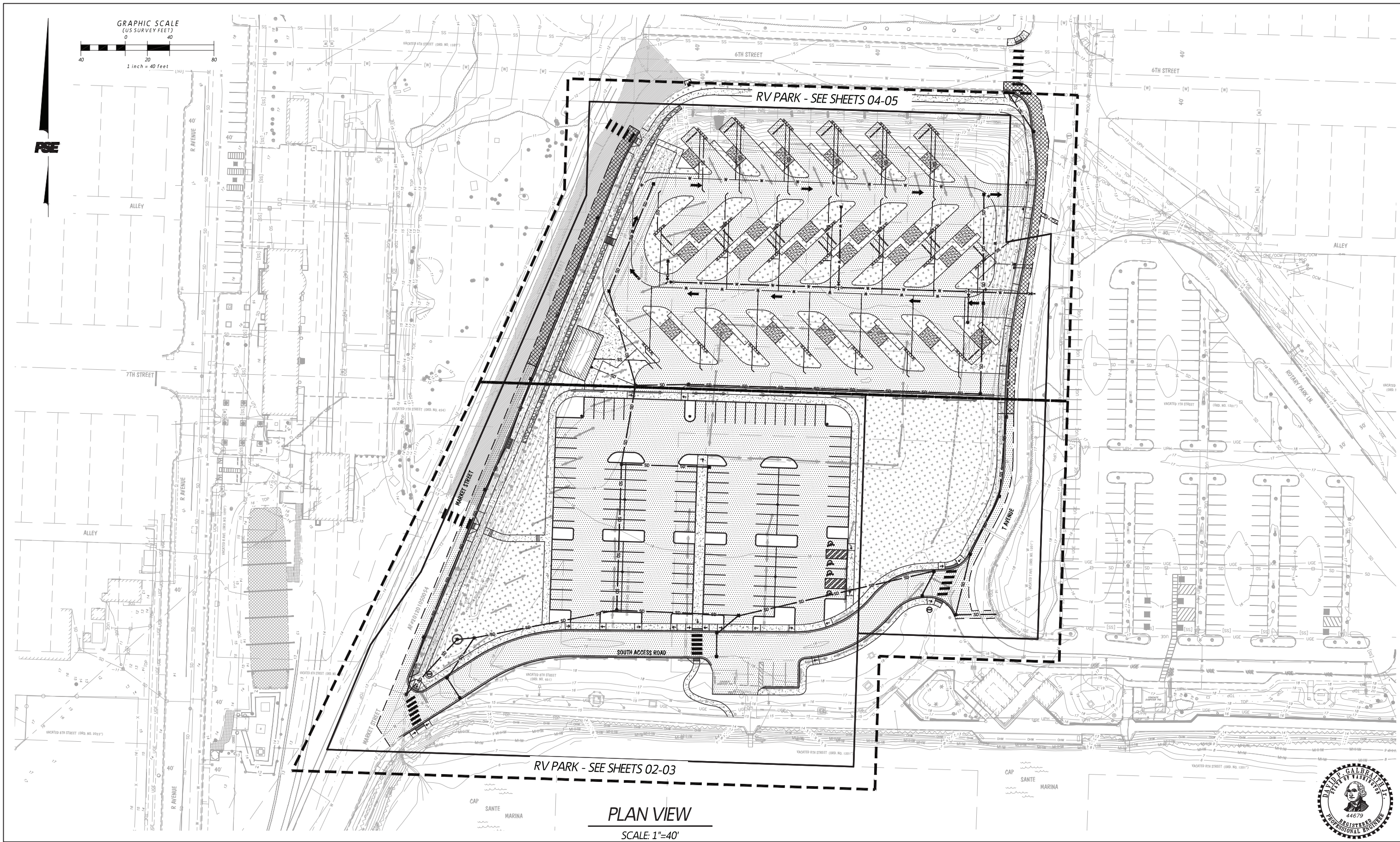
¹ If no surface or groundwater enters site, give 0 points.

APPENDIX 5 – Site Plan with all applicable information (Minimum Size 11x17 at a legible scale)

Exhibits Include:

- Site Plan
- Pre-Developed Basin Map
- Post-Developed Basin Map
- Water Quality Basin Map
- TESC Plan

In addition to the attached 11x17 exhibits, complete civil design drawings will be submitted for review.



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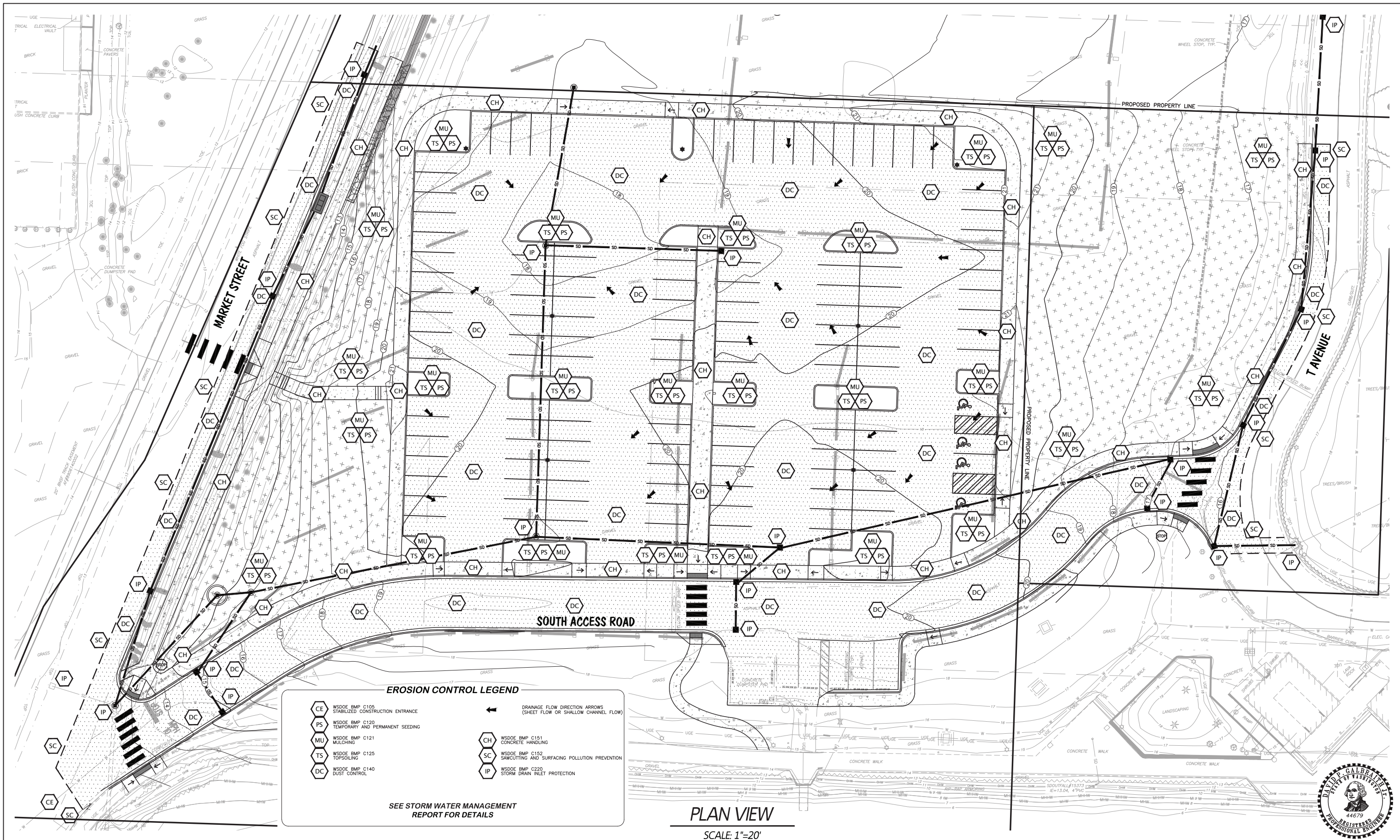


CAP SANTE - JKL LOT / RV PARK IMPROVEMENTS
 PORT OF ANACORTES
 PROJECT #

KEY SHEET

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DESIGN: JG	SCALE: 1"=20'
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01 OF 05



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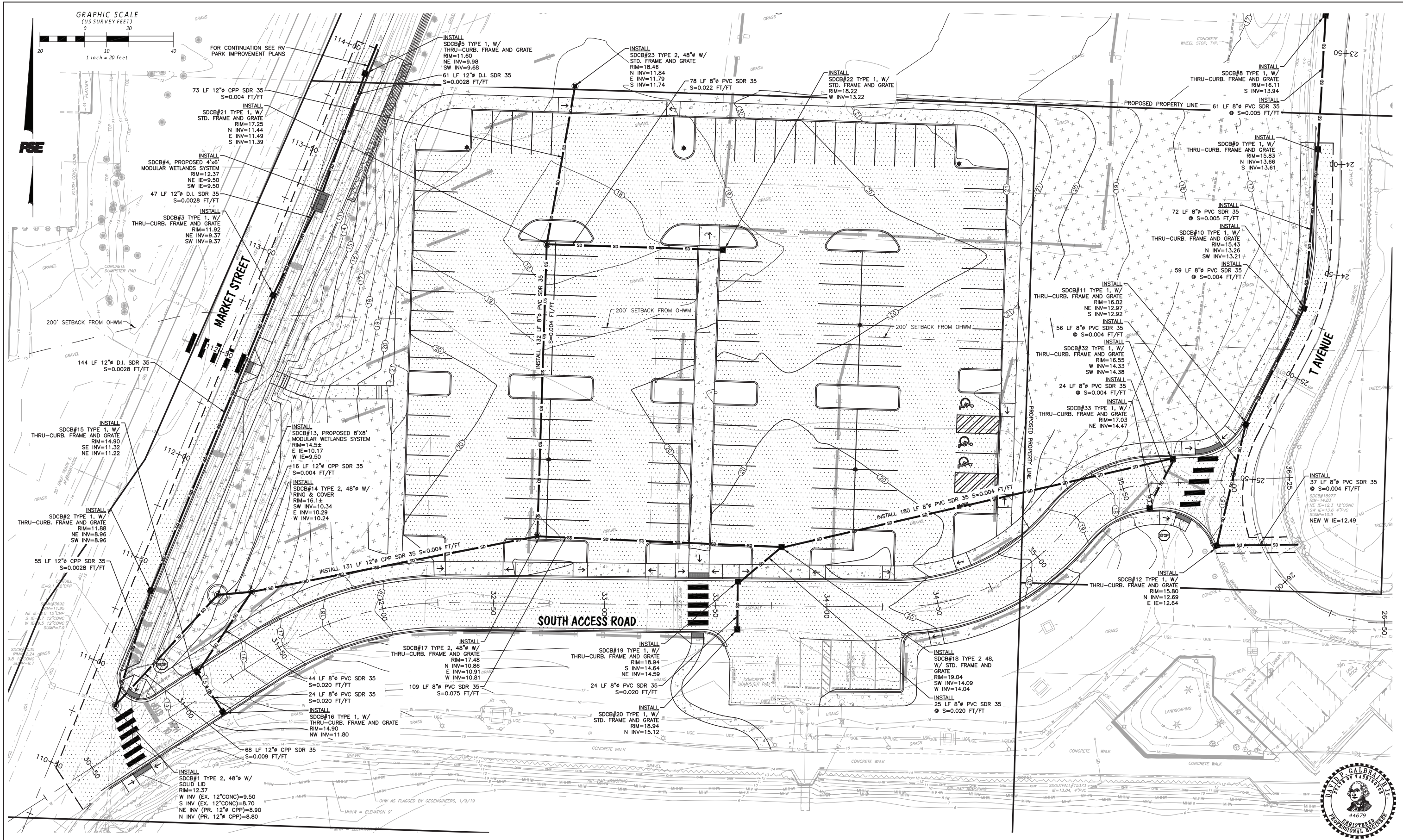
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CAP SANTE - JKL LOT / RV PARK IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

JKL LOT TEMPORARY EROSION
AND SEDIMENT CONTROL PLAN

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PORT OF ANACORTES
PROJECT #

JKL LOT DRAINAGE PLAN

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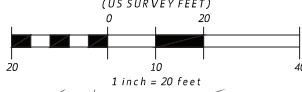
EROSION CONTROL LEGEND

- CE WSDOE BMP C105 STABILIZED CONSTRUCTION ENTRANCE
- PS WSDOE BMP C120 TEMPORARY AND PERMANENT SEEDING
- TS WSDOE BMP C125 TOPSOILING
- DC WSDOE BMP C140 DUST CONTROL

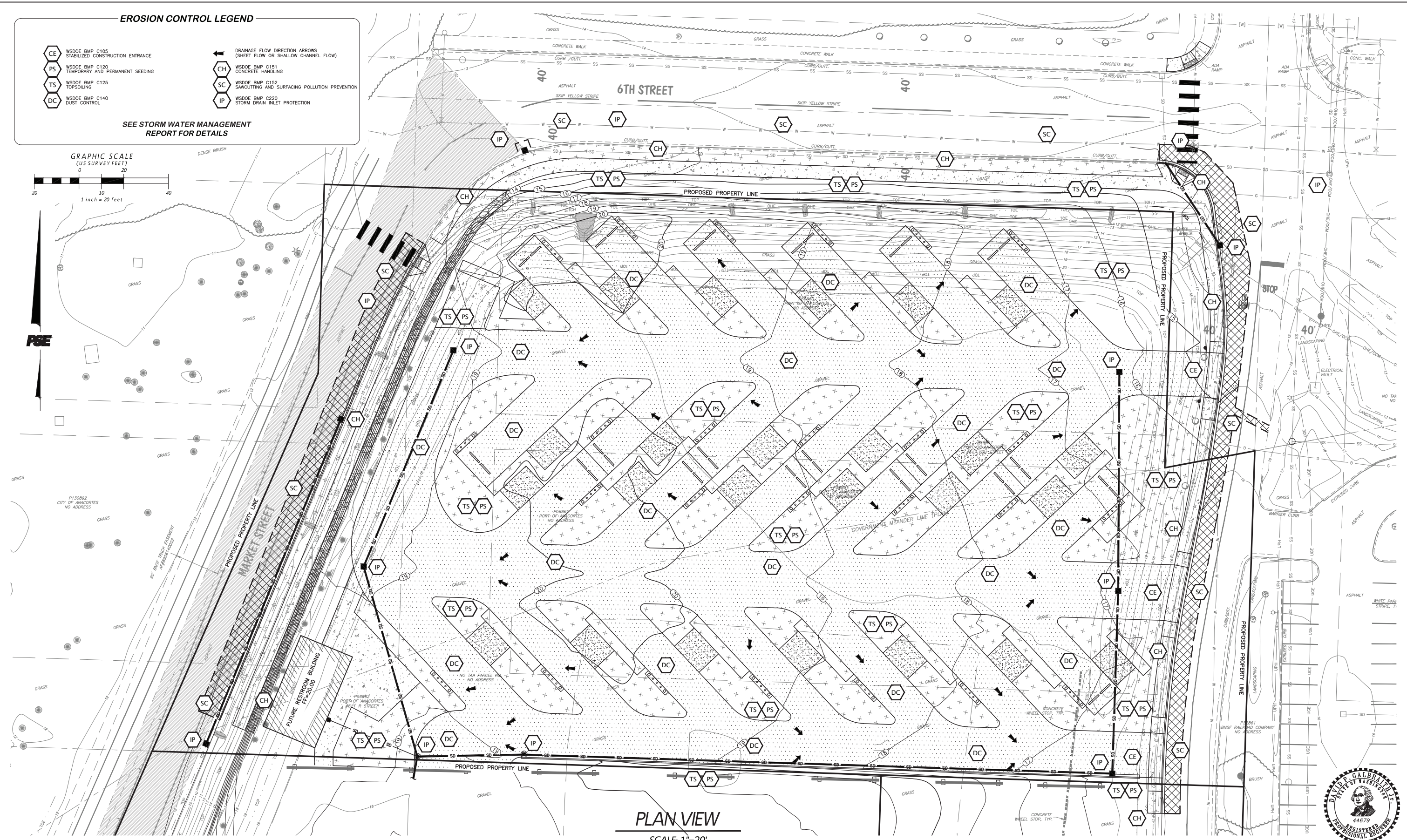
- CH WSDOE BMP C151 CONCRETE HANDLING
- SC WSDOE BMP C152 SAWCUTTING AND SURFACING POLLUTION PREVENTION
- IP WSDOE BMP C220 STORM DRAIN INLET PROTECTION

SEE STORM WATER MANAGEMENT REPORT FOR DETAILS

GRAPHIC SCALE



PSE



PLAN VIEW

SCALE: 1"=20'

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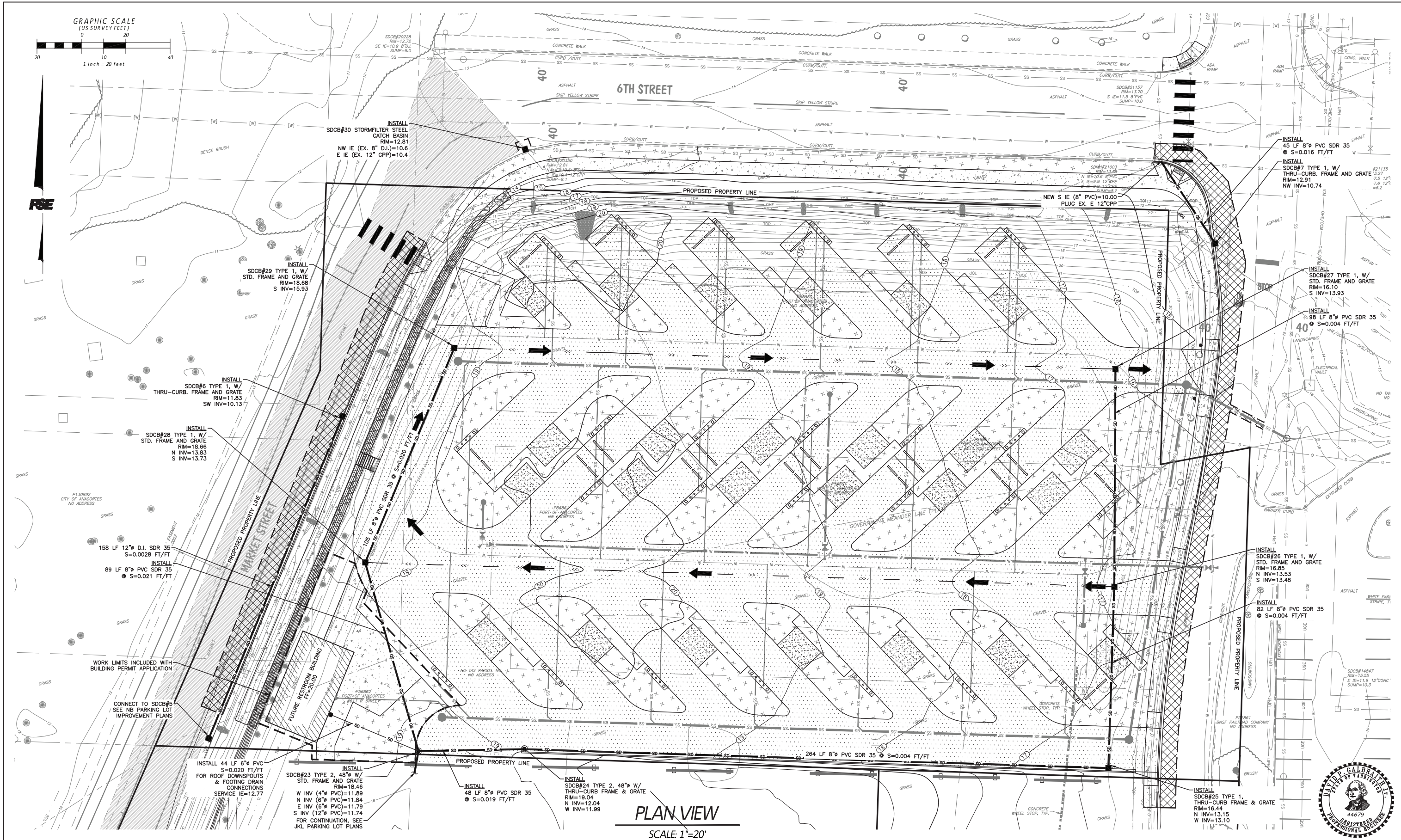


CAP SANTE - JKL LOT / RV PARK IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

RV LOT TEMPORARY EROSION +
SEDIMENT CONTROL PLAN

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DESIGN: JG SCALE: 1"=20'
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04 OF 05



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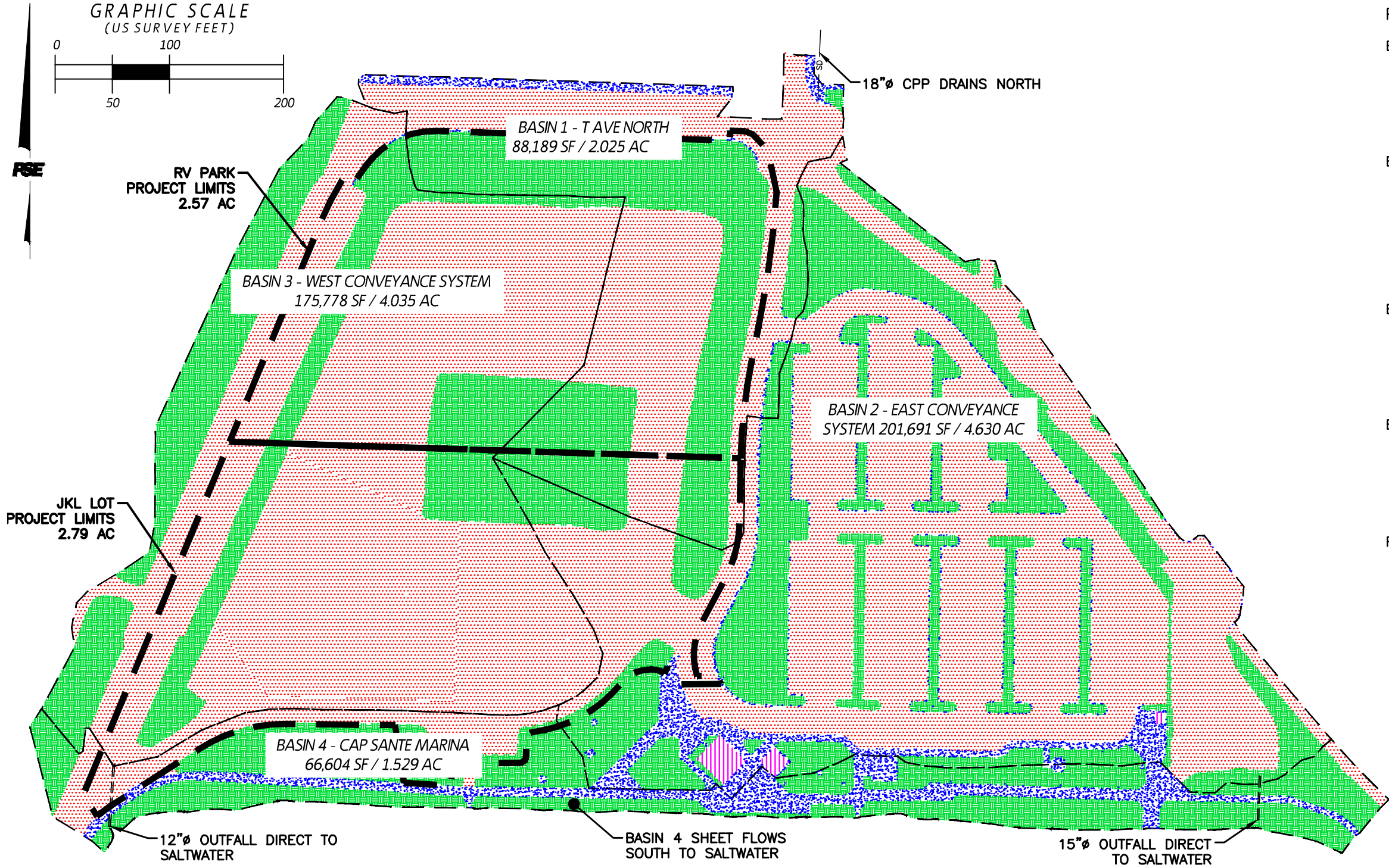
CAP SANTE - JKL LOT / RV PARK IMPROVEMENTS
PORT OF ANACORTES
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RV LOT DRAINAGE
PLAN

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PRE-DEVELOPMENT BASIN AREA SUMMARY

BASIN 1 – T AVE NORTH		
ASPHALT:	44,513 SF	/ 1.022 AC
CONCRETE:	3,643 SF	/ 0.084 AC
IMP. TOTAL:	48,156 SF	/ 1.106 AC
LAWN:	40,003 SF	/ 0.919 AC
TOTAL:	88,189 SF	/ 2.025 AC

BASIN 2 – EAST CONVEYANCE		
ASPHALT:	127,239 SF	/ 2.921 AC
CONCRETE:	11,335 SF	/ 0.260 AC
ROOF:	1,336 SF	/ 0.031 AC
IMP. TOTAL:	139,910 SF	/ 3.212 AC
LAWN:	61,781 SF	/ 1.418 AC
TOTAL:	201,691 SF	/ 4.630 AC

BASIN 3 – WEST CONVEYANCE		
ASPHALT:	130,339 SF	/ 2.992 AC
CONCRETE:	108 SF	/ 0.002 AC
IMP TOTAL:	130,447 SF	/ 2.995 AC
LAWN:	45,331 SF	/ 1.041 AC
TOTAL:	175,778 SF	/ 4.035 AC

BASIN 4 – CAP SANTE		
ASPHALT:	10,452 SF	/ 0.240 AC
CONCRETE:	13,509 SF	/ 0.310 AC
IMP TOTAL:	30,447 SF	/ 2.995 AC
LAWN:	42,643 SF	/ 1.041 AC
TOTAL:	66,604 SF	/ 1.529 AC

PROJECT TOTAL: 532,262 SF / 12.219 AC



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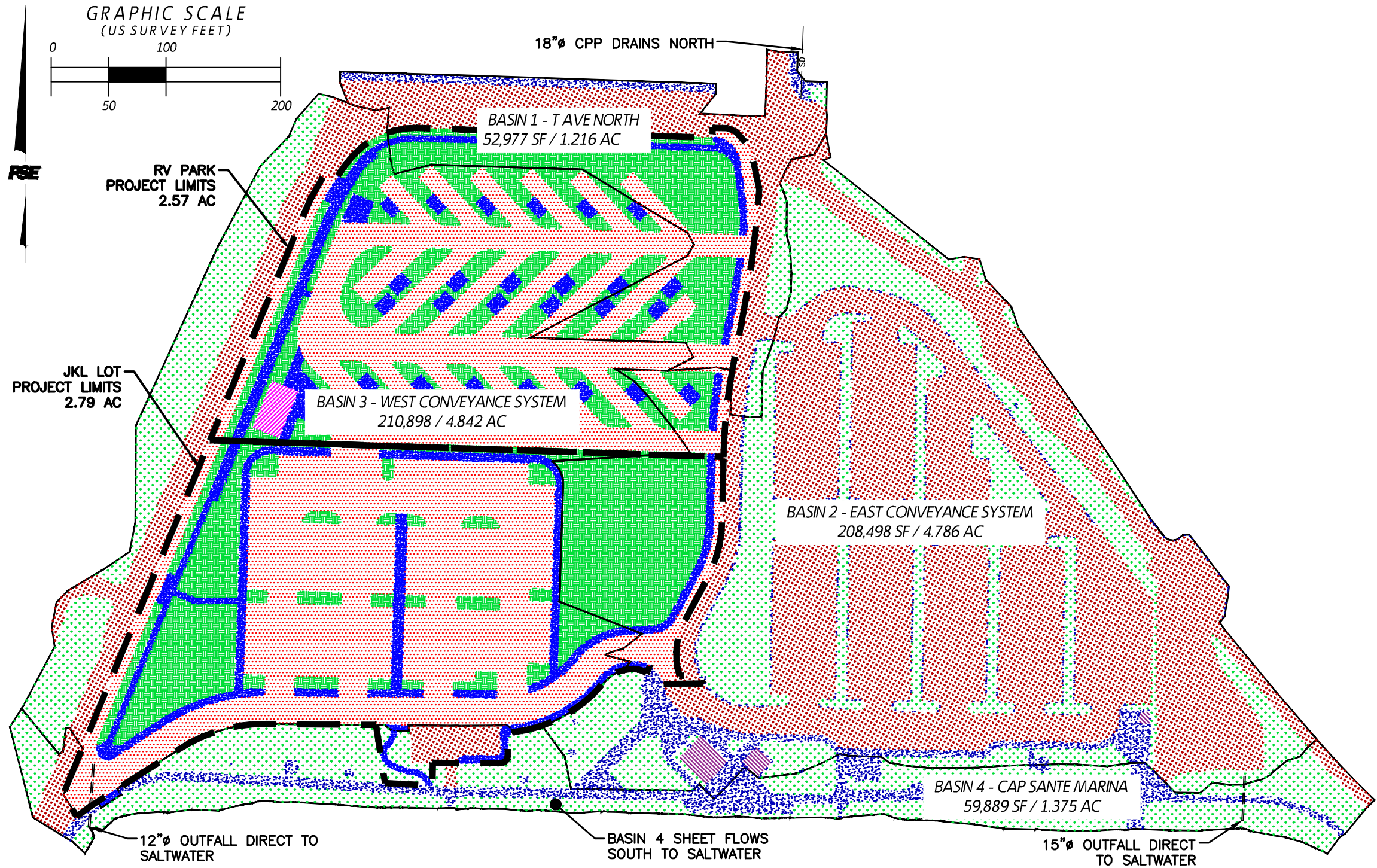
CAP SANTE IMPROVEMENTS
PORT OF ANACORTES

PRE-DEVELOPED BASIN MAP
ANACORTES, WASHINGTON

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POST-DEVELOPMENT BASIN AREA SUMMARY

BASIN 1 - T AVE NORTH		
PR. ASPHALT:	7,350 SF	/ 0.169 AC
EX. ASPHALT:	20,387 SF	/ 0.468 AC
PR. CONCRETE:	3,521 SF	/ 0.081 AC
EX. CONCRETE:	3,122 SF	/ 0.072 AC
IMP. TOTAL:	34,380 SF	/ 0.789 AC
PR. LANDSCAPE:	15,977 SF	/ 0.367 AC
EX. LAWN:	2,620 SF	/ 0.060 AC
TOTAL:	52,977 SF	/ 1.216 AC

BASIN 2 - EAST CONVEYANCE		
PR. ASPHALT:	5,005 SF	/ 0.115 AC
EX. ASPHALT:	115,862 SF	/ 2.660 AC
PR. CONCRETE:	1,866 SF	/ 0.043 AC
EX. CONCRETE:	11,335 SF	/ 0.260 AC
EX. ROOF:	1,336 SF	/ 0.031 AC
IMP. TOTAL:	135,404 SF	/ 3.108 AC
PR. LAWN:	18,483 SF	/ 0.424 AC
EX. LAWN:	54,611 SF	/ 1.254 AC
TOTAL:	208,498 SF	/ 4.786 AC

BASIN 3 - WEST CONVEYANCE		
PR. ASPHALT:	109,847 SF	/ 2.522 AC
EX. ASPHALT:	14,507 SF	/ 0.333 AC
PR. CONCRETE:	20,591 SF	/ 0.473 AC
PR. ROOF:	1,100 SF	/ 0.025 AC
IMP. TOTAL:	146,045 SF	/ 3.353 AC
PR. LAWN:	45,091 SF	/ 1.035 AC
EX. LAWN:	19,762 SF	/ 0.454 AC
TOTAL:	210,898 SF	/ 4.842 AC

BASIN 4 - CAP SANTE		
EX. ASPHALT:	5,031 SF	/ 0.115 AC
PR. CONCRETE:	823 SF	/ 0.473 AC
EX. CONCRETE:	13,430 SF	/ 0.308 AC
IMP. TOTAL:	19,284 SF	/ 0.443 AC
EX. LAWN:	40,605 SF	/ 0.932 AC
TOTAL:	59,889 SF	/ 1.375 AC

PROJECT TOTAL: 532,262 SF / 12.219 AC



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CAP SANTE IMPROVEMENTS

PORT OF ANACORTES

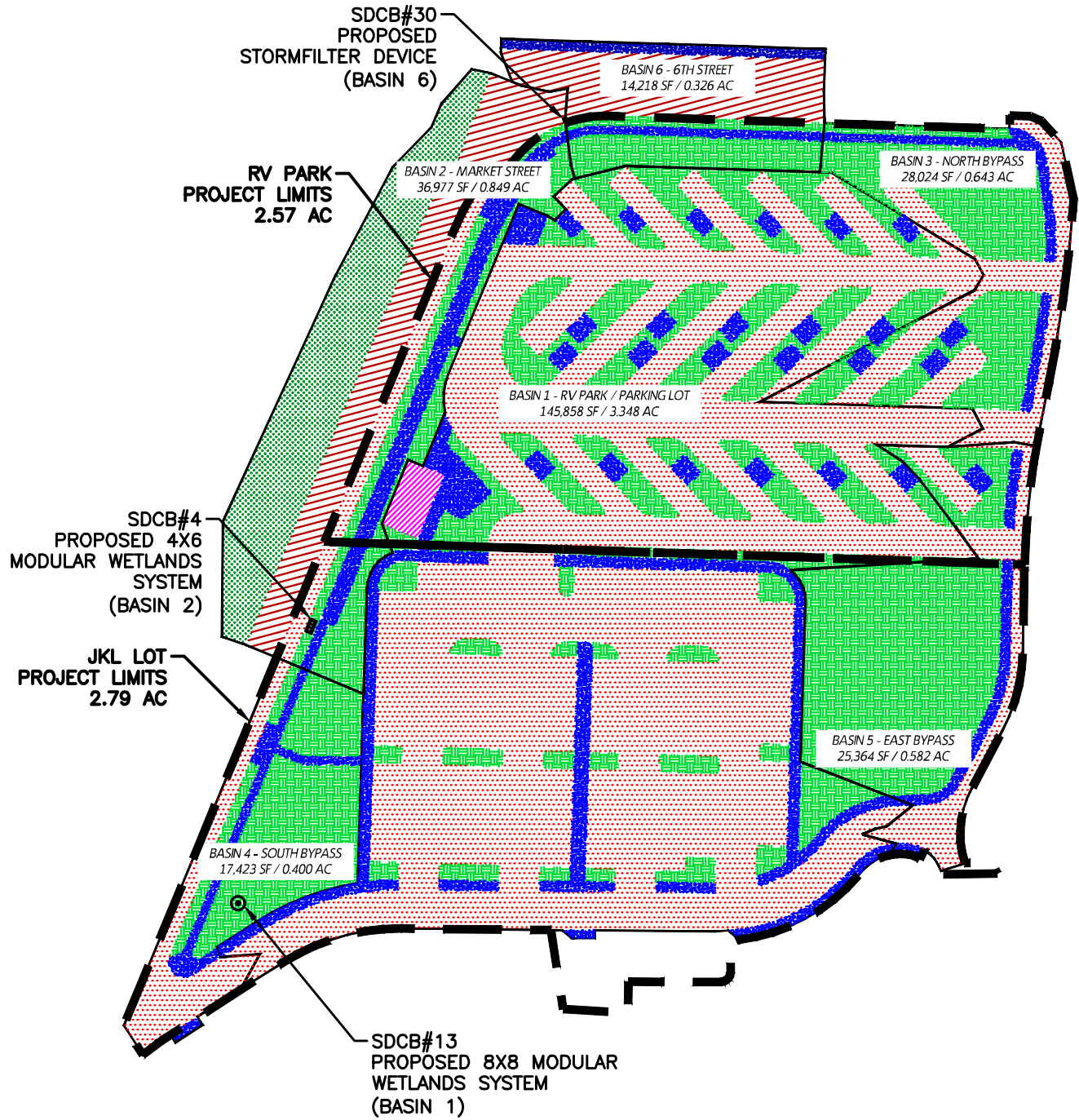
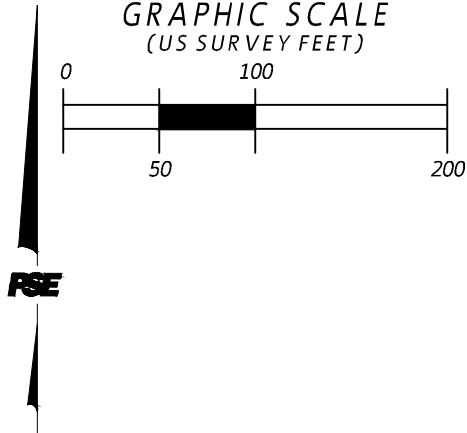
POST-DEVELOPED BASIN MAP

ANACORTES, WASHINGTON

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WATER QUALITY BASIN AREA SUMMARY

BASIN 1 – RV/PARKING LOT		
PR. ASPHALT:	101,846 SF	/ 2.338 AC
PR. CONCRETE:	14,573 SF	/ 0.335 AC
ROOF:	1,100 SF	/ 0.025 AC
IMP. TOTAL:	117,519 SF	/ 2.698 AC
PR. LANDSCAPE:	27,977 SF	/ 0.642 AC
TOTAL:	145,496 SF	/ 3.340 AC
BASIN 2 – MARKET STREET		
PR. ASPHALT:	3,327 SF	/ 0.076 AC
EX. ASPHALT:	9,514 SF	/ 0.218 AC
PGHS TOTAL:	12,841 SF	/ 0.295 AC
PR. CONCRETE:	3,843 SF	/ 0.088 AC
IMP. TOTAL:	16,684 SF	/ 0.383 AC
PR. LAWN:	6,541 SF	/ 0.150 AC
EX. LAWN:	13,752 SF	/ 0.316 AC
TOTAL:	36,977 SF	/ 0.849 AC
BASIN 3 – NORTH BYPASS		
PR. ASPHALT:	7,351 SF	/ 0.169 AC
PR. CONCRETE:	2,537 SF	/ 0.058 AC
IMP. TOTAL:	9,888 SF	/ 0.227 AC
PR. LAWN:	16,940 SF	/ 0.389 AC
TOTAL:	26,828 SF	/ 0.616 AC
BASIN 4 – SOUTH BYPASS		
PR. ASPHALT:	4,675 SF	/ 0.107 AC
PR. CONCRETE:	2,175 SF	/ 0.050 AC
IMP. TOTAL:	7,673 SF	/ 0.176 AC
PR. LAWN:	10,573 SF	/ 0.243 AC
TOTAL:	17,423 SF	/ 0.400 AC
BASIN 5 – EAST BYPASS		
PR. ASPHALT:	50,051 SF	/ 0.115 AC
PR. CONCRETE:	1,876 SF	/ 0.043 AC
IMP. TOTAL:	6,881 SF	/ 0.158 AC
PR. LAWN:	18,483 SF	/ 0.424 AC
TOTAL:	25,364 SF	/ 0.582 AC
BASIN 6 – CAP SANTE		
EX. ASPHALT:	7,668 SF	/ 0.176 AC
PR. CONCRETE:	983 SF	/ 0.023 AC
EX. CONCRETE:	1,331 SF	/ 0.031 AC
IMP. TOTAL:	9,982 SF	/ 0.229 AC
PR. LAWN:	4,236 SF	/ 0.097 AC
TOTAL:	14,218 SF	/ 0.097 AC
NEW PGHS: 122,204 SF / 2.805 AC		
TREATED PGHS: 122,355 SF / 2.809 AC		



PACIFIC SURVEYING
& ENGINEERING, INC.
909 Squalicum Way, Suite 111 | BELLINGHAM, WA 98225
T: 360.671.7387 | F: 360.671.4685
WWW.PSESURVEY.COM | INFO@PSESURVEY.COM

CAP SANTE IMPROVEMENTS
PORT OF ANACORTES

WATER QUALITY BASIN MAP
ANACORTES, WASHINGTON

DRAWN:	JG	SCALE:	1"=100'
CHECKED:	DG	JOB#:	2020064
DATE:	1.03.2022		2020064_ecP_SP-Basin_Maps.dwg

SHEET 03 OF 03

APPENDIX 6 – Documented Site Photos (Show all directions of the site, including frontage)



Image 1: SDCB at SE Corner of Project Site on T Ave, looking East



Image 2: SDCB at SE Corner of Project Site on T Ave, looking Northeast



Image 3: Existing ditch on west side of T Ave, looking North



Image 4: Drainage at the SW corner of T Ave & 6th St , looking North



Image 5: Drainage at the SW corner of T Ave & 6th St, looking West



Image 6: Existing catch basin at east end of 6th St, looking West



Image 7: Ditch on South side of 6th St, looking West



Image 8: Drainage at the Southwest corner of the site, looking West



Image 9: Ditch along East side of Market St, looking North



APPENDIX 7 – Drainage BMP Facility Maintenance Covenant

The Drainage BMP Facility Maintenance Covenant is a deferred submittal and will be recorded prior to the Final Certificate of Occupancy.

The attached document is in draft form. The applicant will work with the City of Anacortes Public Works Engineering who will draft the agreement prior to recording.

Return Address:
City of Anacortes
Planning and Community
Development 904 6th Street
Post Office Box 547
Anacortes, WA 98221

Drainage BMP Facility Maintenance Covenant

Grantor(s) hereinafter referred to as **Grantor**:

- 1.
- 2.
- 3.

Grantee: City of Anacortes, hereinafter referred to as the **City**, a Political Subdivision under the Laws of the State of Washington.

Legal Description of property encumbered by covenant:
Abbreviated:

Common Name of the Development of the property encumbered by covenant:

(if applicable, insert lot, Block, Plat Name), and/or as described in ¹¹ *(typically*
Exhibit(s) *Exhibit A).*

Located in *qtr. I* *qtr. Sec.* Twp. N., Rge. E., W.M.

Reference Number(s) of documents assigned, released, or modified:

Assessor's Property Tax Parcel/Account Number(s) of property(s) encumbered by the drainage covenant:

Page 1

Grantor's Initials ____

Grantor has a record interest in the property encumbered by the covenant and agrees that the obligations of Grantor shall inure to the benefit of and be binding upon the heirs, successors, and assigns. Grantor agrees that this covenant touches and concerns the land described in Exhibit _____ and shall run with the land.

Grantor by execution of this covenant acknowledges that the benefits of this covenant inure to Grantor, downstream property owners, and the general public, and that the City as third-party beneficiary of this covenant has the right, but not the obligation, to enforce this covenant on behalf of downstream property owners and the general public. The City requires this covenant to protect private and public property, private and public drainage infrastructure, and natural resources of downstream property owners and the general public.

Grantor in consideration of the approval of the City development permit No. _____, relating to the real property described in Exhibit _____ and in consideration of other valuable consideration, receipt and sufficiency of which is hereby acknowledged, hereby covenants to perform regular inspections upon the drainage facilities installed, or to be installed, upon Grantor's property. These inspections shall compare the facility/BMP device to the standards described in the current Stormwater Management Manual for Western Washington in use by the City of Anacortes (herein referred to as "the Manual") for all elements of the stormwater drainage system. For any BMP facility approved by the City but not included in the Manual; maintenance standards shall be as described in the manufacturer's operation and maintenance manual; which shall also be referred to as the Manual. As applicable, the system shall include the stormwater conveyance pipes, ditches, swales, and catch basins; stormwater flow regulation system detention ponds, vaults, pipes, retention ponds, flow regulation and control structures; infiltration systems and all other stormwater quality or flow control system.

The inspections conducted on all facility/BMPs shall be performed by qualified personnel who have received professional training in the aspects of stormwater management for which they are responsible to inspect. For example a person qualified to perform an inspection on a detention pond must demonstrate that they have received professional training specifically on detention pond maintenance and compliance with standards.

The City shall request a record of the inspection annually. The Grantor shall provide to the City a written record of the inspection performed and the condition of the facility/BMP upon request. The record shall provide an explanation of each maintenance component and potential defect identified in the maintenance standards in the Manual for each specific BMP/facility. Where measurements must be taken to (trash or debris exceeds 60% of the sump...) the actual field measurements must be included on the report. Pictures of each BMP facility shall be included, and the date(s) of the inspections must be clearly identified.

The scope of this covenant and right of entry shall be adequate to provide for the access, inspection, and maintenance of the stormwater drainage system, and shall be subject to the following terms and conditions:

1. The City shall have the perpetual right of entry across adjacent lands of the Grantor for purposes of inspecting, auditing, or conducting required maintenance of the drainage BMP facility.
2. The facility specific maintenance standards contained in the Manual are intended to be conditions for determining if maintenance actions are required. The standards are not intended to be a measure of the facility's required condition at all times. Discovery through inspection that a facility's condition is in exceedance of a standard does not constitute a violation of this agreement.
3. Should a facility be discovered in a condition that constitutes an exceedance of any described standard, maintenance shall be performed on the following schedule:
 - a. Within nine months for typical maintenance of facilities, except catch basins.
 - b. Within three months for catch basins.
 - c. Within eighteen months for any maintenance that requires capital construction or expenditure over \$25,000
4. In the event that Grantor fails to complete the required maintenance within the identified time period, the City shall have the right to immediately and without further notice perform or contract with others to perform all maintenance necessary to return the facility/BMP to compliance with the standard. This work shall be performed at the sole expense of the Grantor.
5. If the City in its sole discretion determines that an imminent or present danger exists, that any condition exists that could constitute a threat to human health, welfare or the environment, or any condition exists that could cause the City to be found in violation of the Western Washington Phase II Municipal Stormwater NPDES permit issued to the City of Anacortes, or any other environmental permit, the City may take any action required including beginning maintenance or repairs immediately at Grantor's expense without prior notice to Grantor. In such event, the City shall provide Grantor with a written statement and accounting of all work -performed and the fees, charges, and expenses incurred in making such repairs. Grantor shall agree to reimburse the City or pay the City's vendors directly for all reasonable fees, charges, and expenses identified in the City's statement.
6. If the City is required to act as a result of Grantor's failure to comply with this covenant, the City may remove any obstructions and/or interferences that in the sole opinion of the City impair the operation of the drainage BMP facility or the maintenance thereof. Grantor agrees to hold the City, its officers, employees, and agents harmless from any and all claims, actions, suits,

liability, loss, expenses, damages and judgments of any nature whatsoever, including costs and attorney's fees, incurred by the removal of vegetation or physical interference from the drainage BMP facility.

7. When exercising the maintenance provisions of the covenant, in the event of nonpayment, the City may bring suit to recover such costs, including attorney's fees, and upon obtaining a judgment, such amount shall become a lien against the property of Granter as provided in RCW 4.56.190.
8. Grantor covenants that the owners of the property described herein are the person or persons identified on page 1 of this covenant as Grantors, that they have the right to grant this covenant on the property, and that the title to the property is free and clear of any encumbrances which would interfere with the ability to grant this covenant.

Executed this _____ day of _____

1. Grantors:

Signature(s): _____

Printed
Name(s): _____

Title of Authorized Representative(s): (if
signing on behalf of a corporation)

Drainage B M P Facility Maintenance Covenant

PFN _____

Additional Signatures (if needed):

Note: Signature(s) of Grantor(s) must be acknowledged by appropriate Notary Form.

Accepted and approved for
the City of Anacortes:

_____ Date: ____
Director
City of Anacortes Department of Planning and
Community Development Services

2.

3. *INDIVIDUAL ACKNOWLEDGMENT*

STATE OF WASHINGTON)

) SS

City of Anacortes)

I certify that I know or have satisfactory evidence that

is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument and acknowledged it to be (his/her/their) free and voluntary act for the uses and purposes mentioned in the instrument.

Dated:__

Signature: _____
(print name)_____

(Seal or stamp)

NOTARY PUBLIC IN AND FOR THE STATE OF WASHINGTON

My appointment expires _____

4. *REPRESENTATIVE ACKNOWLEDGMENT*

STATE OF WASHINGTON)

) SS

City of Anacortes)

I certify that I know or have satisfactory evidence that

_____ is the person
who appeared before me, and said person acknowledged that (he/she/they)
signed this instrument, on oath stated that (he/she/they) was/were authorized to
execute the instrument and acknowledged it as the

_____ of _____
to be the free and voluntary act of such party for the uses and purposes
mentioned in the instrument.

Dated:__

Signature: _____
(print name)_____

(Seal or stamp)

NOTARY PUBLIC IN AND FOR THE STATE OF WASHINGTON
My appointment expires _____

APPENDIX 8 – WWHM Reports

The following reports are included in the appendix:

- Pre & Post Development Flow Rate Comparisons
 - o Basin 1 – T Avenue North
 - o Basin 2 – East Conveyance
 - o Basin 3 – West Conveyance
 - o Basin 4 – Cap Sante Marina

- Water Quality Reports
 - o Market Street Water Quality
 - o Onsite Water Quality (RV park & JKL Parking)
 - o 6th Street Water Quality

**WWM2012
PROJECT REPORT**

Project Name: B1_T Ave_North
Site Name: B1 - T Ave North
Site Address:
City :
Report Date: 1/12/2022
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Lawn, Flat	.919
Pervious Total	0.919
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	1.022
SIDEWALKS FLAT	0.084
Impervious Total	1.106
Basin Total	2.025

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Pasture, Flat	.367
C, Lawn, Flat	.06
Pervious Total	0.427
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.637
SIDEWALKS FLAT	0.153
Impervious Total	0.79
Basin Total	1.217

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.919
Total Impervious Area:1.106

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.427
Total Impervious Area:0.79

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.397906
5 year	0.576362
10 year	0.711025
25 year	0.900783
50 year	1.056939
100 year	1.226254

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.267203
5 year	0.376713
10 year	0.457661

25 year	0.569875
50 year	0.660909
100 year	0.758511

Stream Protection Duration		
Annual Peaks for Predeveloped and Mitigated. POC #1		
Year	Predeveloped	Mitigated
1949	0.626	0.393
1950	0.303	0.207
1951	0.584	0.356
1952	0.578	0.363
1953	0.654	0.412
1954	0.280	0.200
1955	0.264	0.187
1956	0.206	0.141
1957	0.654	0.404
1958	0.288	0.184
1959	0.280	0.187
1960	0.422	0.300
1961	0.264	0.182
1962	0.441	0.309
1963	0.302	0.198
1964	0.326	0.229
1965	0.840	0.565
1966	0.352	0.241
1967	0.622	0.444
1968	0.516	0.353
1969	0.275	0.180
1970	0.637	0.439
1971	0.430	0.275
1972	0.239	0.164
1973	0.432	0.292
1974	0.347	0.228
1975	0.829	0.463
1976	0.851	0.511
1977	0.329	0.223
1978	0.562	0.398
1979	0.362	0.246
1980	0.452	0.288
1981	0.351	0.251
1982	0.386	0.261
1983	0.347	0.235
1984	0.402	0.247
1985	0.439	0.314
1986	0.270	0.186
1987	0.256	0.183
1988	0.713	0.429
1989	0.393	0.277
1990	0.398	0.257
1991	0.526	0.358
1992	0.395	0.282
1993	0.214	0.146
1994	0.260	0.186
1995	0.233	0.165
1996	0.580	0.359
1997	1.271	0.734

1998	0.371	0.265
1999	0.192	0.133
2000	0.523	0.374
2001	0.343	0.245
2002	0.252	0.179
2003	0.317	0.226
2004	1.308	0.865
2005	0.427	0.296
2006	0.463	0.294
2007	0.394	0.262
2008	0.387	0.258
2009	0.466	0.295

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.3080	0.8651
2	1.2707	0.7338
3	0.8514	0.5652
4	0.8403	0.5106
5	0.8289	0.4627
6	0.7130	0.4435
7	0.6540	0.4394
8	0.6539	0.4290
9	0.6368	0.4124
10	0.6256	0.4044
11	0.6217	0.3978
12	0.5842	0.3926
13	0.5798	0.3736
14	0.5783	0.3626
15	0.5617	0.3591
16	0.5259	0.3578
17	0.5232	0.3555
18	0.5163	0.3526
19	0.4664	0.3136
20	0.4635	0.3090
21	0.4522	0.3002
22	0.4408	0.2959
23	0.4389	0.2955
24	0.4317	0.2938
25	0.4301	0.2922
26	0.4272	0.2877
27	0.4220	0.2816
28	0.4022	0.2770
29	0.3977	0.2748
30	0.3951	0.2651
31	0.3938	0.2619
32	0.3930	0.2606
33	0.3869	0.2580
34	0.3863	0.2570
35	0.3713	0.2509
36	0.3615	0.2468
37	0.3520	0.2463
38	0.3515	0.2451
39	0.3472	0.2415
40	0.3469	0.2347

41	0.3430	0.2292
42	0.3290	0.2283
43	0.3261	0.2263
44	0.3171	0.2232
45	0.3027	0.2075
46	0.3024	0.1997
47	0.2881	0.1980
48	0.2802	0.1872
49	0.2798	0.1870
50	0.2748	0.1859
51	0.2705	0.1858
52	0.2643	0.1842
53	0.2637	0.1831
54	0.2598	0.1823
55	0.2563	0.1799
56	0.2517	0.1794
57	0.2392	0.1651
58	0.2325	0.1638
59	0.2137	0.1455
60	0.2057	0.1412
61	0.1923	0.1327

Stream Protection Duration

POC #1

The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1990	1113	271	24	Pass
0.2076	944	237	25	Pass
0.2163	816	205	25	Pass
0.2250	713	184	25	Pass
0.2336	600	157	26	Pass
0.2423	515	141	27	Pass
0.2510	467	123	26	Pass
0.2596	413	111	26	Pass
0.2683	364	96	26	Pass
0.2770	328	90	27	Pass
0.2856	294	83	28	Pass
0.2943	257	75	29	Pass
0.3030	238	65	27	Pass
0.3116	210	59	28	Pass
0.3203	190	51	26	Pass
0.3290	180	46	25	Pass
0.3376	167	43	25	Pass
0.3463	155	40	25	Pass
0.3550	139	36	25	Pass
0.3636	128	30	23	Pass
0.3723	116	25	21	Pass
0.3810	112	23	20	Pass
0.3896	108	22	20	Pass
0.3983	99	18	18	Pass
0.4069	96	14	14	Pass
0.4156	90	13	14	Pass
0.4243	82	13	15	Pass

0.4329	75	11	14	Pass
0.4416	70	10	14	Pass
0.4503	70	9	12	Pass
0.4589	66	9	13	Pass
0.4676	58	8	13	Pass
0.4763	58	8	13	Pass
0.4849	55	7	12	Pass
0.4936	54	7	12	Pass
0.5023	53	7	13	Pass
0.5109	50	7	14	Pass
0.5196	44	6	13	Pass
0.5283	39	6	15	Pass
0.5369	38	6	15	Pass
0.5456	37	5	13	Pass
0.5543	36	4	11	Pass
0.5629	35	4	11	Pass
0.5716	34	3	8	Pass
0.5803	31	3	9	Pass
0.5889	28	3	10	Pass
0.5976	26	3	11	Pass
0.6063	23	3	13	Pass
0.6149	21	3	14	Pass
0.6236	17	3	17	Pass
0.6323	16	3	18	Pass
0.6409	15	3	20	Pass
0.6496	15	3	20	Pass
0.6583	12	3	25	Pass
0.6669	12	3	25	Pass
0.6756	12	3	25	Pass
0.6843	11	3	27	Pass
0.6929	11	3	27	Pass
0.7016	10	3	30	Pass
0.7103	9	3	33	Pass
0.7189	8	3	37	Pass
0.7276	8	3	37	Pass
0.7363	8	1	12	Pass
0.7449	8	1	12	Pass
0.7536	8	1	12	Pass
0.7623	8	1	12	Pass
0.7709	8	1	12	Pass
0.7796	8	1	12	Pass
0.7883	7	1	14	Pass
0.7969	6	1	16	Pass
0.8056	6	1	16	Pass
0.8143	6	1	16	Pass
0.8229	6	1	16	Pass
0.8316	5	1	20	Pass
0.8403	5	1	20	Pass
0.8489	4	1	25	Pass
0.8576	3	1	33	Pass
0.8663	3	0	0	Pass
0.8749	3	0	0	Pass
0.8836	3	0	0	Pass
0.8923	3	0	0	Pass
0.9009	3	0	0	Pass
0.9096	3	0	0	Pass
0.9183	3	0	0	Pass

0.9269	3	0	0	Pass
0.9356	3	0	0	Pass
0.9443	3	0	0	Pass
0.9529	3	0	0	Pass
0.9616	3	0	0	Pass
0.9703	3	0	0	Pass
0.9789	3	0	0	Pass
0.9876	3	0	0	Pass
0.9963	3	0	0	Pass
1.0049	3	0	0	Pass
1.0136	3	0	0	Pass
1.0223	3	0	0	Pass
1.0309	3	0	0	Pass
1.0396	3	0	0	Pass
1.0483	3	0	0	Pass
1.0569	3	0	0	Pass

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative
Percent	Water Quality	Percent	Through	Volume	Volume
Volume	Treatment?	Needs	Facility	(ac-ft.)	Infiltration
Infiltrated	Water Quality	Treatment			
	Treated	(ac-ft)	(ac-ft)		Credit
Total Volume Infiltrated		0.00	0.00	0.00	
0.00	0.00	0%	No Treat.	Credit	
Compliance with LID Standard 8					
Duration Analysis Result = Passed					

Perlnd and Implnd Changes

No changes have been made.

This program and accompanying documentation is provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by the user. Clear Creek Solutions, Inc. disclaims all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions, Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions, Inc. has been advised of the possibility of such damages.

**WWM2012
PROJECT REPORT**

Project Name: B2_EastConveyance
Site Name: B2 - East Conveyance
Site Address:
City :
Report Date: 1/12/2022
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Lawn, Flat	1.418

Pervious Total	1.418
-----------------------	--------------

<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.921
ROOF TOPS FLAT	0.031
SIDEWALKS FLAT	0.26

Impervious Total	3.212
-------------------------	--------------

Basin Total	4.63
--------------------	-------------

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Pasture, Flat	.424
C, Lawn, Flat	1.254
Pervious Total	1.678
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.775
ROOF TOPS FLAT	0.031
SIDEWALKS FLAT	0.303
Impervious Total	3.109
Basin Total	4.787

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:1.418
Total Impervious Area:3.212

Mitigated Landuse Totals for POC #1
Total Pervious Area:1.678
Total Impervious Area:3.109

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	1.112104
5 year	1.586903
10 year	1.941113
25 year	2.435737
50 year	2.839562
100 year	3.274698

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	1.076467

5 year	1.534759
10 year	1.876436
25 year	2.353314
50 year	2.742478
100 year	3.161671

Stream Protection Duration

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.688	1.629
1950	0.853	0.827
1951	1.535	1.488
1952	1.572	1.512
1953	1.775	1.712
1954	0.812	0.786
1955	0.761	0.737
1956	0.575	0.560
1957	1.767	1.698
1958	0.780	0.756
1959	0.786	0.758
1960	1.223	1.183
1961	0.740	0.717
1962	1.268	1.226
1963	0.834	0.807
1964	0.939	0.908
1965	2.367	2.284
1966	1.001	0.967
1967	1.804	1.746
1968	1.465	1.415
1969	0.762	0.735
1970	1.790	1.732
1971	1.158	1.125
1972	0.672	0.653
1973	1.219	1.177
1974	0.950	0.923
1975	2.062	2.004
1976	2.255	2.169
1977	0.921	0.893
1978	1.624	1.571
1979	1.012	0.978
1980	1.222	1.184
1981	1.020	0.988
1982	1.089	1.051
1983	0.973	0.943
1984	1.055	1.023
1985	1.274	1.234
1986	0.762	0.740
1987	0.744	0.720
1988	1.877	1.812
1989	1.133	1.096
1990	1.088	1.052
1991	1.490	1.438
1992	1.146	1.109
1993	0.594	0.579
1994	0.754	0.730
1995	0.672	0.651

1996	1.537	1.491
1997	3.187	3.113
1998	1.078	1.043
1999	0.543	0.527
2000	1.519	1.470
2001	0.996	0.964
2002	0.730	0.706
2003	0.921	0.891
2004	3.653	3.523
2005	1.221	1.180
2006	1.251	1.211
2007	1.088	1.056
2008	1.072	1.040
2009	1.274	1.226

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	3.6533	3.5225
2	3.1869	3.1135
3	2.3668	2.2840
4	2.2551	2.1692
5	2.0617	2.0037
6	1.8768	1.8123
7	1.8038	1.7461
8	1.7898	1.7321
9	1.7755	1.7118
10	1.7674	1.6984
11	1.6881	1.6288
12	1.6239	1.5712
13	1.5716	1.5121
14	1.5371	1.4911
15	1.5349	1.4881
16	1.5189	1.4704
17	1.4896	1.4384
18	1.4649	1.4149
19	1.2745	1.2338
20	1.2737	1.2262
21	1.2678	1.2260
22	1.2507	1.2110
23	1.2225	1.1835
24	1.2219	1.1833
25	1.2211	1.1801
26	1.2195	1.1773
27	1.1581	1.1250
28	1.1461	1.1093
29	1.1330	1.0962
30	1.0889	1.0564
31	1.0884	1.0524
32	1.0881	1.0513
33	1.0779	1.0434
34	1.0722	1.0401
35	1.0553	1.0234
36	1.0203	0.9876
37	1.0115	0.9782
38	1.0006	0.9669

39	0.9956	0.9639
40	0.9731	0.9427
41	0.9504	0.9235
42	0.9387	0.9081
43	0.9208	0.8935
44	0.9206	0.8910
45	0.8531	0.8275
46	0.8344	0.8068
47	0.8121	0.7861
48	0.7859	0.7582
49	0.7802	0.7560
50	0.7618	0.7396
51	0.7615	0.7370
52	0.7614	0.7350
53	0.7543	0.7304
54	0.7443	0.7204
55	0.7403	0.7168
56	0.7298	0.7065
57	0.6721	0.6526
58	0.6719	0.6505
59	0.5942	0.5790
60	0.5755	0.5603
61	0.5426	0.5271

Stream Protection Duration

POC #1

The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.5561	1126	1011	89	Pass
0.5791	968	857	88	Pass
0.6022	835	753	90	Pass
0.6252	728	651	89	Pass
0.6483	641	574	89	Pass
0.6714	565	499	88	Pass
0.6944	491	452	92	Pass
0.7175	446	391	87	Pass
0.7406	388	346	89	Pass
0.7636	345	313	90	Pass
0.7867	313	274	87	Pass
0.8098	275	251	91	Pass
0.8328	254	229	90	Pass
0.8559	235	212	90	Pass
0.8790	213	197	92	Pass
0.9020	197	171	86	Pass
0.9251	177	162	91	Pass
0.9482	164	150	91	Pass
0.9712	156	140	89	Pass
0.9943	144	124	86	Pass
1.0174	128	122	95	Pass
1.0404	122	110	90	Pass
1.0635	115	101	87	Pass
1.0866	105	99	94	Pass
1.1096	100	90	90	Pass

1.1327	96	85	88	Pass
1.1558	89	81	91	Pass
1.1788	84	76	90	Pass
1.2019	81	71	87	Pass
1.2250	72	68	94	Pass
1.2480	70	63	90	Pass
1.2711	66	59	89	Pass
1.2942	61	52	85	Pass
1.3172	58	51	87	Pass
1.3403	52	48	92	Pass
1.3634	51	44	86	Pass
1.3864	48	43	89	Pass
1.4095	44	43	97	Pass
1.4326	43	41	95	Pass
1.4556	42	33	78	Pass
1.4787	39	32	82	Pass
1.5017	33	29	87	Pass
1.5248	32	25	78	Pass
1.5479	30	24	80	Pass
1.5709	27	24	88	Pass
1.5940	24	21	87	Pass
1.6171	24	20	83	Pass
1.6401	23	19	82	Pass
1.6632	20	19	95	Pass
1.6863	20	17	85	Pass
1.7093	19	13	68	Pass
1.7324	19	12	63	Pass
1.7555	15	10	66	Pass
1.7785	12	10	83	Pass
1.8016	11	10	90	Pass
1.8247	10	9	90	Pass
1.8477	10	9	90	Pass
1.8708	10	9	90	Pass
1.8939	9	9	100	Pass
1.9169	9	9	100	Pass
1.9400	9	8	88	Pass
1.9631	9	8	88	Pass
1.9861	9	8	88	Pass
2.0092	8	7	87	Pass
2.0323	8	7	87	Pass
2.0553	8	7	87	Pass
2.0784	7	7	100	Pass
2.1015	7	7	100	Pass
2.1245	7	7	100	Pass
2.1476	7	7	100	Pass
2.1707	7	6	85	Pass
2.1937	7	4	57	Pass
2.2168	7	4	57	Pass
2.2399	7	4	57	Pass
2.2629	4	4	100	Pass
2.2860	4	3	75	Pass
2.3090	4	3	75	Pass
2.3321	4	3	75	Pass
2.3552	4	3	75	Pass
2.3782	3	3	100	Pass
2.4013	3	3	100	Pass
2.4244	3	3	100	Pass

2.4474	3	3	100	Pass
2.4705	3	3	100	Pass
2.4936	3	3	100	Pass
2.5166	3	3	100	Pass
2.5397	3	3	100	Pass
2.5628	3	3	100	Pass
2.5858	3	3	100	Pass
2.6089	3	3	100	Pass
2.6320	3	3	100	Pass
2.6550	3	3	100	Pass
2.6781	3	3	100	Pass
2.7012	3	3	100	Pass
2.7242	3	3	100	Pass
2.7473	3	3	100	Pass
2.7704	3	3	100	Pass
2.7934	3	3	100	Pass
2.8165	3	3	100	Pass
2.8396	3	3	100	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 acre-feet
On-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.
Off-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative
Percent	Water Quality	Percent	Through	Volume	Volume
Volume	Treatment?	Needs	Facility	(ac-ft.)	Infiltration
Infiltrated	Water Quality	Treatment	(ac-ft)	(ac-ft)	Credit
	Treated	(ac-ft)	(ac-ft)		
Total Volume Infiltrated		0.00	0.00	0.00	
0.00	0.00	0%	No Treat.	Credit	
Compliance with LID Standard 8					
Duration Analysis Result = Passed					

PerIpd and Implnd Changes

No changes have been made.

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**WWM2012
PROJECT REPORT**

Project Name: B3_WestConveyance
Site Name: B3 West Conveyance
Site Address:
City :
Report Date: 1/12/2022
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Lawn, Flat	1.041

Pervious Total	1.041
-----------------------	--------------

<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.992
SIDEWALKS FLAT	0.002

Impervious Total	2.994
-------------------------	--------------

Basin Total	4.035
--------------------	--------------

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Pasture, Flat	1.035
C, Lawn, Flat	.454

Pervious Total	1.489
----------------	-------

<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.855
ROOF TOPS FLAT	0.025
SIDEWALKS FLAT	0.473

Impervious Total	3.353
------------------	-------

Basin Total	4.842
-------------	-------

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:1.041
Total Impervious Area:2.994

Mitigated Landuse Totals for POC #1
Total Pervious Area:1.489
Total Impervious Area:3.353

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	1.027002
5 year	1.460142
10 year	1.782378
25 year	2.231362
50 year	2.59722
100 year	2.990851

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	1.135823
5 year	1.603835

10 year	1.950197
25 year	2.430801
50 year	2.82101
100 year	3.239647

Stream Protection Duration

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.545	1.674
1950	0.789	0.880
1951	1.394	1.513
1952	1.441	1.555
1953	1.627	1.764
1954	0.757	0.847
1955	0.710	0.794
1956	0.531	0.596
1957	1.618	1.737
1958	0.715	0.783
1959	0.726	0.798
1960	1.139	1.274
1961	0.690	0.773
1962	1.179	1.313
1963	0.768	0.843
1964	0.873	0.974
1965	2.190	2.410
1966	0.928	1.028
1967	1.681	1.882
1968	1.358	1.502
1969	0.702	0.768
1970	1.667	1.865
1971	1.059	1.165
1972	0.621	0.693
1973	1.129	1.245
1974	0.873	0.967
1975	1.844	1.969
1976	2.053	2.193
1977	0.851	0.946
1978	1.512	1.689
1979	0.937	1.046
1980	1.118	1.224
1981	0.951	1.065
1982	1.008	1.111
1983	0.899	0.997
1984	0.958	1.047
1985	1.188	1.331
1986	0.704	0.787
1987	0.694	0.777
1988	1.706	1.834
1989	1.054	1.177
1990	0.999	1.094
1991	1.380	1.524
1992	1.068	1.195
1993	0.548	0.614
1994	0.703	0.788
1995	0.626	0.701
1996	1.400	1.526

1997	2.858	3.101
1998	1.005	1.125
1999	0.502	0.562
2000	1.416	1.586
2001	0.928	1.040
2002	0.680	0.761
2003	0.858	0.961
2004	3.373	3.695
2005	1.134	1.259
2006	1.144	1.250
2007	1.002	1.111
2008	0.988	1.094
2009	1.169	1.266

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	3.3728	3.6949
2	2.8577	3.1005
3	2.1896	2.4105
4	2.0533	2.1929
5	1.8442	1.9685
6	1.7059	1.8824
7	1.6810	1.8653
8	1.6675	1.8343
9	1.6272	1.7640
10	1.6179	1.7372
11	1.5446	1.6893
12	1.5121	1.6739
13	1.4407	1.5857
14	1.4157	1.5548
15	1.3999	1.5263
16	1.3944	1.5243
17	1.3800	1.5129
18	1.3577	1.5016
19	1.1879	1.3307
20	1.1790	1.3134
21	1.1691	1.2744
22	1.1445	1.2658
23	1.1389	1.2589
24	1.1338	1.2504
25	1.1291	1.2453
26	1.1184	1.2238
27	1.0681	1.1955
28	1.0591	1.1766
29	1.0543	1.1653
30	1.0076	1.1251
31	1.0047	1.1107
32	1.0021	1.1106
33	0.9993	1.0945
34	0.9879	1.0945
35	0.9584	1.0649
36	0.9509	1.0474
37	0.9367	1.0458
38	0.9279	1.0397
39	0.9278	1.0278

40	0.8992	0.9969
41	0.8731	0.9739
42	0.8731	0.9672
43	0.8580	0.9607
44	0.8505	0.9462
45	0.7894	0.8795
46	0.7679	0.8474
47	0.7569	0.8431
48	0.7263	0.7978
49	0.7146	0.7945
50	0.7096	0.7880
51	0.7045	0.7870
52	0.7030	0.7833
53	0.7020	0.7769
54	0.6937	0.7733
55	0.6900	0.7682
56	0.6800	0.7614
57	0.6263	0.7010
58	0.6212	0.6934
59	0.5480	0.6141
60	0.5315	0.5960
61	0.5024	0.5617

Stream Protection Duration

POC #1

The Facility FAILED

Facility FAILED duration standard for 1+ flows.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.5135	1137	1687	148	Fail
0.5345	975	1480	151	Fail
0.5556	837	1299	155	Fail
0.5766	741	1117	150	Fail
0.5977	650	975	150	Fail
0.6187	577	844	146	Fail
0.6398	507	754	148	Fail
0.6608	450	676	150	Fail
0.6819	404	608	150	Fail
0.7029	354	543	153	Fail
0.7240	318	478	150	Fail
0.7450	279	433	155	Fail
0.7661	256	386	150	Fail
0.7871	238	344	144	Fail
0.8082	216	314	145	Fail
0.8292	201	279	138	Fail
0.8503	184	257	139	Fail
0.8713	166	242	145	Fail
0.8924	157	224	142	Fail
0.9134	145	209	144	Fail
0.9345	137	198	144	Fail
0.9555	122	177	145	Fail
0.9765	118	162	137	Fail
0.9976	109	154	141	Fail
1.0186	99	146	147	Fail
1.0397	96	136	141	Fail

1.0607	90	122	135	Fail
1.0818	83	117	140	Fail
1.1028	81	110	135	Fail
1.1239	79	102	129	Fail
1.1449	69	95	137	Fail
1.1660	67	94	140	Fail
1.1870	62	87	140	Fail
1.2081	56	83	148	Fail
1.2291	53	80	150	Fail
1.2502	51	76	149	Fail
1.2712	47	69	146	Fail
1.2923	44	64	145	Fail
1.3133	43	63	146	Fail
1.3344	41	55	134	Fail
1.3554	39	53	135	Fail
1.3765	37	47	127	Fail
1.3975	32	46	143	Fail
1.4186	28	44	157	Fail
1.4396	26	41	157	Fail
1.4606	24	40	166	Fail
1.4817	24	39	162	Fail
1.5027	24	36	150	Fail
1.5238	20	35	175	Fail
1.5448	20	32	160	Fail
1.5659	19	25	131	Fail
1.5869	17	24	141	Fail
1.6080	15	23	153	Fail
1.6290	12	23	191	Fail
1.6501	12	23	191	Fail
1.6711	11	22	200	Fail
1.6922	10	18	180	Fail
1.7132	9	17	188	Fail
1.7343	9	16	177	Fail
1.7553	9	14	155	Fail
1.7764	9	13	144	Fail
1.7974	9	13	144	Fail
1.8185	9	12	133	Fail
1.8395	9	11	122	Fail
1.8606	7	11	157	Fail
1.8816	7	10	142	Fail
1.9026	7	9	128	Fail
1.9237	7	9	128	Fail
1.9447	7	9	128	Fail
1.9658	7	9	128	Fail
1.9868	7	8	114	Fail
2.0079	7	8	114	Fail
2.0289	7	8	114	Fail
2.0500	7	8	114	Fail
2.0710	6	7	116	Fail
2.0921	4	7	175	Fail
2.1131	4	7	175	Fail
2.1342	4	7	175	Fail
2.1552	4	7	175	Fail
2.1763	4	7	175	Fail
2.1973	3	6	200	Fail
2.2184	3	6	200	Fail
2.2394	3	6	200	Fail

2.2605	3	6	200	Fail
2.2815	3	6	200	Fail
2.3026	3	6	200	Fail
2.3236	3	5	166	Fail
2.3446	3	4	133	Fail
2.3657	3	4	133	Fail
2.3867	3	4	133	Fail
2.4078	3	4	133	Fail
2.4288	3	3	100	Pass
2.4499	3	3	100	Pass
2.4709	3	3	100	Pass
2.4920	3	3	100	Pass
2.5130	3	3	100	Pass
2.5341	3	3	100	Pass
2.5551	3	3	100	Pass
2.5762	3	3	100	Pass
2.5972	3	3	100	Pass

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative
Percent	Water Quality	Percent	Comment	Through	Volume
Volume	Water Quality	Treatment	Facility	(ac-ft.)	Infiltration
Infiltrated	Treated	(ac-ft)	(ac-ft)		Credit
Total Volume Infiltrated		0.00	0.00	0.00	
0.00	0.00	0%	No Treat.	Credit	
Compliance with LID Standard 8					
Duration Analysis Result = Failed					

Perlnd and Implnd Changes

No changes have been made.

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**WWM2012
PROJECT REPORT**

Project Name: B4_CapSante
Site Name: B4 Cap Sante
Site Address:
City :
Report Date: 1/12/2022
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Lawn, Flat	.979
Pervious Total	0.979
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.24
SIDEWALKS FLAT	0.31
Impervious Total	0.55
Basin Total	1.529

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
C, Lawn, Mod	.932
Pervious Total	0.932
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.115
SIDEWALKS FLAT	0.327
Impervious Total	0.442
Basin Total	1.374

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.979
Total Impervious Area:0.55

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.932
Total Impervious Area:0.442

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.216204
5 year	0.325
10 year	0.411269
25 year	0.53794
50 year	0.6461
100 year	0.766926

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.186722
5 year	0.288829
10 year	0.371587
25 year	0.495284

50 year	0.602566
100 year	0.72391

Stream Protection Duration		
Annual Peaks for Predeveloped and Mitigated. POC #1		
Year	Predeveloped	Mitigated
1949	0.368	0.354
1950	0.161	0.136
1951	0.358	0.344
1952	0.333	0.306
1953	0.377	0.348
1954	0.174	0.172
1955	0.137	0.114
1956	0.111	0.092
1957	0.380	0.354
1958	0.167	0.153
1959	0.151	0.132
1960	0.237	0.217
1961	0.150	0.134
1962	0.224	0.184
1963	0.169	0.145
1964	0.166	0.135
1965	0.449	0.388
1966	0.184	0.154
1967	0.310	0.250
1968	0.281	0.248
1969	0.152	0.136
1970	0.365	0.345
1971	0.252	0.231
1972	0.128	0.108
1973	0.229	0.193
1974	0.196	0.169
1975	0.556	0.506
1976	0.514	0.480
1977	0.178	0.153
1978	0.282	0.229
1979	0.196	0.170
1980	0.263	0.231
1981	0.175	0.141
1982	0.206	0.175
1983	0.195	0.174
1984	0.247	0.220
1985	0.218	0.176
1986	0.144	0.121
1987	0.133	0.114
1988	0.435	0.388
1989	0.199	0.162
1990	0.228	0.199
1991	0.314	0.281
1992	0.197	0.159
1993	0.117	0.098
1994	0.129	0.104
1995	0.120	0.098
1996	0.350	0.333
1997	0.842	0.777
1998	0.185	0.149

1999	0.102	0.085
2000	0.260	0.209
2001	0.171	0.137
2002	0.126	0.101
2003	0.158	0.127
2004	0.711	0.625
2005	0.221	0.184
2006	0.270	0.250
2007	0.219	0.192
2008	0.214	0.185
2009	0.266	0.234

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.8419	0.7775
2	0.7110	0.6250
3	0.5563	0.5058
4	0.5141	0.4798
5	0.4486	0.3883
6	0.4354	0.3876
7	0.3802	0.3541
8	0.3770	0.3539
9	0.3685	0.3482
10	0.3651	0.3453
11	0.3581	0.3438
12	0.3495	0.3333
13	0.3326	0.3059
14	0.3140	0.2806
15	0.3099	0.2495
16	0.2824	0.2495
17	0.2806	0.2479
18	0.2702	0.2342
19	0.2656	0.2307
20	0.2630	0.2307
21	0.2604	0.2295
22	0.2518	0.2205
23	0.2470	0.2173
24	0.2373	0.2093
25	0.2289	0.1985
26	0.2275	0.1930
27	0.2244	0.1924
28	0.2205	0.1853
29	0.2190	0.1843
30	0.2184	0.1840
31	0.2138	0.1755
32	0.2059	0.1746
33	0.1989	0.1743
34	0.1970	0.1723
35	0.1963	0.1700
36	0.1958	0.1693
37	0.1953	0.1618
38	0.1848	0.1588
39	0.1841	0.1540
40	0.1780	0.1531
41	0.1750	0.1526

42	0.1743	0.1486
43	0.1707	0.1453
44	0.1688	0.1407
45	0.1668	0.1373
46	0.1656	0.1363
47	0.1613	0.1356
48	0.1578	0.1350
49	0.1518	0.1343
50	0.1510	0.1317
51	0.1495	0.1274
52	0.1445	0.1211
53	0.1375	0.1144
54	0.1328	0.1143
55	0.1293	0.1081
56	0.1285	0.1039
57	0.1256	0.1011
58	0.1200	0.0979
59	0.1172	0.0976
60	0.1114	0.0925
61	0.1022	0.0847

Stream Protection Duration

POC #1

The Facility PASSED

The Facility **PASSED.**

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1081	1065	533	50	Pass
0.1135	898	462	51	Pass
0.1190	761	392	51	Pass
0.1244	634	330	52	Pass
0.1298	542	293	54	Pass
0.1353	457	250	54	Pass
0.1407	398	220	55	Pass
0.1461	347	190	54	Pass
0.1516	313	171	54	Pass
0.1570	272	151	55	Pass
0.1624	235	142	60	Pass
0.1679	215	133	61	Pass
0.1733	196	118	60	Pass
0.1787	179	108	60	Pass
0.1842	158	100	63	Pass
0.1896	147	91	61	Pass
0.1951	134	84	62	Pass
0.2005	125	81	64	Pass
0.2059	122	76	62	Pass
0.2114	109	68	62	Pass
0.2168	102	66	64	Pass
0.2222	94	62	65	Pass
0.2277	86	57	66	Pass
0.2331	81	54	66	Pass
0.2385	75	52	69	Pass
0.2440	74	51	68	Pass
0.2494	69	50	72	Pass
0.2548	67	46	68	Pass

0.2603	63	43	68	Pass
0.2657	57	42	73	Pass
0.2711	54	42	77	Pass
0.2766	51	40	78	Pass
0.2820	49	38	77	Pass
0.2874	47	34	72	Pass
0.2929	47	34	72	Pass
0.2983	47	32	68	Pass
0.3037	46	32	69	Pass
0.3092	41	29	70	Pass
0.3146	37	27	72	Pass
0.3200	35	27	77	Pass
0.3255	35	24	68	Pass
0.3309	34	23	67	Pass
0.3363	31	20	64	Pass
0.3418	31	16	51	Pass
0.3472	31	14	45	Pass
0.3526	29	13	44	Pass
0.3581	28	10	35	Pass
0.3635	25	10	40	Pass
0.3689	20	9	45	Pass
0.3744	17	8	47	Pass
0.3798	16	8	50	Pass
0.3853	15	8	53	Pass
0.3907	14	6	42	Pass
0.3961	12	6	50	Pass
0.4016	10	6	60	Pass
0.4070	10	6	60	Pass
0.4124	9	6	66	Pass
0.4179	8	5	62	Pass
0.4233	8	5	62	Pass
0.4287	8	5	62	Pass
0.4342	8	5	62	Pass
0.4396	7	5	71	Pass
0.4450	7	5	71	Pass
0.4505	6	5	83	Pass
0.4559	5	5	100	Pass
0.4613	5	5	100	Pass
0.4668	5	5	100	Pass
0.4722	5	5	100	Pass
0.4776	5	5	100	Pass
0.4831	5	4	80	Pass
0.4885	5	4	80	Pass
0.4939	5	4	80	Pass
0.4994	5	4	80	Pass
0.5048	5	4	80	Pass
0.5102	5	3	60	Pass
0.5157	4	3	75	Pass
0.5211	4	3	75	Pass
0.5265	4	3	75	Pass
0.5320	4	3	75	Pass
0.5374	4	3	75	Pass
0.5428	4	3	75	Pass
0.5483	4	3	75	Pass
0.5537	4	3	75	Pass
0.5592	3	3	100	Pass
0.5646	3	3	100	Pass

0.5700	3	3	100	Pass
0.5755	3	3	100	Pass
0.5809	3	3	100	Pass
0.5863	3	3	100	Pass
0.5918	3	3	100	Pass
0.5972	3	3	100	Pass
0.6026	3	3	100	Pass
0.6081	3	3	100	Pass
0.6135	3	3	100	Pass
0.6189	3	3	100	Pass
0.6244	3	3	100	Pass
0.6298	3	2	66	Pass
0.6352	3	2	66	Pass
0.6407	3	2	66	Pass
0.6461	3	2	66	Pass

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

LID Report

LID Technique	Water Quality	Used for Percent Treatment? Water Quality	Total Volume Comment Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit
Infiltrated		Treated	0.00	0.00	0.00	
Total Volume Infiltrated	0.00	0.00	0%	No Treat.	Credit	
Compliance with LID Standard 8						
Duration Analysis Result = Passed						

Perlnd and Implnd Changes

No changes have been made.

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**WWM2012
PROJECT REPORT**

Project Name: 2021.12.01_Market_St_WQ
Site Name: 2021.12.01_Market_St_WQ
Site Address:
City :
Report Date: 12/6/2021
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.15
A B, Lawn, Flat	.316
Pervious Total	0.466
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.295
SIDEWALKS FLAT	0.088
Impervious Total	0.383
Basin Total	0.849

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.15
A B, Lawn, Flat	.316
 Pervious Total	 0.466
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.295
SIDEWALKS FLAT	0.088
 Impervious Total	 0.383
 Basin Total	 0.849

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.466
Total Impervious Area:0.383

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.466
Total Impervious Area:0.383

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.127482
5 year	0.179328
10 year	0.217586
25 year	0.27055
50 year	0.313466
100 year	0.359436

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.127482
5 year	0.179328

10 year	0.217586
25 year	0.27055
50 year	0.313466
100 year	0.359436

Stream Protection Duration

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.188	0.188
1950	0.098	0.098
1951	0.161	0.161
1952	0.173	0.173
1953	0.195	0.195
1954	0.097	0.097
1955	0.091	0.091
1956	0.066	0.066
1957	0.193	0.193
1958	0.086	0.086
1959	0.090	0.090
1960	0.145	0.145
1961	0.088	0.088
1962	0.150	0.150
1963	0.094	0.094
1964	0.111	0.111
1965	0.272	0.272
1966	0.116	0.116
1967	0.215	0.215
1968	0.170	0.170
1969	0.086	0.086
1970	0.213	0.213
1971	0.127	0.127
1972	0.079	0.079
1973	0.141	0.141
1974	0.106	0.106
1975	0.233	0.233
1976	0.240	0.240
1977	0.105	0.105
1978	0.193	0.193
1979	0.119	0.119
1980	0.133	0.133
1981	0.122	0.122
1982	0.125	0.125
1983	0.112	0.112
1984	0.120	0.120
1985	0.152	0.152
1986	0.088	0.088
1987	0.089	0.089
1988	0.198	0.198
1989	0.134	0.134
1990	0.121	0.121
1991	0.173	0.173
1992	0.137	0.137
1993	0.067	0.067
1994	0.090	0.090
1995	0.080	0.080
1996	0.164	0.164

1997	0.317	0.317
1998	0.129	0.129
1999	0.063	0.063
2000	0.181	0.181
2001	0.119	0.119
2002	0.087	0.087
2003	0.110	0.110
2004	0.416	0.416
2005	0.143	0.143
2006	0.139	0.139
2007	0.122	0.122
2008	0.121	0.121
2009	0.141	0.141

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.4163	0.4163
2	0.3169	0.3169
3	0.2724	0.2724
4	0.2395	0.2395
5	0.2329	0.2329
6	0.2149	0.2149
7	0.2130	0.2130
8	0.1976	0.1976
9	0.1950	0.1950
10	0.1930	0.1930
11	0.1927	0.1927
12	0.1878	0.1878
13	0.1811	0.1811
14	0.1728	0.1728
15	0.1725	0.1725
16	0.1703	0.1703
17	0.1644	0.1644
18	0.1612	0.1612
19	0.1520	0.1520
20	0.1496	0.1496
21	0.1454	0.1454
22	0.1431	0.1431
23	0.1411	0.1411
24	0.1409	0.1409
25	0.1385	0.1385
26	0.1366	0.1366
27	0.1340	0.1340
28	0.1334	0.1334
29	0.1285	0.1285
30	0.1272	0.1272
31	0.1254	0.1254
32	0.1223	0.1223
33	0.1216	0.1216
34	0.1209	0.1209
35	0.1207	0.1207
36	0.1195	0.1195
37	0.1190	0.1190
38	0.1187	0.1187
39	0.1165	0.1165

40	0.1115	0.1115
41	0.1109	0.1109
42	0.1098	0.1098
43	0.1057	0.1057
44	0.1051	0.1051
45	0.0983	0.0983
46	0.0968	0.0968
47	0.0938	0.0938
48	0.0908	0.0908
49	0.0900	0.0900
50	0.0899	0.0899
51	0.0888	0.0888
52	0.0883	0.0883
53	0.0876	0.0876
54	0.0871	0.0871
55	0.0860	0.0860
56	0.0859	0.0859
57	0.0800	0.0800
58	0.0789	0.0789
59	0.0674	0.0674
60	0.0658	0.0658
61	0.0635	0.0635

Stream Protection Duration

POC #1

The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0637	1169	1169	100	Pass
0.0663	998	998	100	Pass
0.0688	868	868	100	Pass
0.0713	764	764	100	Pass
0.0738	680	680	100	Pass
0.0764	605	605	100	Pass
0.0789	537	537	100	Pass
0.0814	474	474	100	Pass
0.0839	420	420	100	Pass
0.0864	377	377	100	Pass
0.0890	329	329	100	Pass
0.0915	295	295	100	Pass
0.0940	269	269	100	Pass
0.0965	250	250	100	Pass
0.0991	233	233	100	Pass
0.1016	212	212	100	Pass
0.1041	191	191	100	Pass
0.1066	178	178	100	Pass
0.1091	172	172	100	Pass
0.1117	152	152	100	Pass
0.1142	142	142	100	Pass
0.1167	133	133	100	Pass
0.1192	124	124	100	Pass
0.1218	113	113	100	Pass
0.1243	108	108	100	Pass
0.1268	102	102	100	Pass

0.1293	93	93	100	Pass
0.1318	90	90	100	Pass
0.1344	84	84	100	Pass
0.1369	80	80	100	Pass
0.1394	74	74	100	Pass
0.1419	69	69	100	Pass
0.1445	67	67	100	Pass
0.1470	60	60	100	Pass
0.1495	57	57	100	Pass
0.1520	50	50	100	Pass
0.1546	48	48	100	Pass
0.1571	47	47	100	Pass
0.1596	44	44	100	Pass
0.1621	39	39	100	Pass
0.1646	36	36	100	Pass
0.1672	36	36	100	Pass
0.1697	34	34	100	Pass
0.1722	30	30	100	Pass
0.1747	28	28	100	Pass
0.1773	28	28	100	Pass
0.1798	24	24	100	Pass
0.1823	22	22	100	Pass
0.1848	20	20	100	Pass
0.1873	19	19	100	Pass
0.1899	18	18	100	Pass
0.1924	18	18	100	Pass
0.1949	14	14	100	Pass
0.1974	13	13	100	Pass
0.2000	12	12	100	Pass
0.2025	12	12	100	Pass
0.2050	12	12	100	Pass
0.2075	11	11	100	Pass
0.2100	11	11	100	Pass
0.2126	11	11	100	Pass
0.2151	9	9	100	Pass
0.2176	9	9	100	Pass
0.2201	9	9	100	Pass
0.2227	9	9	100	Pass
0.2252	9	9	100	Pass
0.2277	9	9	100	Pass
0.2302	9	9	100	Pass
0.2327	9	9	100	Pass
0.2353	7	7	100	Pass
0.2378	7	7	100	Pass
0.2403	6	6	100	Pass
0.2428	6	6	100	Pass
0.2454	6	6	100	Pass
0.2479	6	6	100	Pass
0.2504	6	6	100	Pass
0.2529	6	6	100	Pass
0.2554	6	6	100	Pass
0.2580	6	6	100	Pass
0.2605	6	6	100	Pass
0.2630	6	6	100	Pass
0.2655	4	4	100	Pass
0.2681	4	4	100	Pass
0.2706	4	4	100	Pass

0.2731	3	3	100	Pass
0.2756	3	3	100	Pass
0.2782	3	3	100	Pass
0.2807	3	3	100	Pass
0.2832	3	3	100	Pass
0.2857	3	3	100	Pass
0.2882	3	3	100	Pass
0.2908	3	3	100	Pass
0.2933	3	3	100	Pass
0.2958	3	3	100	Pass
0.2983	3	3	100	Pass
0.3009	3	3	100	Pass
0.3034	3	3	100	Pass
0.3059	3	3	100	Pass
0.3084	3	3	100	Pass
0.3109	3	3	100	Pass
0.3135	3	3	100	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0.0346 acre-feet
On-line facility target flow: 0.0507 cfs.
Adjusted for 15 min: 0.0507 cfs.
Off-line facility target flow: 0.0288 cfs.
Adjusted for 15 min: 0.0288 cfs.

LID Report

LID Technique Percent	Water Quality	Used for Percent Treatment? Water Quality	Total Volume Comment Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit
Total Volume Infiltrated			0.00	0.00	0.00	0.00
0.00	0%	No Treat.	Credit			
Compliance with LID Standard 8						
Duration Analysis Result = Passed						

Perlnd and Implnd Changes

No changes have been made.

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**WWM2012
PROJECT REPORT**

Project Name: 2021.12.01_Onsite_WQ
Site Name: 2021.12.01_Onsite_WQ
Site Address:
City :
Report Date: 12/6/2021
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.642
Pervious Total	0.642
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.338
ROOF TOPS FLAT	0.025
SIDEWALKS FLAT	0.343
Impervious Total	2.706
Basin Total	3.348

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.642
Pervious Total	0.642
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	2.338
ROOF TOPS FLAT	0.025
SIDEWALKS FLAT	0.343
Impervious Total	2.706
Basin Total	3.348

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.642
Total Impervious Area:2.706

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.642
Total Impervious Area:2.706

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.897627
5 year	1.258807
10 year	1.524706
25 year	1.892129
50 year	2.189363
100 year	2.507341

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.897627
5 year	1.258807

10 year	1.524706
25 year	1.892129
50 year	2.189363
100 year	2.507341

Stream Protection Duration

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.326	1.326
1950	0.694	0.694
1951	1.139	1.139
1952	1.221	1.221
1953	1.377	1.377
1954	0.684	0.684
1955	0.641	0.641
1956	0.464	0.464
1957	1.363	1.363
1958	0.607	0.607
1959	0.635	0.635
1960	1.027	1.027
1961	0.624	0.624
1962	1.057	1.057
1963	0.661	0.661
1964	0.783	0.783
1965	1.924	1.924
1966	0.823	0.823
1967	1.518	1.518
1968	1.201	1.201
1969	0.607	0.607
1970	1.504	1.504
1971	0.889	0.889
1972	0.556	0.556
1973	0.995	0.995
1974	0.747	0.747
1975	1.407	1.407
1976	1.692	1.692
1977	0.743	0.743
1978	1.361	1.361
1979	0.841	0.841
1980	0.942	0.942
1981	0.859	0.859
1982	0.886	0.886
1983	0.786	0.786
1984	0.844	0.844
1985	1.074	1.074
1986	0.619	0.619
1987	0.627	0.627
1988	1.396	1.396
1989	0.947	0.947
1990	0.853	0.853
1991	1.219	1.219
1992	0.965	0.965
1993	0.476	0.476
1994	0.635	0.635
1995	0.565	0.565
1996	1.155	1.155

1997	2.224	2.224
1998	0.908	0.908
1999	0.448	0.448
2000	1.279	1.279
2001	0.839	0.839
2002	0.614	0.614
2003	0.775	0.775
2004	2.939	2.939
2005	1.011	1.011
2006	0.963	0.963
2007	0.864	0.864
2008	0.854	0.854
2009	0.996	0.996

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	2.9391	2.9391
2	2.2243	2.2243
3	1.9236	1.9236
4	1.6922	1.6922
5	1.5181	1.5181
6	1.5044	1.5044
7	1.4072	1.4072
8	1.3961	1.3961
9	1.3774	1.3774
10	1.3632	1.3632
11	1.3611	1.3611
12	1.3265	1.3265
13	1.2793	1.2793
14	1.2209	1.2209
15	1.2189	1.2189
16	1.2013	1.2013
17	1.1550	1.1550
18	1.1386	1.1386
19	1.0736	1.0736
20	1.0565	1.0565
21	1.0272	1.0272
22	1.0106	1.0106
23	0.9964	0.9964
24	0.9950	0.9950
25	0.9648	0.9648
26	0.9628	0.9628
27	0.9467	0.9467
28	0.9422	0.9422
29	0.9080	0.9080
30	0.8888	0.8888
31	0.8858	0.8858
32	0.8640	0.8640
33	0.8591	0.8591
34	0.8542	0.8542
35	0.8528	0.8528
36	0.8444	0.8444
37	0.8406	0.8406
38	0.8385	0.8385
39	0.8226	0.8226

40	0.7863	0.7863
41	0.7831	0.7831
42	0.7752	0.7752
43	0.7466	0.7466
44	0.7427	0.7427
45	0.6944	0.6944
46	0.6837	0.6837
47	0.6611	0.6611
48	0.6410	0.6410
49	0.6354	0.6354
50	0.6354	0.6354
51	0.6271	0.6271
52	0.6235	0.6235
53	0.6187	0.6187
54	0.6139	0.6139
55	0.6072	0.6072
56	0.6066	0.6066
57	0.5654	0.5654
58	0.5563	0.5563
59	0.4756	0.4756
60	0.4641	0.4641
61	0.4476	0.4476

Stream Protection Duration

POC #1

The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.4488	1190	1190	100	Pass
0.4664	1008	1008	100	Pass
0.4840	887	887	100	Pass
0.5016	770	770	100	Pass
0.5191	691	691	100	Pass
0.5367	611	611	100	Pass
0.5543	548	548	100	Pass
0.5719	485	485	100	Pass
0.5895	424	424	100	Pass
0.6070	380	380	100	Pass
0.6246	331	331	100	Pass
0.6422	303	303	100	Pass
0.6598	273	273	100	Pass
0.6774	253	253	100	Pass
0.6950	238	238	100	Pass
0.7125	213	213	100	Pass
0.7301	198	198	100	Pass
0.7477	183	183	100	Pass
0.7653	174	174	100	Pass
0.7829	157	157	100	Pass
0.8004	147	147	100	Pass
0.8180	136	136	100	Pass
0.8356	128	128	100	Pass
0.8532	115	115	100	Pass
0.8708	109	109	100	Pass
0.8883	103	103	100	Pass

0.9059	95	95	100	Pass
0.9235	88	88	100	Pass
0.9411	86	86	100	Pass
0.9587	80	80	100	Pass
0.9763	76	76	100	Pass
0.9938	69	69	100	Pass
1.0114	63	63	100	Pass
1.0290	56	56	100	Pass
1.0466	53	53	100	Pass
1.0642	49	49	100	Pass
1.0817	45	45	100	Pass
1.0993	44	44	100	Pass
1.1169	42	42	100	Pass
1.1345	39	39	100	Pass
1.1521	36	36	100	Pass
1.1696	34	34	100	Pass
1.1872	32	32	100	Pass
1.2048	30	30	100	Pass
1.2224	28	28	100	Pass
1.2400	27	27	100	Pass
1.2576	23	23	100	Pass
1.2751	22	22	100	Pass
1.2927	21	21	100	Pass
1.3103	19	19	100	Pass
1.3279	17	17	100	Pass
1.3455	17	17	100	Pass
1.3630	16	16	100	Pass
1.3806	13	13	100	Pass
1.3982	12	12	100	Pass
1.4158	11	11	100	Pass
1.4334	11	11	100	Pass
1.4509	11	11	100	Pass
1.4685	10	10	100	Pass
1.4861	10	10	100	Pass
1.5037	10	10	100	Pass
1.5213	8	8	100	Pass
1.5389	8	8	100	Pass
1.5564	8	8	100	Pass
1.5740	8	8	100	Pass
1.5916	8	8	100	Pass
1.6092	8	8	100	Pass
1.6268	8	8	100	Pass
1.6443	8	8	100	Pass
1.6619	7	7	100	Pass
1.6795	7	7	100	Pass
1.6971	6	6	100	Pass
1.7147	6	6	100	Pass
1.7322	6	6	100	Pass
1.7498	6	6	100	Pass
1.7674	6	6	100	Pass
1.7850	6	6	100	Pass
1.8026	6	6	100	Pass
1.8202	6	6	100	Pass
1.8377	6	6	100	Pass
1.8553	6	6	100	Pass
1.8729	5	5	100	Pass
1.8905	4	4	100	Pass

1.9081	4	4	100	Pass
1.9256	3	3	100	Pass
1.9432	3	3	100	Pass
1.9608	3	3	100	Pass
1.9784	3	3	100	Pass
1.9960	3	3	100	Pass
2.0135	3	3	100	Pass
2.0311	3	3	100	Pass
2.0487	3	3	100	Pass
2.0663	3	3	100	Pass
2.0839	3	3	100	Pass
2.1015	3	3	100	Pass
2.1190	3	3	100	Pass
2.1366	3	3	100	Pass
2.1542	3	3	100	Pass
2.1718	3	3	100	Pass
2.1894	3	3	100	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0.2444 acre-feet
On-line facility target flow: 0.3584 cfs.
Adjusted for 15 min: 0.3584 cfs.
Off-line facility target flow: 0.2033 cfs.
Adjusted for 15 min: 0.2033 cfs.

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative
Percent	Water Quality	Percent	Through	Volume	Volume
Volume	Treatment?	Needs	Facility	(ac-ft.)	Infiltration
Infiltrated	Water Quality	Treatment	(ac-ft)	(ac-ft)	Credit
	Treated	(ac-ft)			
Total Volume Infiltrated		0.00	0.00	0.00	0.00
0.00	0%	No Treat.	Credit		
Compliance with LID Standard 8					
Duration Analysis Result = Passed					

Perlnd and Implnd Changes

No changes have been made.

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**WWM2012
PROJECT REPORT**

Project Name: 2021.12.06_6th_St_WQ
Site Name: 2021.12.06_6th_St_WQ
Site Address:
City :
Report Date: 12/6/2021
Gage : Burlington
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 0.83
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.097
Pervious Total	0.097
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.176
SIDEWALKS FLAT	0.054
Impervious Total	0.23
Basin Total	0.327

Element Flows To:		
Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

<u>Pervious Land Use</u>	<u>acre</u>
A B, Pasture, Flat	.097
Pervious Total	0.097
<u>Impervious Land Use</u>	<u>acre</u>
ROADS FLAT	0.176
SIDEWALKS FLAT	0.054
Impervious Total	0.23
Basin Total	0.327

Element Flows To:		
Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.097
Total Impervious Area:0.23

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.097
Total Impervious Area:0.23

Flow Frequency Return Periods for Predeveloped. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.076303
5 year	0.107003
10 year	0.129603
25 year	0.160832
50 year	0.186096
100 year	0.213122

Flow Frequency Return Periods for Mitigated. POC #1

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.076303
5 year	0.107003
10 year	0.129603
25 year	0.160832

50 year	0.186096
100 year	0.213122

Stream Protection Duration		
Annual Peaks for Predeveloped and Mitigated. POC #1		
Year	Predeveloped	Mitigated
1949	0.113	0.113
1950	0.059	0.059
1951	0.097	0.097
1952	0.104	0.104
1953	0.117	0.117
1954	0.058	0.058
1955	0.054	0.054
1956	0.039	0.039
1957	0.116	0.116
1958	0.052	0.052
1959	0.054	0.054
1960	0.087	0.087
1961	0.053	0.053
1962	0.090	0.090
1963	0.056	0.056
1964	0.067	0.067
1965	0.164	0.164
1966	0.070	0.070
1967	0.129	0.129
1968	0.102	0.102
1969	0.052	0.052
1970	0.128	0.128
1971	0.076	0.076
1972	0.047	0.047
1973	0.085	0.085
1974	0.063	0.063
1975	0.120	0.120
1976	0.144	0.144
1977	0.063	0.063
1978	0.116	0.116
1979	0.071	0.071
1980	0.080	0.080
1981	0.073	0.073
1982	0.075	0.075
1983	0.067	0.067
1984	0.072	0.072
1985	0.091	0.091
1986	0.053	0.053
1987	0.053	0.053
1988	0.119	0.119
1989	0.080	0.080
1990	0.072	0.072
1991	0.104	0.104
1992	0.082	0.082
1993	0.040	0.040
1994	0.054	0.054
1995	0.048	0.048
1996	0.098	0.098
1997	0.189	0.189
1998	0.077	0.077

1999	0.038	0.038
2000	0.109	0.109
2001	0.071	0.071
2002	0.052	0.052
2003	0.066	0.066
2004	0.250	0.250
2005	0.086	0.086
2006	0.082	0.082
2007	0.073	0.073
2008	0.073	0.073
2009	0.085	0.085

Stream Protection Duration

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.2498	0.2498
2	0.1891	0.1891
3	0.1635	0.1635
4	0.1438	0.1438
5	0.1290	0.1290
6	0.1279	0.1279
7	0.1196	0.1196
8	0.1187	0.1187
9	0.1171	0.1171
10	0.1159	0.1159
11	0.1157	0.1157
12	0.1127	0.1127
13	0.1087	0.1087
14	0.1038	0.1038
15	0.1036	0.1036
16	0.1021	0.1021
17	0.0982	0.0982
18	0.0968	0.0968
19	0.0913	0.0913
20	0.0898	0.0898
21	0.0873	0.0873
22	0.0859	0.0859
23	0.0847	0.0847
24	0.0846	0.0846
25	0.0820	0.0820
26	0.0818	0.0818
27	0.0805	0.0805
28	0.0801	0.0801
29	0.0772	0.0772
30	0.0755	0.0755
31	0.0753	0.0753
32	0.0734	0.0734
33	0.0730	0.0730
34	0.0726	0.0726
35	0.0725	0.0725
36	0.0718	0.0718
37	0.0714	0.0714
38	0.0713	0.0713
39	0.0699	0.0699
40	0.0668	0.0668
41	0.0666	0.0666

42	0.0659	0.0659
43	0.0635	0.0635
44	0.0631	0.0631
45	0.0590	0.0590
46	0.0581	0.0581
47	0.0562	0.0562
48	0.0545	0.0545
49	0.0540	0.0540
50	0.0540	0.0540
51	0.0533	0.0533
52	0.0530	0.0530
53	0.0526	0.0526
54	0.0522	0.0522
55	0.0516	0.0516
56	0.0516	0.0516
57	0.0481	0.0481
58	0.0473	0.0473
59	0.0404	0.0404
60	0.0395	0.0395
61	0.0380	0.0380

Stream Protection Duration

POC #1

The Facility PASSED

The Facility **PASSED.**

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0382	1178	1178	100	Pass
0.0396	1004	1004	100	Pass
0.0411	881	881	100	Pass
0.0426	769	769	100	Pass
0.0441	691	691	100	Pass
0.0456	608	608	100	Pass
0.0471	548	548	100	Pass
0.0486	481	481	100	Pass
0.0501	423	423	100	Pass
0.0516	380	380	100	Pass
0.0531	330	330	100	Pass
0.0546	303	303	100	Pass
0.0561	273	273	100	Pass
0.0576	253	253	100	Pass
0.0591	237	237	100	Pass
0.0606	212	212	100	Pass
0.0621	198	198	100	Pass
0.0636	182	182	100	Pass
0.0651	174	174	100	Pass
0.0665	155	155	100	Pass
0.0680	147	147	100	Pass
0.0695	136	136	100	Pass
0.0710	128	128	100	Pass
0.0725	115	115	100	Pass
0.0740	109	109	100	Pass
0.0755	103	103	100	Pass
0.0770	95	95	100	Pass
0.0785	88	88	100	Pass

0.0800	86	86	100	Pass
0.0815	80	80	100	Pass
0.0830	76	76	100	Pass
0.0845	69	69	100	Pass
0.0860	63	63	100	Pass
0.0875	56	56	100	Pass
0.0890	53	53	100	Pass
0.0905	50	50	100	Pass
0.0919	44	44	100	Pass
0.0934	44	44	100	Pass
0.0949	42	42	100	Pass
0.0964	39	39	100	Pass
0.0979	36	36	100	Pass
0.0994	34	34	100	Pass
0.1009	32	32	100	Pass
0.1024	30	30	100	Pass
0.1039	28	28	100	Pass
0.1054	27	27	100	Pass
0.1069	23	23	100	Pass
0.1084	22	22	100	Pass
0.1099	21	21	100	Pass
0.1114	19	19	100	Pass
0.1129	17	17	100	Pass
0.1144	17	17	100	Pass
0.1159	16	16	100	Pass
0.1174	13	13	100	Pass
0.1188	12	12	100	Pass
0.1203	11	11	100	Pass
0.1218	11	11	100	Pass
0.1233	11	11	100	Pass
0.1248	10	10	100	Pass
0.1263	10	10	100	Pass
0.1278	10	10	100	Pass
0.1293	8	8	100	Pass
0.1308	8	8	100	Pass
0.1323	8	8	100	Pass
0.1338	8	8	100	Pass
0.1353	8	8	100	Pass
0.1368	8	8	100	Pass
0.1383	8	8	100	Pass
0.1398	8	8	100	Pass
0.1413	7	7	100	Pass
0.1428	7	7	100	Pass
0.1443	6	6	100	Pass
0.1457	6	6	100	Pass
0.1472	6	6	100	Pass
0.1487	6	6	100	Pass
0.1502	6	6	100	Pass
0.1517	6	6	100	Pass
0.1532	6	6	100	Pass
0.1547	6	6	100	Pass
0.1562	6	6	100	Pass
0.1577	6	6	100	Pass
0.1592	5	5	100	Pass
0.1607	4	4	100	Pass
0.1622	4	4	100	Pass
0.1637	3	3	100	Pass

0.1652	3	3	100	Pass
0.1667	3	3	100	Pass
0.1682	3	3	100	Pass
0.1697	3	3	100	Pass
0.1712	3	3	100	Pass
0.1726	3	3	100	Pass
0.1741	3	3	100	Pass
0.1756	3	3	100	Pass
0.1771	3	3	100	Pass
0.1786	3	3	100	Pass
0.1801	3	3	100	Pass
0.1816	3	3	100	Pass
0.1831	3	3	100	Pass
0.1846	3	3	100	Pass
0.1861	3	3	100	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0.0207 acre-feet
On-line facility target flow: 0.0304 cfs.
Adjusted for 15 min: 0.0304 cfs.
Off-line facility target flow: 0.0172 cfs.
Adjusted for 15 min: 0.0172 cfs.

LID Report

LID Technique	Water Quality	Used for Percent Treatment? Water Quality	Total Volume Comment Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit
Infiltrated		Treated				
Total Volume Infiltrated			0.00	0.00	0.00	0.00
0.00	0%	No Treat.	Credit			
Compliance with LID Standard 8						
Duration Analysis Result = Passed						

Perlnd and Implnd Changes

No changes have been made.

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PORT OF ANACORTES CAP SANTE REDEVELOPMENT - JKL LOT IMPROVEMENTS

PROJECT ADDRESS: PORT OF ANACORTES CAP SANTE MARINA, ANACORTES, WA
SECTION 18, TOWNSHIP 35 NORTH, RANGE 02 EAST, CITY OF ANACORTES, SKAGIT COUNTY, WASHINGTON

LEGEND

EXISTING FEATURE SYMBOL LEGEND

- = EXISTING MONUMENT
- = EXISTING REBAR AND CAP
- = EXISTING REBAR, NO CAP
- = SET REBAR & ORANGE PLASTIC CAP
- = SET MAG NAIL
- = EXISTING NAIL/FLASHER
- = SET NAIL/FLASHER
- = SET CHISELED "X"
- = EXISTING STORM DRAIN CLEANOUT
- = EXISTING CATCH BASIN
- = EXISTING DOWNSPOUT
- = EXISTING SANITARY SEWER MANHOLE
- = EXISTING SANITARY SEWER CLEANOUT
- = EXISTING SANITARY SEWER SERVICE STUB
- = EXISTING GATE VALVE
- = EXISTING WATER METER
- = EXISTING FIRE HYDRANT
- = EXISTING HOSE BIB
- = EXISTING FIRE STANDPIPE
- = EXISTING POST INDICATOR VALVE
- = EXISTING IRRIGATION BOX
- = EXISTING BOLLARD
- = EXISTING STOP SIGN
- = EXISTING STREET SIGN
- = EXISTING FLAG POLE
- = EXISTING SIGNAL BASE
- = EXISTING POWER POLE
- = EXISTING POWER POLE W/DROP
- = EXISTING GUY POLE
- = EXISTING STREET LIGHT POLE
- = EXISTING STREET LIGHT POLE W/ DROP
- = EXISTING YARD LIGHT
- = EXISTING LUMINAIRE WITH MAST ARM(S)
- = EXISTING UTILITY POLE
- = EXISTING GROUND GUY
- = EXISTING FIBER-OPTIC/COMM. HANDHOLD
- = EXISTING ELECTRICAL VAULT
- = EXISTING ELECTRIC HANDHOLD
- = EXISTING TELEPHONE PEDESTAL/RISER
- = EXISTING ELECTRIC METER/SWITCH
- = EXISTING GAS METER
- = EXISTING NATURAL GAS VALVE
- = EXISTING CARSONITE POST
- = EXISTING BIRCH TREE
- = EXISTING PINE/SPRUCE TREE
- = EXISTING FIR TREE
- = EXISTING FRUIT TREE
- = EXISTING MADRONA TREE
- = EXISTING MAPLE TREE
- = EXISTING STUMP
- = RIGHT OF WAY VACATION WITH UTILITY EASEMENT RIGHTS RETAINED
- = COULD NOT OPEN (STRUCTURE INACCESSIBLE)

PROPOSED FEATURE SYMBOL LEGEND

- = PROPOSED STORM DRAIN MANHOLE
- = PROPOSED CATCH BASIN
- = PROPOSED SANITARY SEWER MANHOLE
- = PROPOSED SANITARY SEWER SERVICE
- = PROPOSED WATER METER
- = PROPOSED 45° BEND, MJ
- = PROPOSED TEE, MJ
- = PROPOSED GATE VALVE, MJ
- = PROPOSED TAPPING TEE & VALVE
- = PROPOSED ASPHALT SURFACING
- = PROPOSED CONCRETE SURFACING

EXISTING LINE LEGEND

- = EXISTING EDGE OF ASPHALT
- = EXISTING EDGE OF CONCRETE
- = EXISTING EDGE OF GRAVEL ROAD
- = EXISTING CURB
- = EXISTING SIDEWALK
- = EXISTING STORM CULVERT
- = EXISTING STORM DRAIN LINE
- = RECORD STORM DRAIN LINE
- = EXISTING SANITARY SEWER GRAVITY LINE
- = RECORD SANITARY SEWER LINE
- = EXISTING WATER LINE
- = RECORD WATER LINE
- = EXISTING OVERHEAD ELECTRIC LINES
- = EXISTING OVERHEAD ELECTRIC & COMMUNICATION LINES
- = EXISTING UNDERGROUND POWER
- = EXISTING UNDERGROUND TV CABLE LINE
- = EXISTING UNDERGROUND COMMUNICATIONS LINE
- = EXISTING OVERHEAD COMMUNICATIONS LINE
- = EXISTING UNDERGROUND FIBER OPTIC LINE
- = EXISTING UNDERGROUND GAS LINE
- = EXISTING TOP OF SLOPE LINE
- = EXISTING TOE OF SLOPE LINE
- = EXISTING GRADE INDEX CONTOUR
- = EXISTING GRADE INTERVAL CONTOUR
- = EXISTING FLOW LINE
- = EXISTING ORDINARY HIGH WATER LINE
- = EXISTING MEAN HIGH WATER LINE
- = EXISTING MEAN HIGH HIGH WATER LINE
- = EXISTING EDGE OF BRUSH
- = EXISTING EDGE OF TREES
- = EXISTING EDGE OF LANDSCAPED AREA
- = EXISTING RAILROAD RAIL
- = EXISTING FENCE (AS NOTED)
- = EXISTING CHAINLINK FENCE
- = EXISTING WOOD FENCE
- = EXISTING GUARDRAIL

PROPOSED LINE LEGEND

- = PROPOSED EDGE OF ASPHALT
- = PROPOSED CURB
- = PROPOSED SIDEWALK
- = PROPOSED SAWCUT LIMITS
- = PROPOSED STORM DRAIN LINE
- = PROPOSED SANITARY SEWER LINE
- = PROPOSED WATER LINE
- = PROPOSED TOP OF SLOPE LINE
- = PROPOSED SLOPE DIRECTION ARROW
- = PROPOSED TOE OF SLOPE LINE
- = PROPOSED FINISHED GRADE INDEX CONTOUR
- = PROPOSED FINISHED GRADE INTERVAL CONTOUR

SHEET INDEX

SHEET NUMBER	SHEET NAME
01	COVER SHEET
02	EXISTING CONDITIONS
03	SITE PLAN
04	GRADING PLAN
05	DRAINAGE PLAN
06	TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
LANDSCAPE SHEETS (FROM HBB)	
L101	JKL PARKING LOT PLANTING PLAN
L103	PLANTING SCHEDULES
L104	PLANTING ABB, NOTES, & LEGEND
L105	PLANTING DETAILS
L106	PLANTING DETAILS
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L201	JKL PARKING LOT IRRIGATION PLAN
L203	IRRIGATION SCH, ABBV, NOTES, & LEGEND
L204	IRRIGATION DETAILS
L205	IRRIGATION DETAILS
L206	IRRIGATION DETAILS

ABBREVIATIONS

ACP	ASPHALT CONCRETE PAVING	F.HYD.	FIRE HYDRANT	RT	RIGHT
ADA	AMERICAN DISABILITIES ACT	F/C	FACE OF CURB	R/W	RIGHT OF WAY
A.F.#	AUDITOR'S FILE NUMBER	FF	FINISH FLOOR	SD	STORM DRAIN
APWA	AMERICAN PUBLIC WORKS ASSOCIATION	FG	FINISH GRADE	SDCB	STORM DRAIN CATCH BASIN
APPROX.	APPROXIMATE	FL	FLOWLINE	SDR	STANDARD DIAMETER RATIO
A.D.	ALGEBRAIC DIFFERENCE	FS	FINISH SURFACE	SDMH	STORM DRAIN MANHOLE
B/C	BACK OF CURB	GA	GAUGE	SVC	SERVICE
BW	BOTTOM OF WALL	GALV.	GALVANIZED	SPEC.	SPECIFICATION
BMP	BEST MANAGEMENT PRACTICE	H.C.	HANDICAP	SSCO	SANITARY SEWER CLEAN-OUT
BVCS	BEGINNING VERTICAL CURVE STATION	I.E.	INVERT ELEVATION	SSMH	SANITARY SEWER MANHOLE
BVCE	BEGINNING VERTICAL CURVE ELEVATION	INV.	INVERT	STD	STANDARD
CB	CATCH BASIN	K	RATE OF VERTICAL CURVATURE	STA	STATION
C&G	CURB AND GUTTER	LT	LEFT	S/W	SIDEWALK
CL	CENTERLINE	LF	LINEAL FEET	SF	SQUARE FOOT
CMF	CORRUGATED METAL PIPE	MAX.	MAXIMUM	T/W	TOP OF WALL
CMU	CONCRETE MASONRY UNIT	MIN.	MINIMUM	TBOC	TOP BACK OF CURB
CONC.	CONCRETE	N.I.C.	NOT IN CONTRACT	TC	TOP OF CURB
CPP	CORRUGATED POLYETHYLENE PIPE	NVPA	NATIVE VEGETATION PROTECTION AREA	TF	TOP OF FOOTING
DIA.	DIAMETER	OHWM	ORDINARY HIGH WATER MARK	TP	TOP OF PIPE
EL	ELEVATION	PROP.	PROPOSED	TYP.	TYPICAL
EOP	EDGE OF PAVEMENT	PERF.	PERFORATED	VC	VERTICAL CURVE LENGTH
EVCS	ENDING VERTICAL CURVE STATION	PVC	POLYVINYL CHLORIDE	WM	WATER METER
EVCE	ENDING VERTICAL CURVE ELEVATION	PVI	POINT OF VERTICAL INFLECTION	WSDOE	WASHINGTON STATE DEPT. OF ECOLOGY
EX	EXISTING	PC	POINT OF CURVATURE	WSDOT	WASHINGTON STATE DEPT. OF TRANSPORTATION
F&G	FRAME AND GRATE	PT	POINT OF TANGENCY		
		R=	CURVE RADIUS		

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City of Anacortes
Planning, Community & Economic Development

Date Received:
12/21/21
COA File #
SDP-2021-0012



PACIFIC SURVEY & ENGINEERING INC
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NO.	DATE	BY	REVISION
1.	12/10/21	JG	SHORELINE / SITE PLAN REVIEW

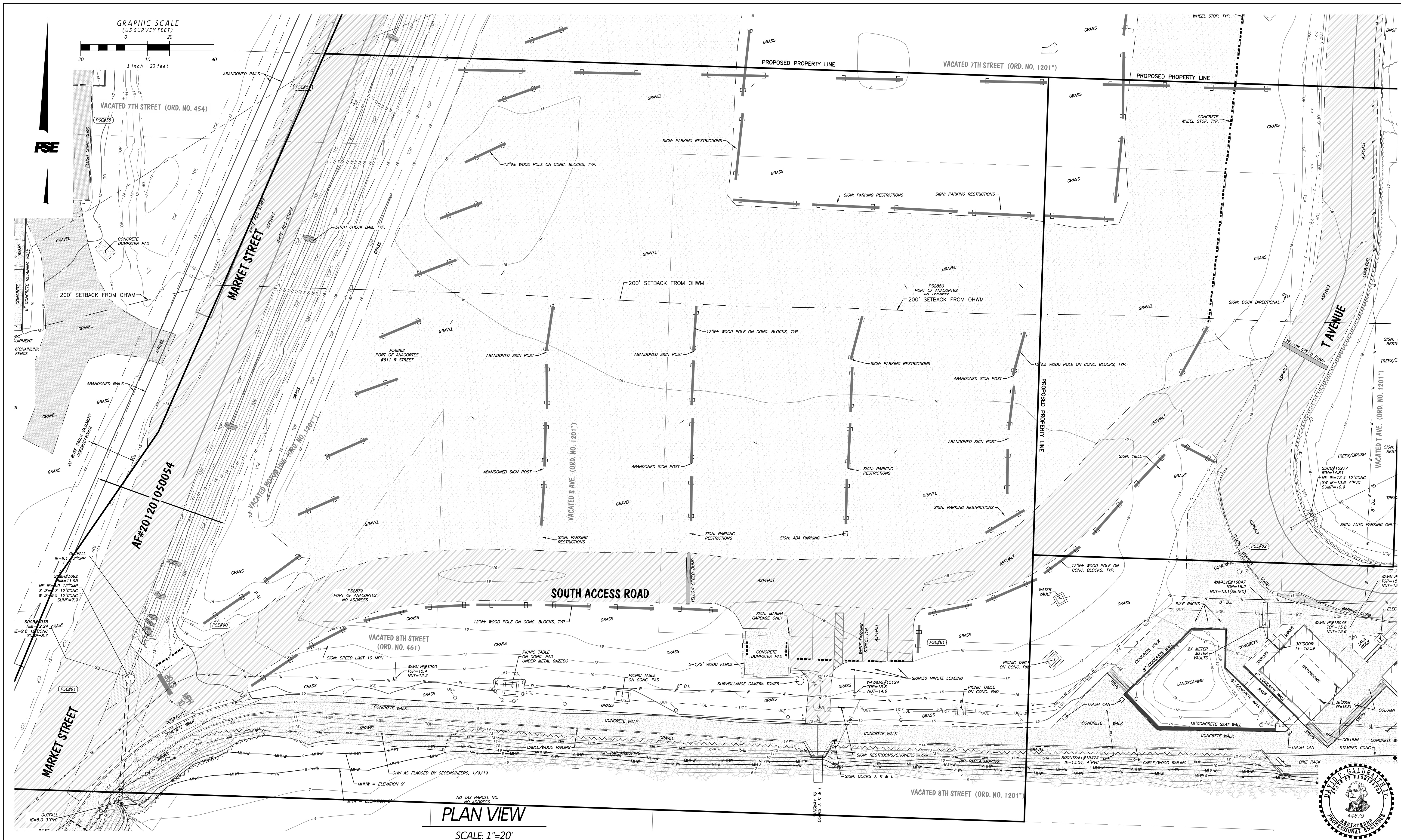


CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

COVER SHEET

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DESIGN: JG	SCALE: 1"=20'
CHECKED: DG	DATE: 12/17/2021
SHEET NO.	

01 OF 06



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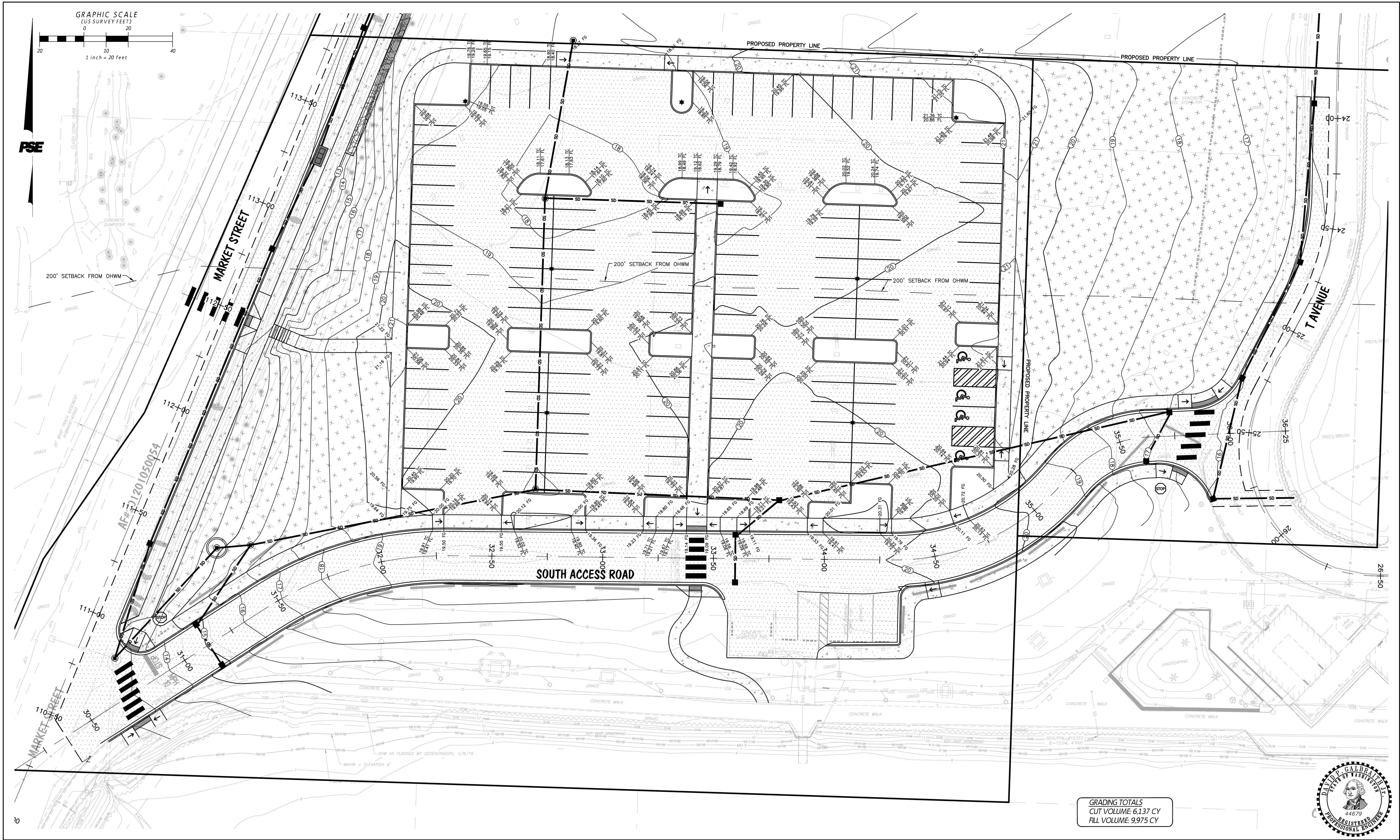
NO.	DATE	BY	REVISION
1.	12/10/21	JG	SHORELINE / SITE PLAN REVIEW



CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

EXISTING CONDITIONS

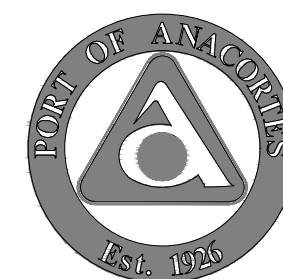
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SHEET NO.	
02	OF 06



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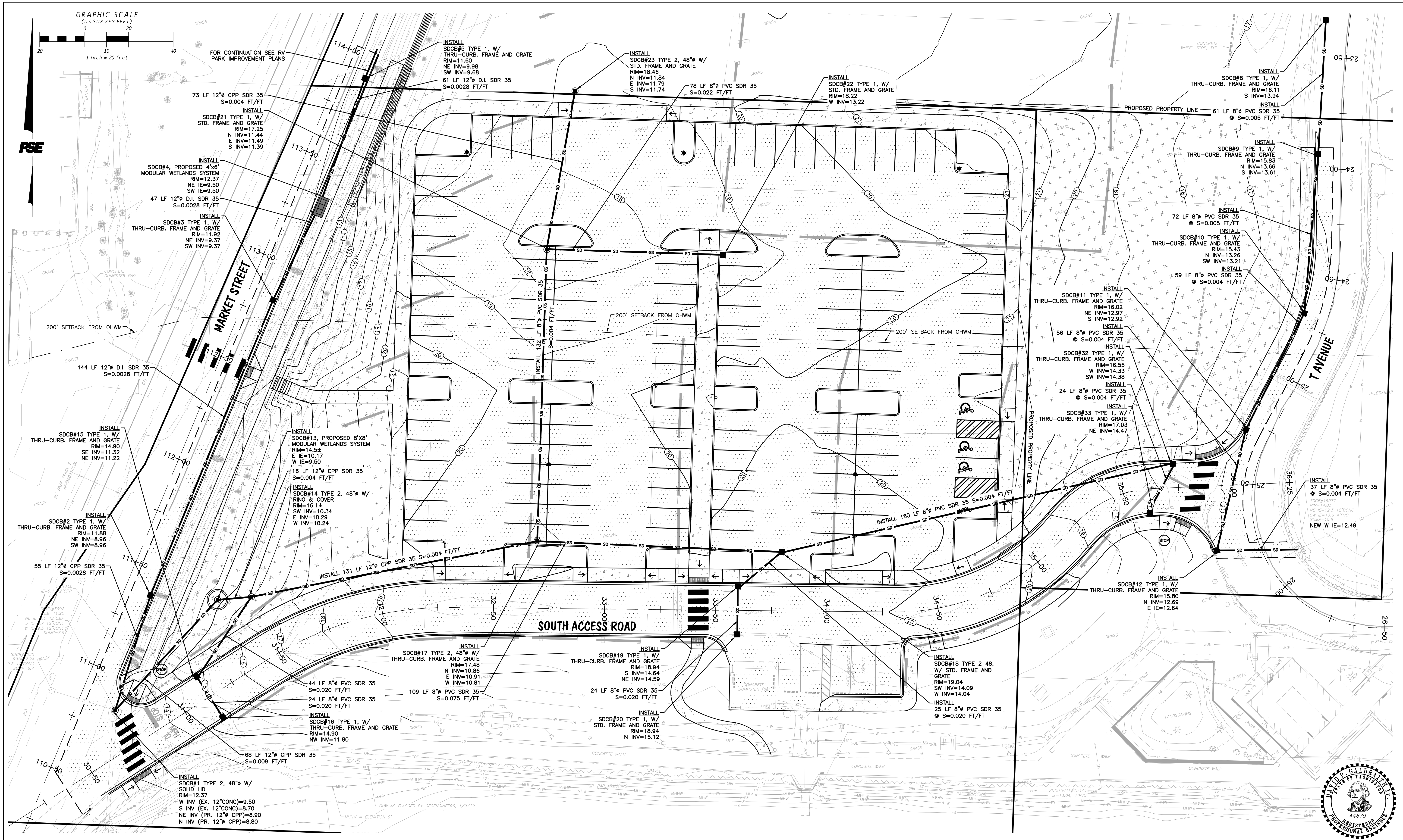


CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

GRADING PLAN

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DESIGN: JG SCALE: 1"=20'
CHECKED: DG DATE: 12/17/2021
SHEET NO.

04 OF 06



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NO.	DATE	BY	REVISION
1.	12/10/21	JG	SHORELINE / SITE PLAN REVIEW

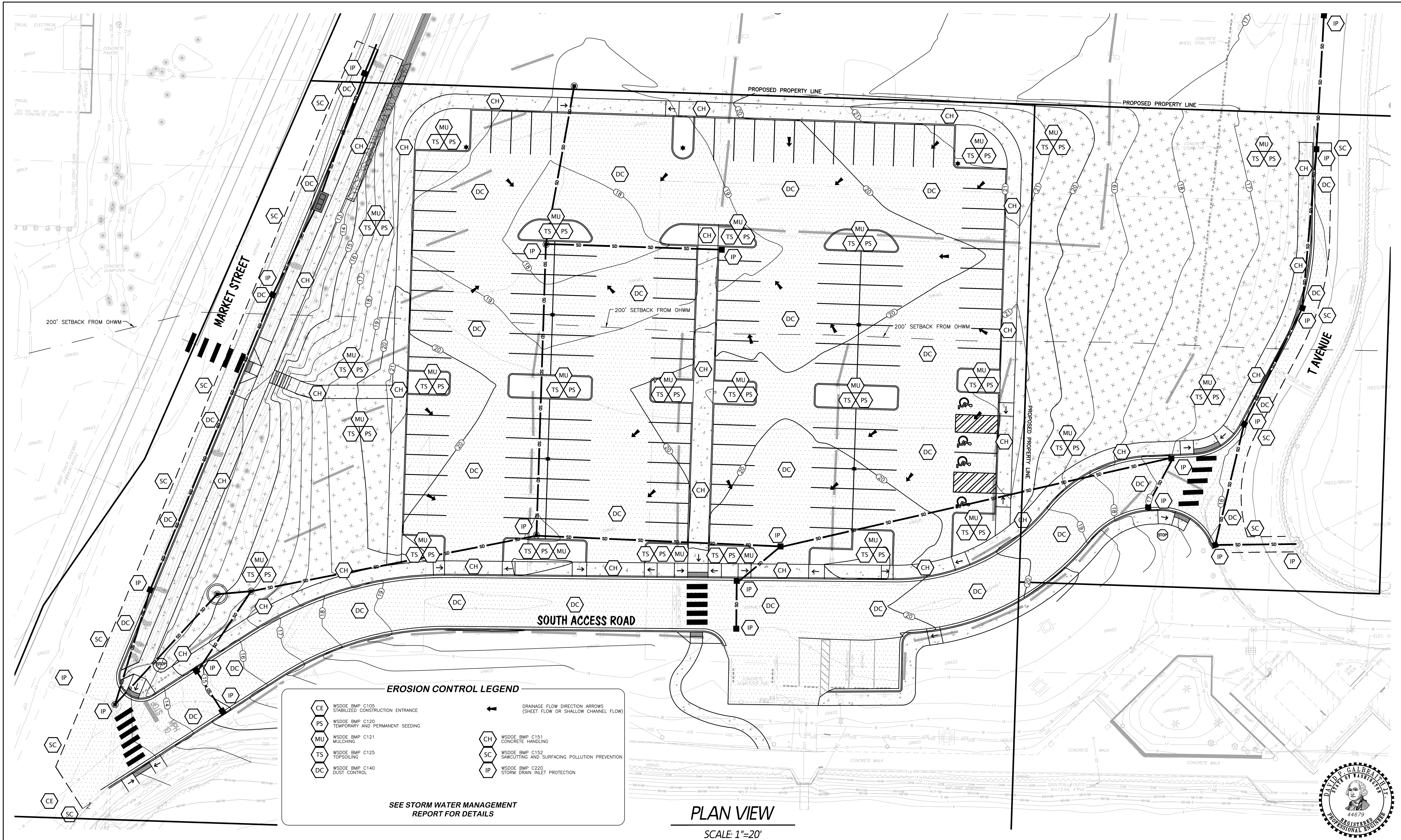


CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

DRAINAGE PLAN

DRAWN: JG	PROJECT NO.:2020064
DESIGN: JG	SCALE: 1"=20'
CHECKED: DG	DATE: 12/17/2021
SHEET NO.	

05 OF 06



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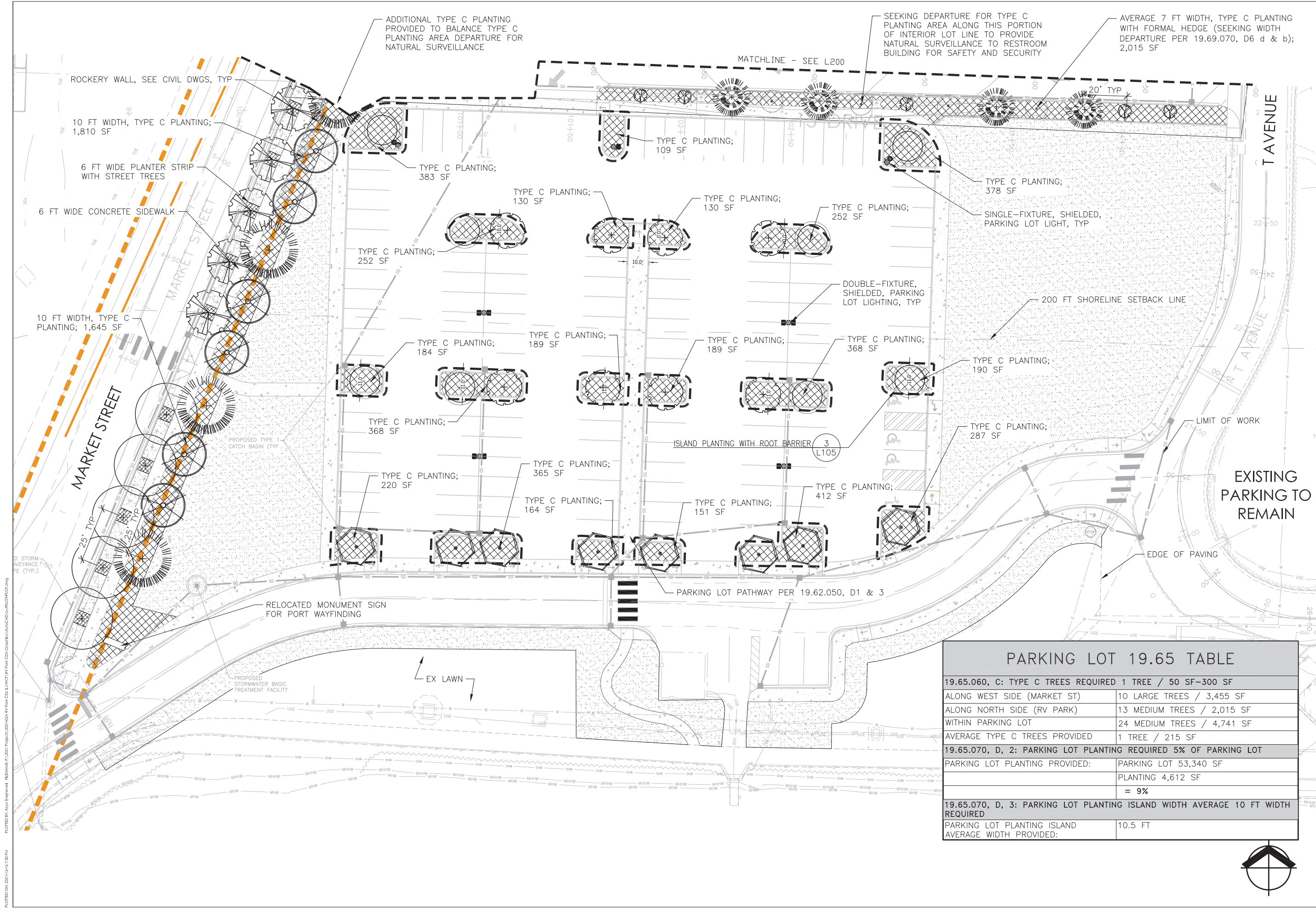
NO.	DATE	BY	REVISION
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CAP SANTE - JKL LOT IMPROVEMENTS
PORT OF ANACORTES
PROJECT #

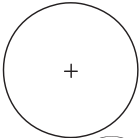
TEMPORARY EROSION AND
SEDIMENT CONTROL PLAN

DRAWN: JG	PROJECT NO.:2020064
DESIGN: JG	SCALE: 1"=20'
CHECKED: DG	DATE: 12/17/2021
SHEET NO.	
06	OF 06



PLOTTED ON: 2022-12-14 2:32 PM
 PLOTTED BY: Ayoa Sogajevsdi
 FILENAME: P:\2021 Projects\2022-02A RV Park CDS & UNCR\RV Park CDS\Graphics\AutoCAD\JKL\JKT.dwg

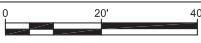
JKL PARKING LOT PLANTING SCHEDULE

SYM	QTY	SCIENTIFIC/COMMON NAME	SIZE/REMARKS
TREES			
	5	ACER RUBRUM 'FRANKSRED' / RED SUNSET MAPLE (MATURE HT 45')	1.5" CAL; B&B; FULL, WELL BRANCHED & WELL ROOTED; STRAIGHT CENTRAL LEADER & SINGLE TRUNK; SYMMETRICAL BRANCHING HABIT
	8	QUERCUS ROBUR X ALBA 'CRIMSCHMIDT' / CRIMSON SPIRE OAK (MATURE HT 50')	
	5	LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE' / SLENDER SILHOUETTE SWEETGUM (MATURE HT 50')	
	8	CELTIS OCCIDENTALIS 'JFS-KSU1' / PRAIRIE SENTINEL HACKBERRY (MATURE HT 45')	
	4	GINKGO BILBOA 'PRINCETON SENTRY' / PRINCETON SENTRY GINKGO (MATURE HT 40')	
	6	CARPINUS CAROLIANA / AMERICAN HORNBEAM (MATURE HT 25')	
	5	QUERCUS MACROCARPA 'JFS-KW3' / URBAN PINNACLE OAK (MATURE HT 50')	
	8	NYSSA SYLVATICA 'HAYMANRED' / RED RAGE TUPELO (MATURE HT 35')	
	4	THUJA PLICATA / WESTERN RED CEDAR (MATURE HT 80')	1.5" CAL; B&B; FULL, WELL BRANCHED & WELL ROOTED; STRAIGHT CENTRAL LEADER & SINGLE TRUNK; SYMMETRICAL BRANCHING HABIT
	4	PINUS STROBUS 'FASTIGIATA' / FASTIGATE WHITE PINE (MATURE HT 30')	2" CAL; B&B; FULL, WELL BRANCHED & WELL ROOTED; STRAIGHT CENTRAL LEADER & SINGLE TRUNK; SYMMETRICAL BRANCHING HABIT
SHRUBS			
	XX	ROSA GYMNOCARPA / BALDHIP ROSE	5 GAL; 3' HT; NOT SHEARED; SYMMETRICAL FULL & WELL BRANCHED; MAINTAIN AS HEDGE; HT 6' AND ALLOW INDIVIDUAL PLANTS TO MERGE INTO A 'WALL'
	XX	Rosa 'WEKvassutono' PP18473 / YELLOW FLORIBUNDA ROSE (IN ACCENT AREAS ONLY)	1 GAL; 3' HT; NOT SHEARED; SYMMETRICAL FULL & WELL BRANCHED;
	XX	ROSA X NEARLY WILD / FLORIBUNDA ROSE (IN PARKING ISLANDS ONLY)	
	XX	ROSA RUGOSA / SEA TOMATO (IN ACCENT AREAS ONLY)	
	XX	ROSA CV. 'WEKMORIDAHOR', PPAF / TOP GUN SHRUB ROSE	
GROUNDCOVERS			
	XX SF	CORNUS SERICEA 'KELSEY' / KELSEY DWARF RED DOGWOOD	1 GAL @ 18" OC TRIANGULAR SPACING; FULL, WELL ROOTED, & WELL BRANCHED
	XX SF	MAHONIA AQUIFOLIUM 'COMPACTA' / COMPACT OREGON GRAPE	
	XX SF	DWARF ESCALLONIA / ESCALLONIA 'COMPACTA' (FOR EDGES IN PARKING ISLANDS ONLY)	
	XX SF	PENNISETUM ALOPECUROIDES 'LITTLE BUNNY' / LITTLE BUNNY FOUNTAIN GRASS	
	XX SF	SOD LAWN	
	XX SF	MULCH ONLY	
	XX LF	ROOT BARRIER	



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

ISSUE	DATE	DESCRIPTION
1		DRAFT

PROJECT:	0436.05
DESIGNED:	D. KOONTIS
DRAWN:	A. SNEJNEVSKI
CHECKED:	D. KOONTIS
SCALE	
	
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.	
SHEET TITLE	
PLANTING SCHEDULES	
SHEET	
L103	

PLANTING NOTES

- | | | | | | | | | | | | | | |
|---|--|-----------------|-----|--------------|-----|------------------|-----|------------------------------------|----|----------------------------|----|-----------------|----|
| <p>1. ANY DISCREPANCIES WITH THE DWGS AND/OR SPECS & SITE CONDITIONS MUST BE BROUGHT TO THE ATTENTION OF LA PRIOR TO PROCEEDING WITH CONSTRUCTION.</p> <p>2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.</p> <p>3. LA MUST INSPECT PLANT MATERIALS AND STAKING LOCATIONS PRIOR TO INSTALLATION TO ASSURE THE APPROPRIATE PLANT SCHEDULE AND PLANT CHARACTERISTICS ARE MET.</p> <p>3. PLANT MATERIAL LOCATIONS MUST BE COORDINATED WITH SPRINKLER IRRIGATION HEAD LOCATIONS TO AVOID ANY CONFLICTS.</p> <p>4. INSTALL GROUNDCOVERS IN A TRIANGULAR PATTERN AT SPACING SHOWN IN THE PLANT SCHEDULE. WHERE GROUNDCOVER ABUTS CURBING, WALLS, OR WALKS, MIN PLANTING DISTANCE MUST BE NINE (9) INCHES FROM SAME UNLESS OTHERWISE NOTED. INSTALL GROUNDCOVERS CONTINUOUS IN BETWEEN SHRUB PLANTINGS.</p> | <p>5. ALL SOD AND PLANT MATERIAL WILL RECEIVE IRRIGATION. HEDGE AND STREET TREES WILL RECEIVE BUBBLERS SEE IRRIGATION PLANS.</p> <p>6. TREE LOCATIONS SHOWN ON PLANTING PLANS ARE APPROXIMATE; IF FIELD ADJUSTMENTS ARE NECESSARY THE FOLLOWING MIN SETBACKS FOR CENTERLINE OF TREE TRUNKS TO EDGE OF DRIVEWAY, FACE OF CURB OR INTERSECTION AND TO CENTER OF ALL OTHERS SHOWN MUST APPLY:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">A. STREET LIGHT</td> <td style="width: 20%; text-align: right;">20'</td> </tr> <tr> <td>B. DRIVEWAYS</td> <td style="text-align: right;">10'</td> </tr> <tr> <td>C. INTERSECTIONS</td> <td style="text-align: right;">30'</td> </tr> <tr> <td>D. UNDERGROUND SEWER & WATER LINES</td> <td style="text-align: right;">5'</td> </tr> <tr> <td>E. UNDERGROUND FIBER CABLE</td> <td style="text-align: right;">2'</td> </tr> <tr> <td>F. FACE OF CURB</td> <td style="text-align: right;">3'</td> </tr> </table> | A. STREET LIGHT | 20' | B. DRIVEWAYS | 10' | C. INTERSECTIONS | 30' | D. UNDERGROUND SEWER & WATER LINES | 5' | E. UNDERGROUND FIBER CABLE | 2' | F. FACE OF CURB | 3' |
| A. STREET LIGHT | 20' | | | | | | | | | | | | |
| B. DRIVEWAYS | 10' | | | | | | | | | | | | |
| C. INTERSECTIONS | 30' | | | | | | | | | | | | |
| D. UNDERGROUND SEWER & WATER LINES | 5' | | | | | | | | | | | | |
| E. UNDERGROUND FIBER CABLE | 2' | | | | | | | | | | | | |
| F. FACE OF CURB | 3' | | | | | | | | | | | | |

PLANTING ABBREVIATIONS

#/NO	NUMBER	CONT	CONTAINER	MFRS	MANUFACTURER'S
%	PERCENT	CF	CUBIC FEET	MAX	MAXIMUM
&	AND	DIA	DIAMETER	MIN	MINIMUM
@	AT	DWGS	DRAWINGS	OC	ON CENTER
ABBV	ABBREVIATIONS	EA	EACH	PREP	PREPARATION
ALT	ALTERNATE	EQ	EQUAL	QTY	QUANTITY
APPROX	APPROXIMATE	EQUIV	EQUIVALENT	SCH	SCHEDULE
B&B	BALLED AND BURLAPPED	EX	EXISTING	SPEC	SPECIFICATION
CAL	CALIPER	GAL	GALLON	SQ	SQUARE
ε	CENTER LINE	HT	HEIGHT	SYM	SYMBOL
CLR	CLEAR	ID	INSIDE DIAMETER	TBD	TO BE DETERMINED
CONC	CONCRETE	LA	LANDSCAPE ARCHITECT	TYP	TYPICAL
CONST	CONSTRUCTION	LF	LINEAR FEET	WITH	WITH

LEGEND



DETAIL	IDENTIFICATION
SHEET	IDENTIFICATION



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

[illegible]

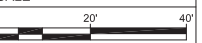
PROJECT: 0436.05

DESIGNED: D. KOONTZ

RAWN: A. SNEJNEVSKI

CHECKED: D. KOONTZ

SCALE



NOTE: BAR IS ONE INCH ON ORIGINAL
DRAWING. IF NOT ONE INCH ON THIS

HEET TITLE

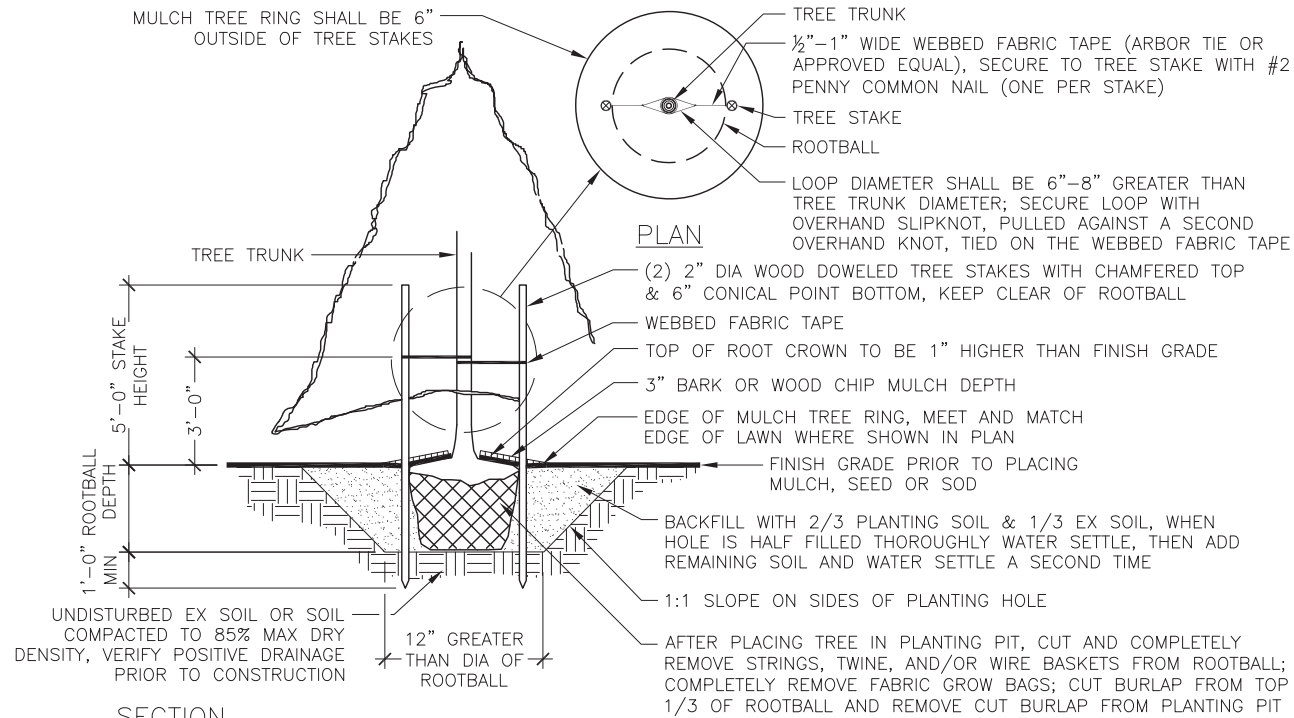
PLANTING ABBV,
NOTES & LEGEND

NOTES, & LEGEND

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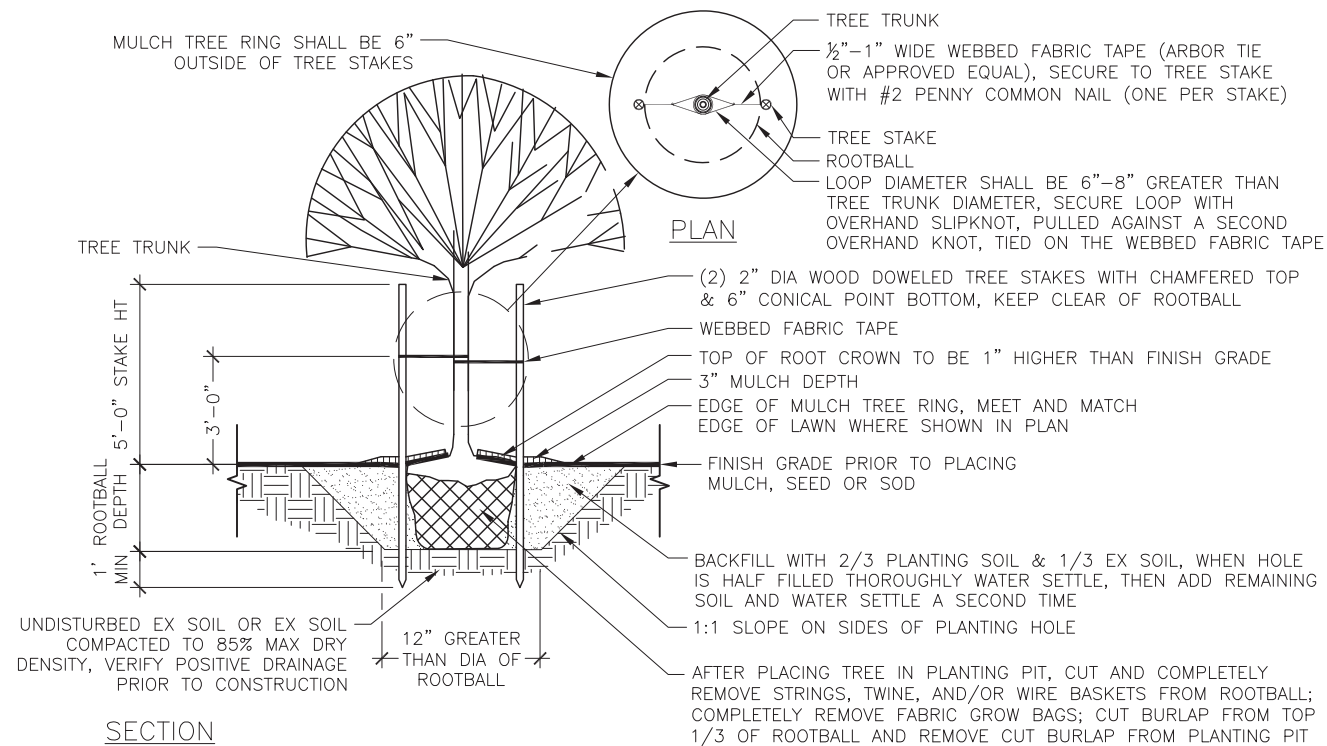
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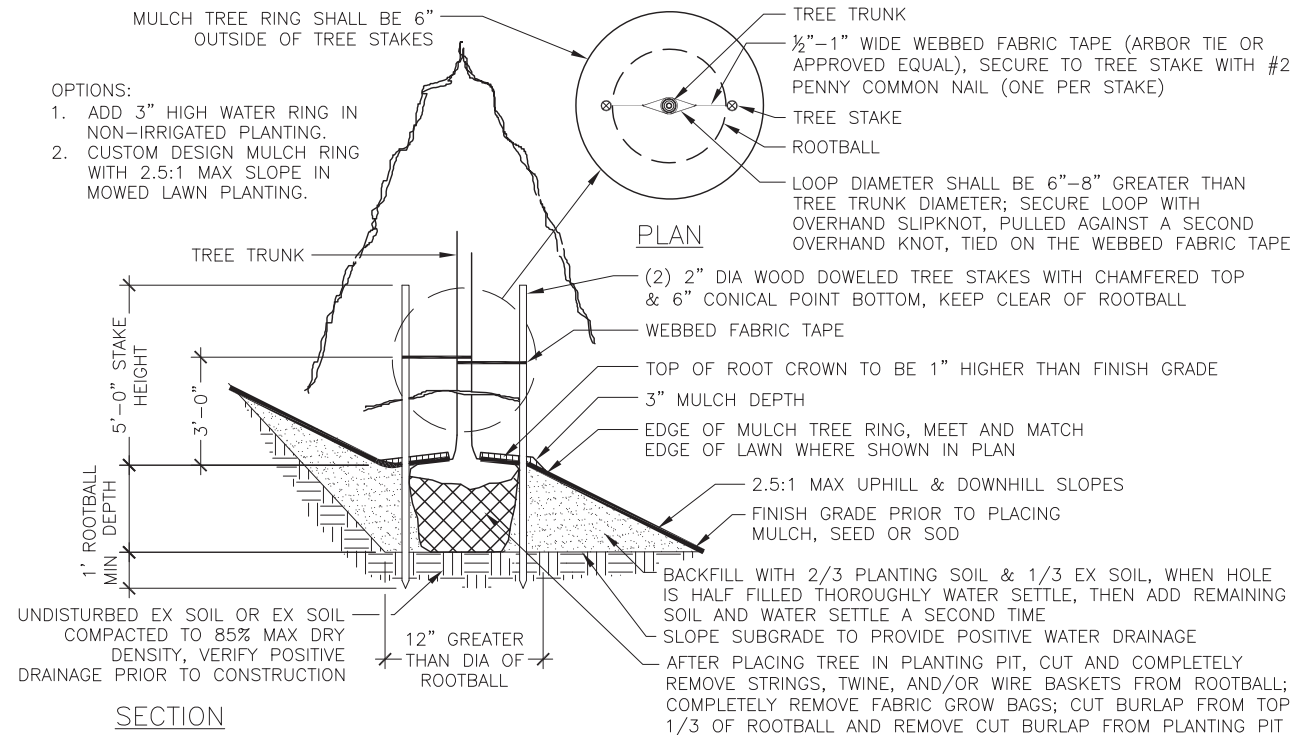
1 CONIFER TREE PLANTING

NOT TO SCALE



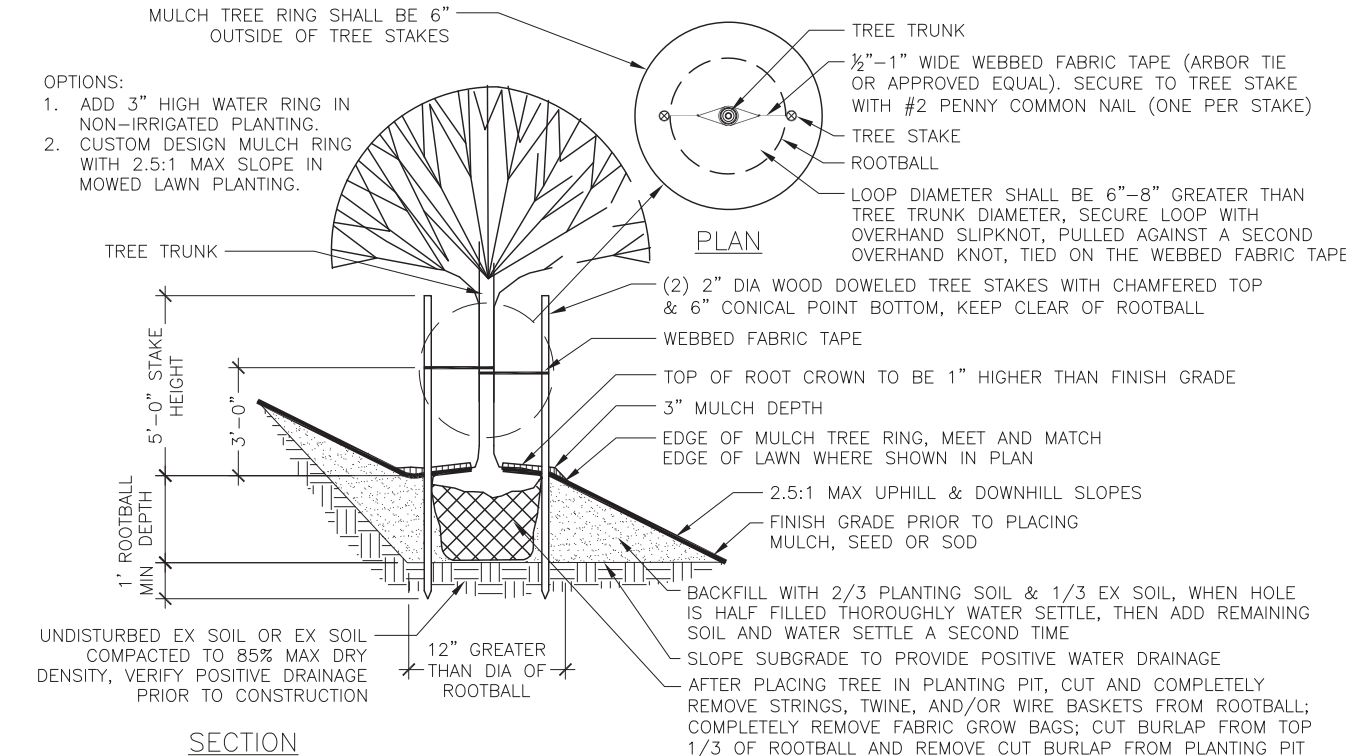
3 DECIDUOUS TREE PLANTING

NOT TO SCALE



2 CONIFER TREE PLANTING ON A SLOPE

NOT TO SCALE



4 DECIDUOUS TREE PLANTING ON A SLOPE

NOT TO SCALE

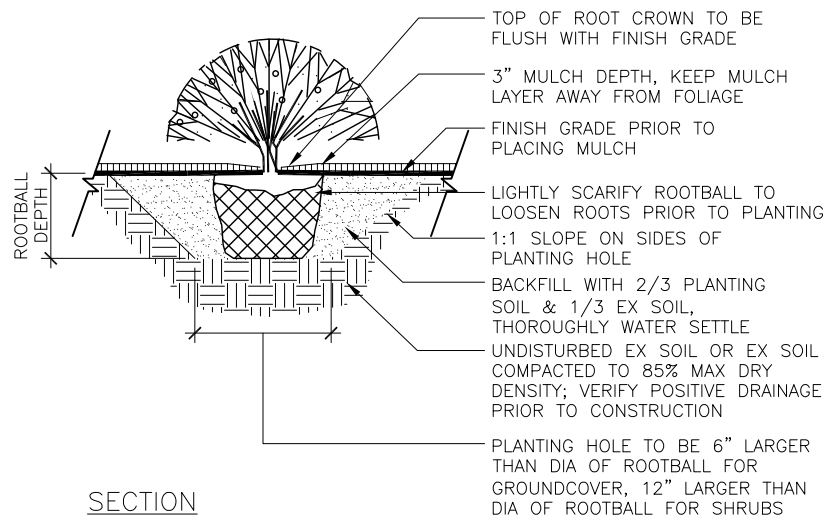


RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

ISSUE	DATE	DESCRIPTION
DRAFT		

PROJECT: 0436.05
DESIGNED: D. KOONTZ
DRAWN: A. SNEJNEVSKI
CHECKED: D. KOONTZ
SCALE
0 20' 40'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

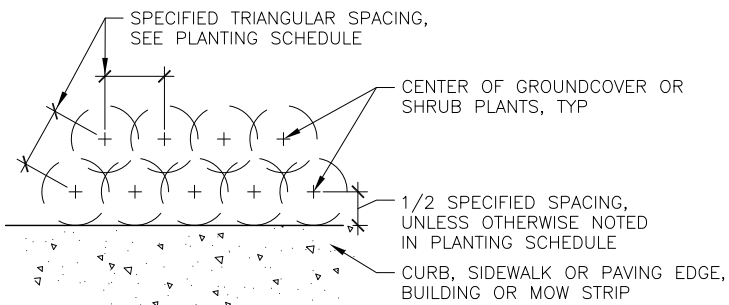
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PLANTING DETAILS
SHEET
L106



SECTION

1 SHRUB & GROUNDCOVER PLANTING

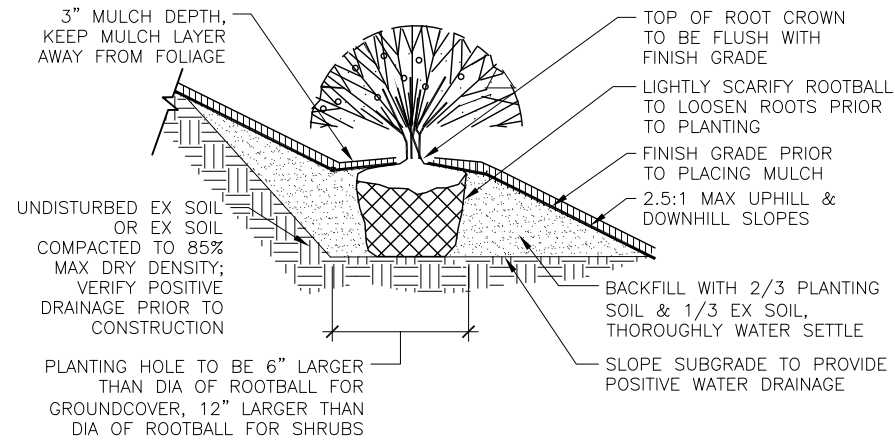
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PLAN

3 SHRUB & GROUNDCOVER PLANTING LAYOUT

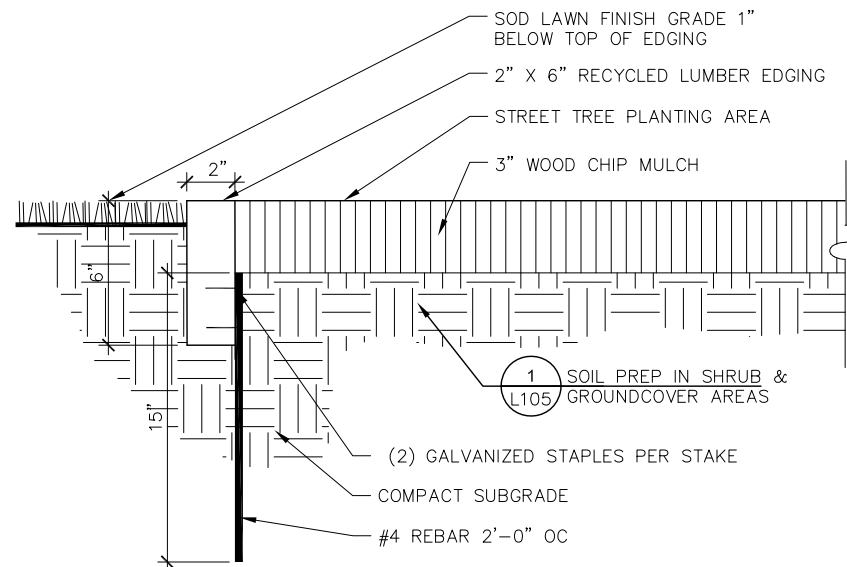
NOT TO SCALE



SECTION

2 SHRUB & GROUNDCOVER PLANTING ON A SLOPE

NOT TO SCALE



4 RECYCLED WOOD EDGING

NOT TO SCALE



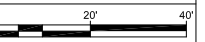
RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

DRAFT

ISSUE DATE DESCRIPTION

PROJECT: 0436.05
DESIGNED: D. KOONTZ
DRAWN: A. SNEJNEVSKI
CHECKED: D. KOONTZ

SCALE



NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

PLANTING DETAILS

SHEET

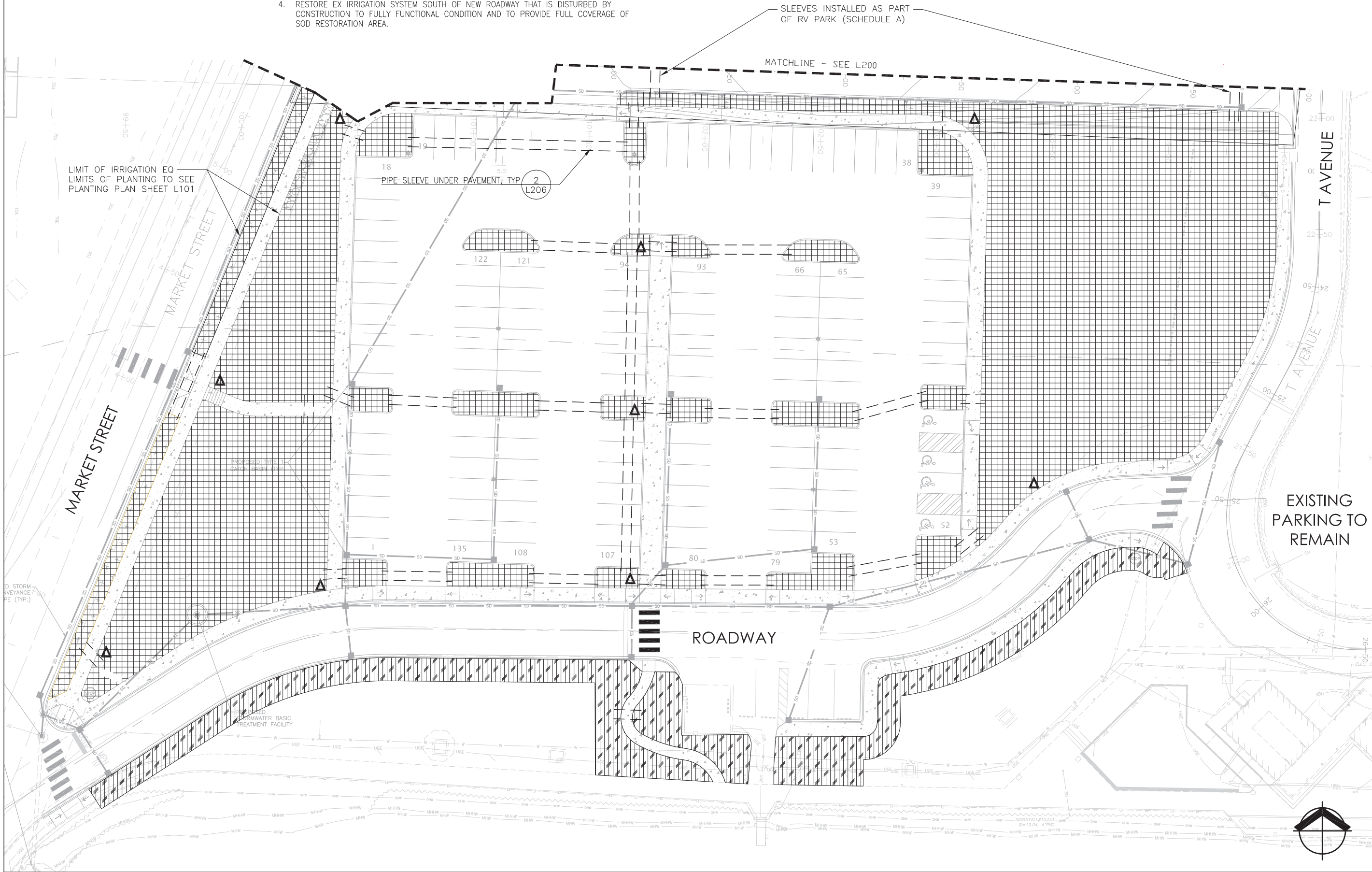
L107

PLOTTED ON: 2024-12-14 12:35 PM
PLOT BY: Auto Engineer III
RENAME P:\2021 Projects\2024-2025 RV Park CDB & LNC\RV Park CDB\Graphics\ANACORTES\FIELD\PL088.dwg

SEE SHEET L203 FOR IRRIGATION
SCHEDULE, NOTES,
ABBREVIATIONS, & LEGEND

JKL PARKING LOT IRRIGATION SYSTEM NOTES

1. ALL ITEMS FOR JKL PARKING LOT ARE TRACKED SEPARATELY IN BID SCHEDULE B.
2. CONNECT TO MAINLINE EXTENSIONS PROVIDED BY THE RV PARK. GATE VALVES TO REMAIN AS PART OF THE SYSTEM IN ORDER TO ISOLATE SYSTEMS.
3. ALL IRRIGATION ZONES FOR JKL PARKING LOT SHALL REMAIN WITH LIMITS SHOWN. NO IRRIGATION ZONE SHALL BE EXTENDED INTO BUILDING SYSTEM AREA OR RV PARK SITE.
4. RESTORE EX IRRIGATION SYSTEM SOUTH OF NEW ROADWAY THAT IS DISTURBED BY CONSTRUCTION TO FULLY FUNCTIONAL CONDITION AND TO PROVIDE FULL COVERAGE OF SOD RESTORATION AREA.



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

ISSUE	DATE	DESCRIPTION
DRAFT		

PROJECT: 0436.05
DESIGNED: D. KOONTZ
DRAWN: A. SNEJNEVSKI
CHECKED: D. KOONTZ
SCALE
0 20' 40'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.
SHEET TITLE

JKL PARKING LOT
IRRIGATION PLAN
SHEET
L201

 POP-UP HEADS*
 ROTOR HEADS
 TREE BUBBLER**

* INSTALL SPRAY NOZZLES LOCATED IN LAWN ON 4" POP-UP HEADS. INSTALL SPRAY NOZZLES LOCATED IN SHRUB AND GROUND COVER PLANTING AREAS ON 12" POP-UP SPRAY HEADS.

** RAINBIRD RWS-MINI ROOT WATERING SYSTEM #RWS-M-BG (0.25 GPM BUBBLER).

SYMBOL	DESCRIPTION
	 PIPE SLEEVES (SCH 80 PVC) W/ SUGGESTED LOCATIONS SHOWN; CONTRACTOR TO SIZE & DETERMINE FINAL LOCATION

QUICK COUPLER KEYS
HOSE SWIVELS
LID KEYS

	C2	RAINBIRD FSM—LSMEF TRADITIONAL WIRED, EXPANDABLE CONTROLLER WITH FLOW SMART AND RSD RAIN SENSOR INSTALL IN RAINBIRD
---	---	---



 2" HAMMOND GATE VALVE MODEL 667
OR APPROVED EQUAL



 3/4" MANUAL DRAIN VALVE, PROVIDE OWNER
 W/ TWO (2) VALVE KEYS

 WILKINS ZURN MODEL 600XL PRESSURE REDUCING VALVE WITH ZURN MODEL 25 PRESSURE GAUGE

1
203

IRRIGATION POINT OF CONNECTION



 RAINBIRD FS SERIES FLOW SENSOR



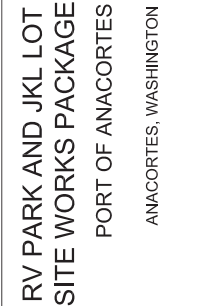
RAINBIRD EFB-CP SERIES
MASTER CONTROL VALVE

1" FEBCO 850 DOUBLE CHECK VALVE
ASSEMBLY BACKFLOW PREVENTER

	<u>SYMBOL</u>	<u>DESCRIPTION</u>
	XX	RV PARK IRRIGATION (SCHEDULE A)
	XX	JKL PARKING LOT IRRIGATION (SCHEDULE B)
	XX	EX IRRIGATION — RESTORATION (SCHEDULE B)
	XX	BUILDING AREA IRRIGATION (SCHEDULE C)

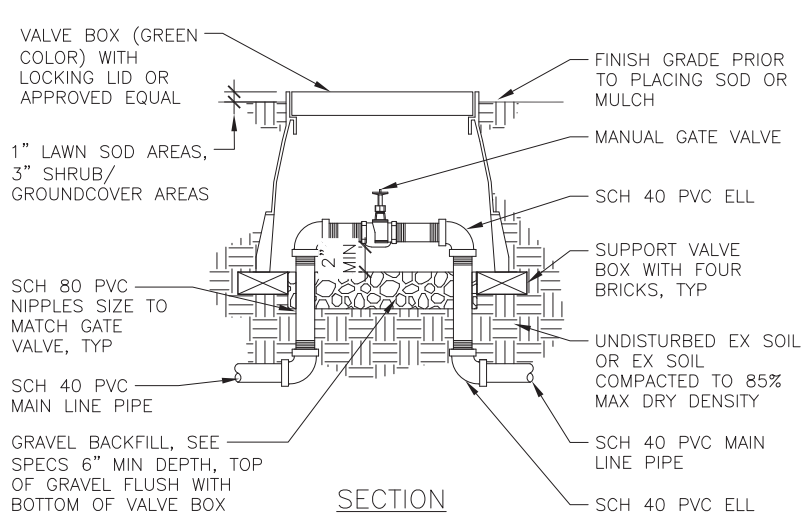
1. EX STATIC PSI AT IRRIGATION METER IS 95 PSI. INFORMATION PROVIDED BY DAVID GALBRAITH, PACIFIC SURVEY & ENGINEERING, (360) 671-7387 RECEIVED ON 12/03/2021. PRIOR TO INSTALLATION OF IRRIGATION SYSTEM, CONTRACTOR SHALL FIELD VERIFY EX PSI NOTIFY LA OF ANY DISCREPANCIES BETWEEN THE DESIGN PSI & EX PSI PRIOR TO PROCEEDING WITH WORK.
2. DRAWING IS SCHEMATIC. ACTUAL LOCATIONS MAY VARY DUE TO PLANT MATERIALS, UTILITIES OR EX CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. THERE IS A LOSS OF PRESSURE IN EACH PIPE FITTING DUE TO FRICTION & ADDITIONAL HEADS MAY BE NEEDED DUE TO FIELD CONDITIONS. THESE LOSSES ARE COMPENSATED FOR BY ADDING TEN (10) PERCENT TO THE MFRS RATED GPM FOR EACH NOZZLE.
4. LOCATE QUICK COUPLING VALVE & AUTOMATIC CONTROL VALVES IN PLANTING AREAS AT POINT OF EASY ACCESS. LA TO REVIEW & APPROVE FINAL LOCATION OF ALL QUICK COUPLERS & AUTOMATIC CONTROL VALVES PRIOR TO INSTALLATION SEE DETAIL 3/L206.
5. HEAD LOCATION MUST BE ADJUSTED IN THE FIELD TO COMPLY WITH EX SITE CONDITIONS, PLANT MATERIALS, & ANY OTHER ITEMS DEEMED APPROPRIATE BY THE LA.
6. CONTRACTOR SHALL COORDINATE IRRIGATION EQUIPMENT WITH PLANT MATERIAL, TO AVOID CONFLICTS, SPRAY BLOCKAGE & ANY OTHER ITEMS DEEMED APPROPRIATE BY THE LA.
7. INSTALL TREE BUBBLERS PER DETAIL 4/L206 AT ALL TREES LOCATED ALONG 6TH STREET AND MARKET STREET, AND ALL TREES LOCATED IN LAWN.
8. IRRIGATION CONTRACTOR SHALL COORDINATE IRRIGATION SLEEVING LOCATIONS WITH GENERAL CONTRACTOR.
9. ALL IRRIGATION SLEEVING TO BE STAKED IN THE FIELD & LOCATED ON DIMENSIONED "AS-BUILT" DRAWING TO ALLOW FUTURE LOCATION & USE.
10. AIR BLOW IRRIGATION SYSTEM THROUGH QUICK COUPLERS TO WINTERIZE IRRIGATION SYSTEM.
11. SUBMIT SHOP DRAWINGS OF IRRIGATION SYSTEM DESIGN FOR LA REVIEW AND APPROVAL PRIOR TO BEGINNING OF INSTALLATION. SEE IRRIGATION SPEC 32 84 00.

#/NO	NUMBER	GPH	GALLONS PER HOUR
%	PERCENT	GPM	GALLONS PER MINUTE
&	AND	IRR	IRRIGATION
@	AT	LA	LANDSCAPE ARCHITECT
ABBV	ABBREVIATIONS	MAX	MAXIMUM
BLDG	BUILDING	MECH	MECHANICAL
£	CENTER LINE	MFRS	MANUFACTURERS
CF	CUBIC FEET	MIN	MINIMUM
CLR	CLEAR	OC	ON CENTER
CONC	CONCRETE	OR	OWNER'S REPRESENTATIVE
CONST	CONSTRUCTION	POC	POINT OF CONNECTION
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DWGS	DRAWINGS	PSI	POUNDS PER SQUARE INCH
ENG	ENGINEER	SCH	SCHEDULE
EX	EXISTING	SPEC	SPECIFICATION
GAL	GALLON	TYP	TYPICAL



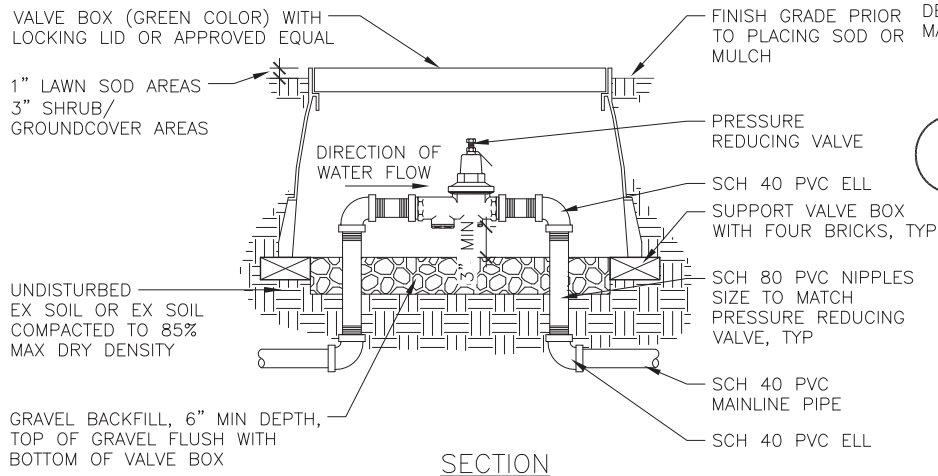
PROJECT: 0436.05
DESIGNED: D. KOONT'S
DRAWN: A. SNEJNEVSKI
CHECKED: D. KOONT'S
SCALE
0 20' 40'
NOTE: BAR IS ONE INCH ON ORIGINAL
DRAWING. IF NOT ONE INCH ON THIS
SHEET, ADJUST SCALE ACCORDINGLY.

SHEET
L203



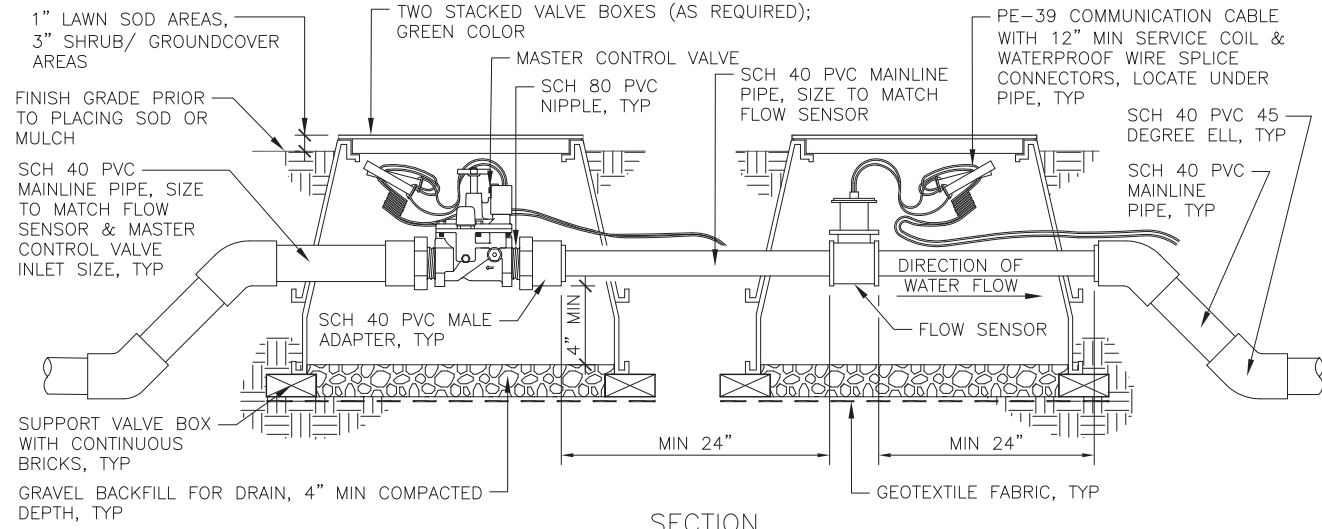
1 MANUAL GATE VALVE

NOT TO SCALE



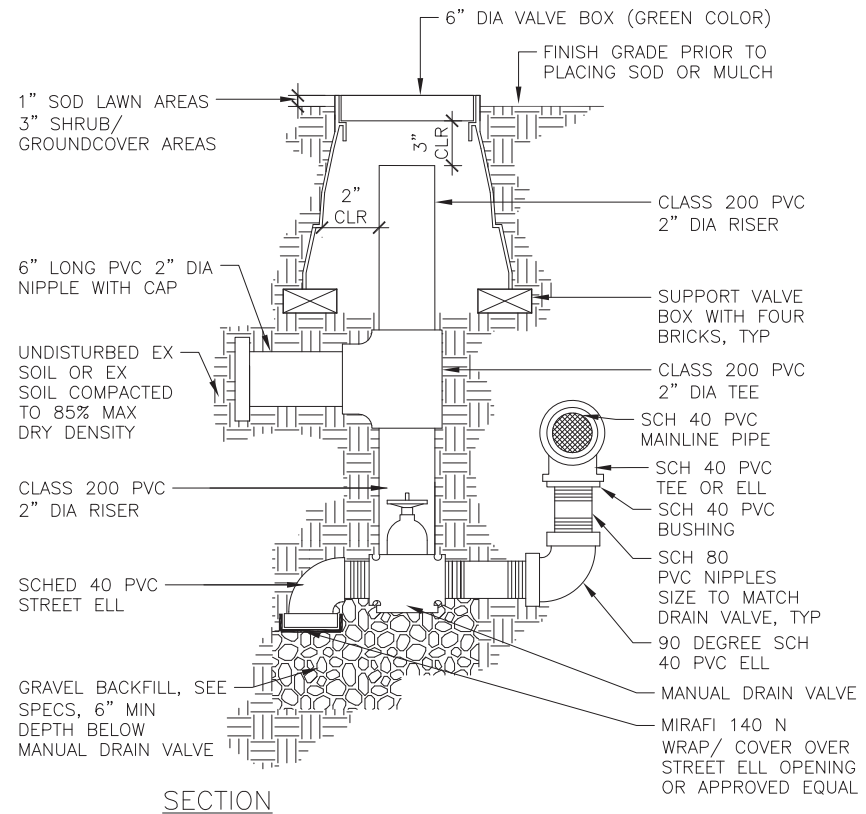
4 PRESSURE REDUCING VALVE

NOT TO SCALE



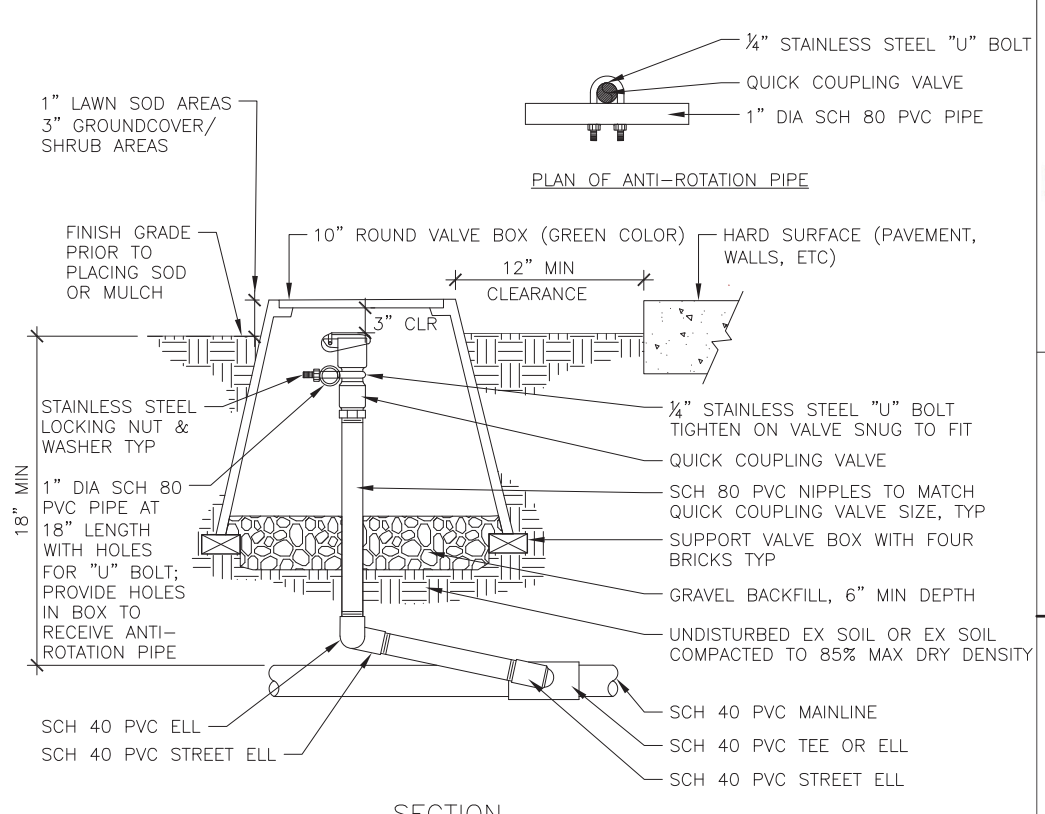
5 FLOW SENSOR AND MASTER CONTROL VALVE

NOT TO SCALE



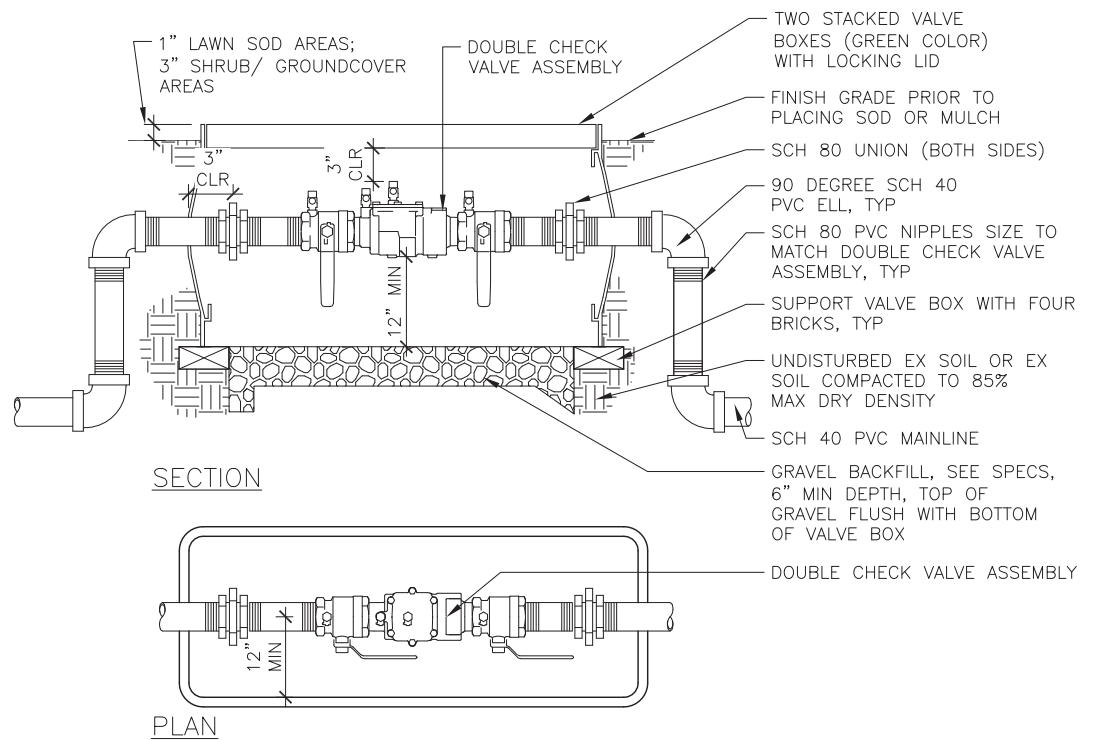
2 MANUAL DRAIN VALVE

NOT TO SCALE



3 QUICK COUPLING VALVE

NOT TO SCALE



6 DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTER

NOT TO SCALE



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

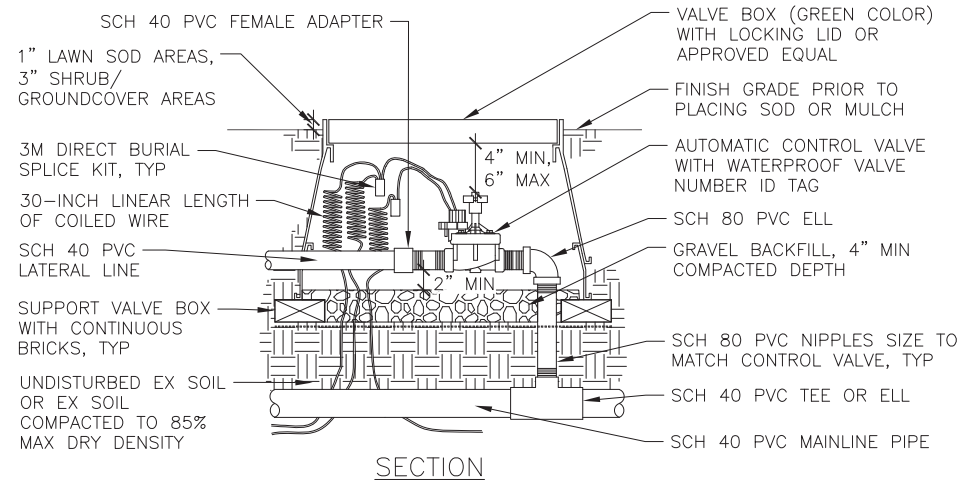
ISSUE	DATE	DESCRIPTION
DRAFT		

PROJECT: 0436.05
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CHECKED: D. KOONTZ
SCALE
0 20' 40'
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SHEET TITLE

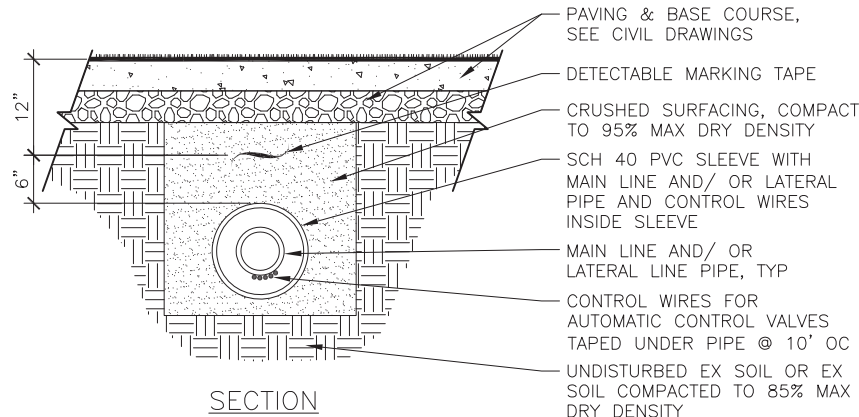
IRRIGATION DETAILS

SHEET
L204

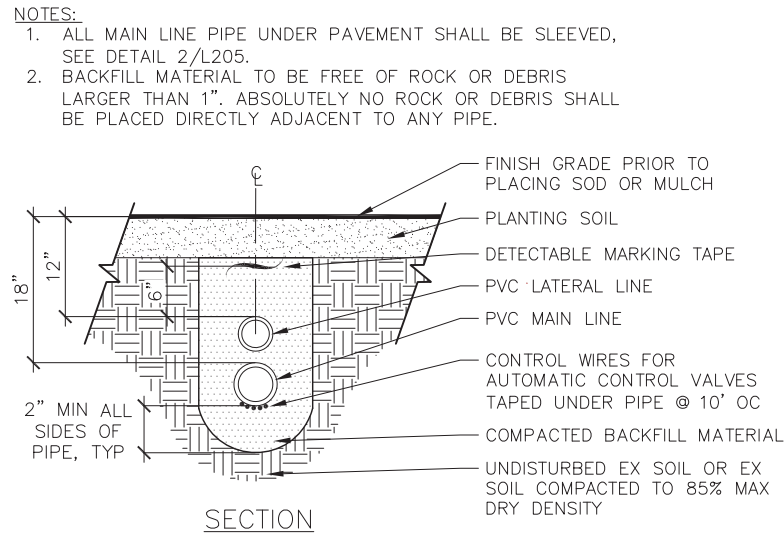
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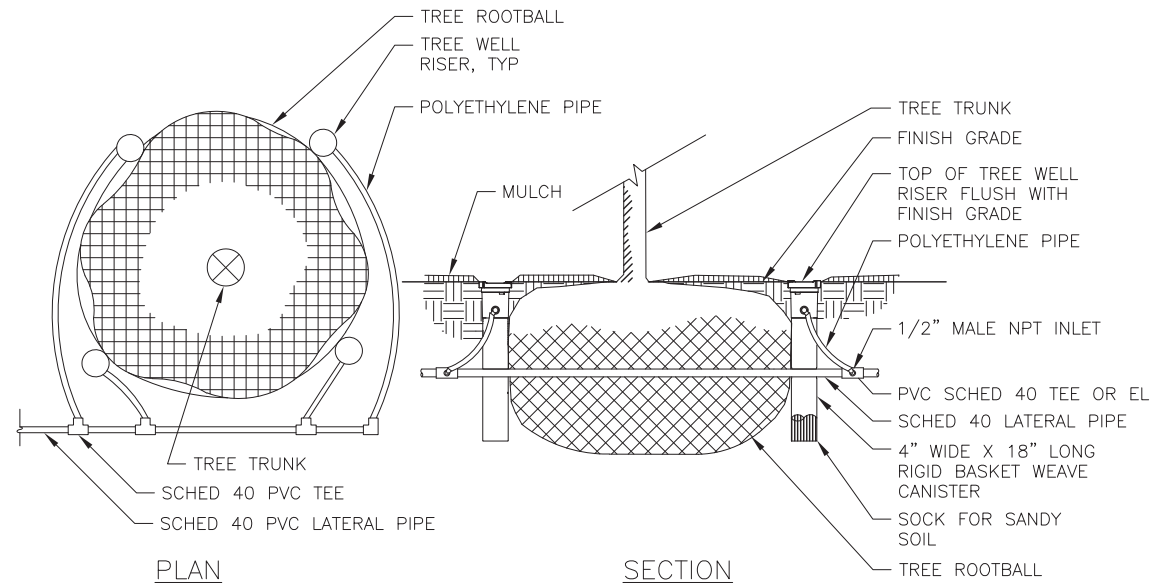
1 AUTOMATIC CONTROL VALVE
NOT TO SCALE



2 PIPE SLEEVE UNDER PAVEMENT
NOT TO SCALE

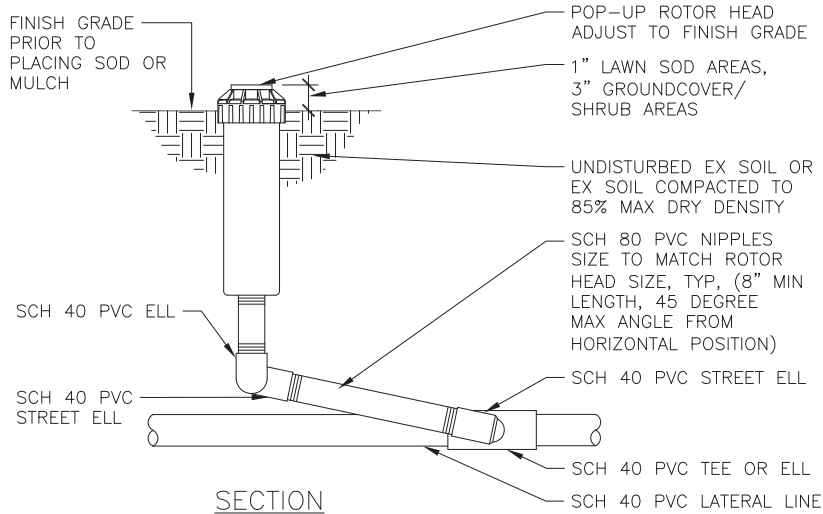


3 MAIN AND LATERAL PIPE TRENCH
NOT TO SCALE

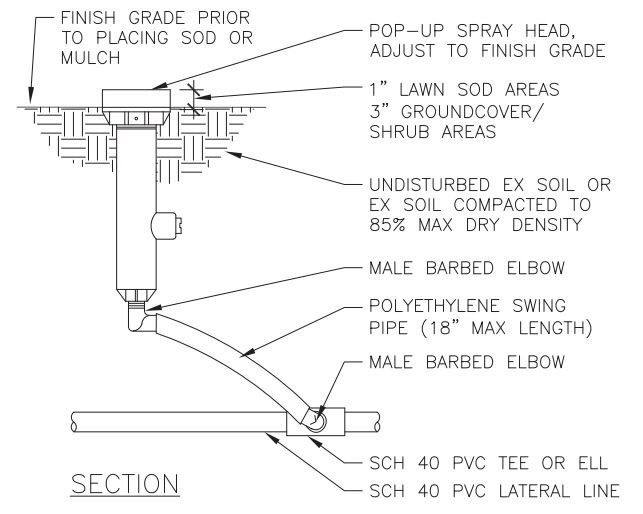


- NOTES:**
1. INSTALL FOUR (4) TREE WELL RISERS PER TREE.
 2. ABUT TREE WELL RISERS TO TREE ROOTBALL.
 3. ONCE ROOT WATERING SYSTEM HAS BEEN INSTALLED FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.

4 TREE BUBBLER
NOT TO SCALE



5 POP-UP ROTOR HEAD WITH TRIPLE SWING JOINT RISER
NOT TO SCALE



6 POP-UP SPRAY HEAD WITH POLY SWING RISER ASSEMBLY
NOT TO SCALE



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

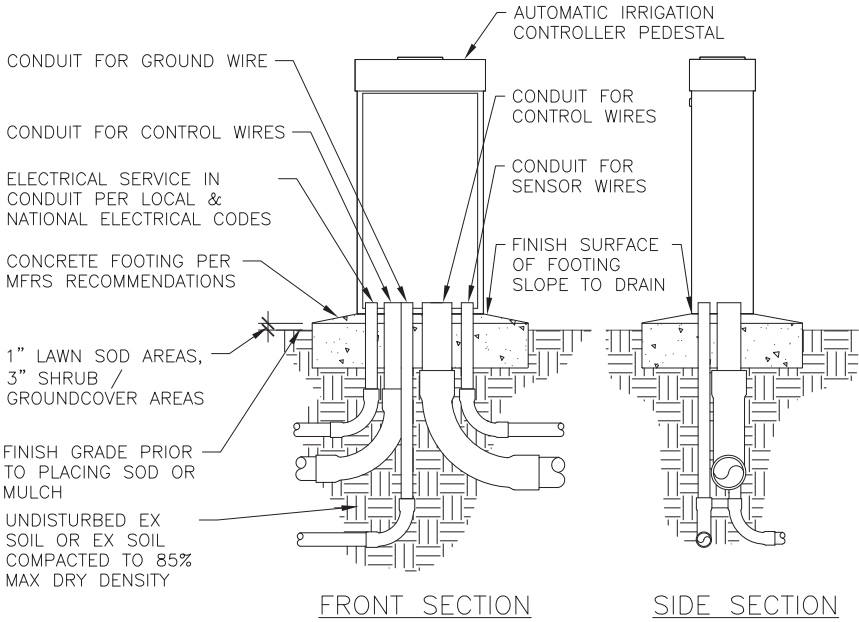
ISSUE	DATE	DESCRIPTION
DRAFT		

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SCALE
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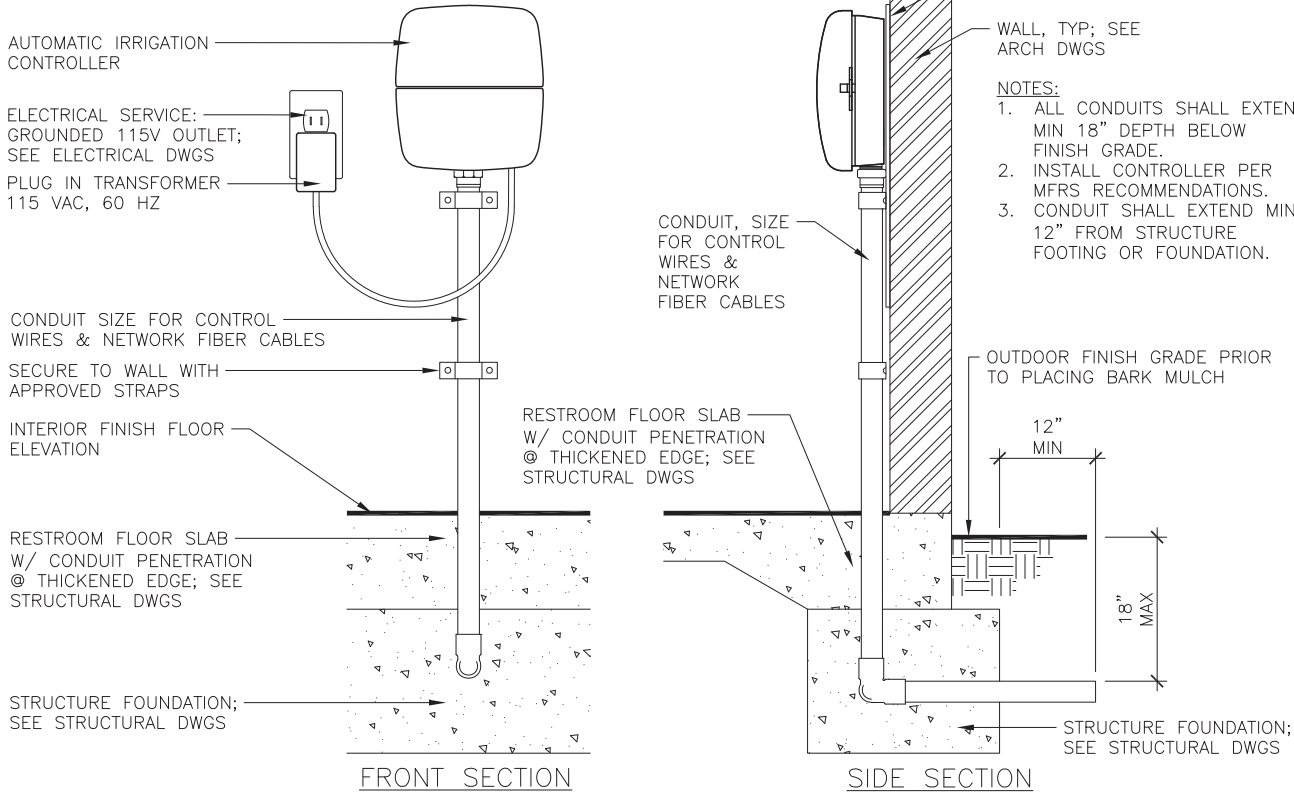
IRRIGATION DETAILS
SHEET
L205

NOTES:

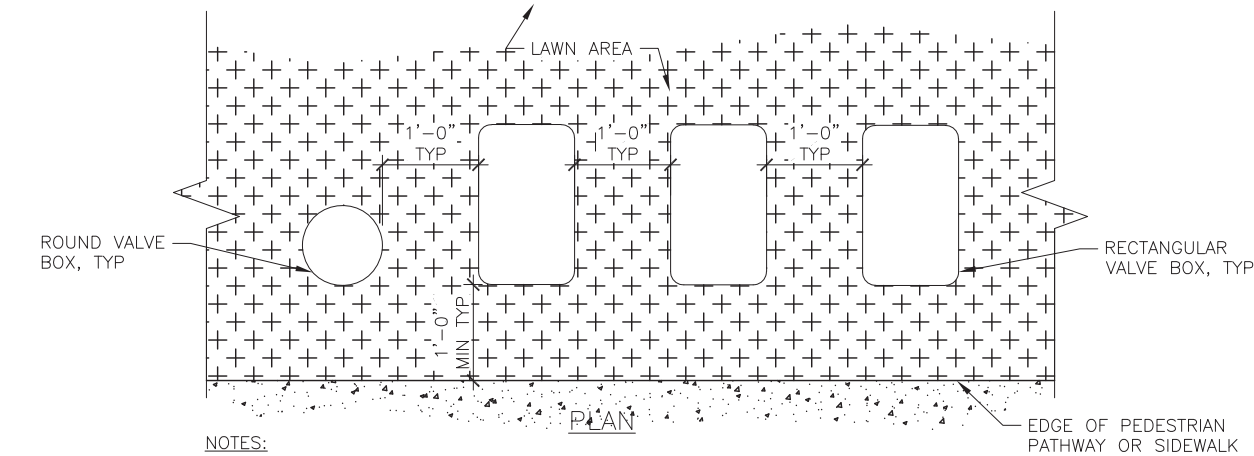
1. ALL CONDUITS SHALL EXTEND MIN 6" BEYOND EDGE OF CONCRETE FOOTING AND MIN 18" DEPTH BELOW FINISH GRADE.
2. INSTALLATION TO BE COMPLETED PER MFRS RECOMMENDATIONS.



1 OUTDOOR AUTOMATIC CONTROLLER PEDESTAL MOUNT
NOT TO SCALE



2 INDOOR AUTOMATIC CONTROLLER WALL MOUNT
NOT TO SCALE



NOTES:

1. CENTER BOXES OVER VALVES.
2. VALVE BOXES SHALL ALWAYS BE LOCATED WITHIN PLANTING AREAS OR LAWN AREAS.
3. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE OF PAVING.
4. AVOID HEAVILY COMPACTING SOIL AROUND BOXES TO PREVENT DAMAGING VALVE BOXES.
5. AUTOMATIC & MANUAL CONTROL VALVES SHALL BE INDIVIDUALLY ENCLOSED IN A FIBERGLASS VALVE BOX W/ A LATCH LOCK COVER. THE BOTTOM SECTION IS TO BE SLOTTED SO AS TO EXTEND BELOW THE PIPE. EXTENSIONS SHALL BE ADDED AS REQUIRED TO MEET GRADES PER DETAILS.
6. BOTTOM OF VALVE BOXES SHALL BE COMPLETELY BLANKETED W/ GEOTEXTILE FOR SEPARATION.
7. PROVIDE 2 SETS OF ALL KEYS REQUIRED FOR VALVES, VALVE BOX COVERS, & PROTECTIVE SLEEVE COVERS UNLESS OTHERWISE NOTED.

3 VALVE BOX LAYOUT
NOT TO SCALE



RV PARK AND JKL LOT
SITE WORKS PACKAGE
PORT OF ANACORTES
ANACORTES, WASHINGTON

ISSUE	DATE	DESCRIPTION
DRAFT		

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CHECKED: D. KOONTZ
SCALE
0 20' 40'
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SHEET TITLE
IRRIGATION DETAILS
SHEET
L206



NOTICE OF APPLICATION

SCAN HERE TO VIEW
Application Materials:



File Number: SDP-2021-0012

Property Owner: Port of Anacortes

Applicant: Kevin Anderson, Port of Anacortes

Date of Application: December 21, 2021

Date of Completeness: January 27, 2022

Project Location: 600 T Avenue (APNs P53862, P56860, P56861, P32880)

NOTICE IS HEREBY GIVEN THAT AN APPLICATION WAS MADE FOR THE FOLLOWING PROPOSAL:

Shoreline substantial development permit and site plan review approval requested to improve an existing gravel parking lot with landscaping, paving, striping, storm drainage and treatment, and lighting. The property located is partially within "Urban" Shoreline Environment Designation and is zoned Commercial Marine.

Required Project Permits/Approvals: The following may be required in addition to the above: Clearing and grading permit, WA State Dept. of Ecology Construction Stormwater General Permit

SEPA Review: The SEPA lead agency for this proposal, the Port of Anacortes, issued a SEPA Determination of Nonsignificance (DNS) on June 17, 2021.

Public Hearing: An open record public hearing and closed record decision hearing are required for this application and will be scheduled and publicized at a later date.

Public Comment Period: The Notice of Application was published on February 2, 2022. Written comments must be submitted to the contact person listed below by **5:00 PM on March 4, 2022**.

ANY PERSON HAS THE RIGHT TO RECEIVE NOTICE, PARTICIPATE IN ANY HEARINGS, REQUEST A COPY OF THE FINAL DECISION AND APPEAL THE DECISION AS PROVIDED BY LAW.

Document Availability: Application documents may be reviewed at <https://www.anacorteswa.gov/161/Planning-Community-Economic-Development> by clicking "**VIEW CURRENT PROJECTS**".

Appeals: Appeals of the decision, once made, are per the provisions in AMC 18.16.110 and RCW 90.50.180.

For Project Information: Libby Grage, Planning Manager; 360-299-1986, libby@cityofanacortes.org; City of Anacortes Department of Planning, Community, & Economic Development, P.O. Box 547, Anacortes, WA 98221



1215 Anderson Road • Mount Vernon • WA • 98274 • t: 360.424.3251 • f: 360.424.5300

Heather Hernandez, Publisher

Affidavit of Publication in the matter of AA-197624

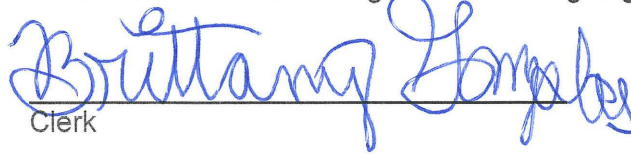
*In the Superior Court of the State of
Washington In and For Skagit County*

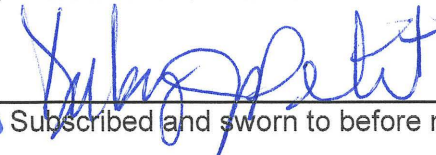
STATE OF WASHINGTON
County of Skagit ss

The undersigned, being first duly sworn on oath deposes that he/she is principal clerk of the Anacortes American, a weekly newspaper. That said newspaper has been approved as a legal newspaper by the Superior Court of Skagit County and is now and has been for more than six months prior to the publication hereinafter referred to, published in the English language continually as a weekly newspaper in Skagit County, Washington, and it is now and during all of said time was printed at an office maintained at the aforesaid place of publication of said newspaper.

That the annexed is a true copy of an advertisement, with publication dates, as it was published in regular issues (and not in supplemental form) of said newspaper commencing with the issue of February 2, 2022 and ending with the issue of February 2, 2022.

That such newspaper was regularly distributed to its subscribers during all of said period and the full amount of the fee charged for the foregoing is the sum of \$121.80.

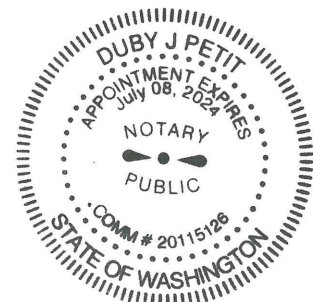

Clerk


Subscribed and sworn to before me this

2nd day of February, 2022

Notary Public and for the State of Washington
Clerk's filing stamp

Date: February 2, 2022



AN ORDINANCE
AMENDING ORDINANCE
NO. 3078 ADOPTED ON
DECEMBER 21, 2021
ENTITLED "AN ORDINANCE ADOPTING THE
BUDGET FOR ALL MUNICIPALITIES FOR THE YEAR 2022"

AFFIDAVIT OF POSTING

City of Anacortes Planning, Community, & Economic Development

I, **Libby Grage**, declare under the penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

That on **February 2, 2022**, the general notice of land use action containing the permit #, applicant name and a description of the proposal for a **SDP-2021-0012**, was posted on the subject property.



Signature

February 2, 2022

Date



NOTICE OF PUBLIC HEARING

SCAN HERE TO VIEW
All File Materials & Staff Report:



NOTICE IS HEREBY GIVEN that a Pre-Decision Open Record Public Hearing will be held by the Anacortes Planning Commission on Wednesday, March 23, 2022, at 6:00 PM for the following proposal:

File Number: SDP-2021-0012

Project Name: Port of Anacortes JKL Parking Lot Improvements

Property Owner: Port of Anacortes

Applicant: Kevin Anderson, Port of Anacortes

Project Location: 600 T Avenue (APNs P53862, P56860, P56861, P32880)

Request: Shoreline substantial development permit and site plan review approval requested to improve an existing gravel parking lot with landscaping, paving, striping, storm drainage and treatment, and lighting. The property located is partially within "Urban" Shoreline Environment Designation and is zoned Commercial Marine.

Environmental Review: The SEPA lead agency for this proposal, the Port of Anacortes, issued a SEPA Determination of Nonsignificance (DNS) on June 17, 2021.

Public Hearing: Planning Commission Open Record Public Hearing: Wednesday, March 23, 2022, at 6:00 PM
City Council Closed Record Decision Hearing: Monday, April 4, 2022, at 6:00 PM

- Virtual meeting participation instructions and connection information can be viewed here: <https://www.anacorteswa.gov/700/Meeting-Documents-and-Video>. Meeting attendance options will be posted on the applicable agenda published the week before the meeting. Hearings will be conducted in accordance with the rules of procedure adopted by the hearing body.
- Members of the public who require special assistance to participate in or access the public hearing may contact the [City Clerk](#) 24 hours before the meeting to make special arrangements. Dial 360-299-1960.

Document Availability: Application documents may be reviewed at <https://www.anacorteswa.gov/1377/Current-Projects> by clicking under "Current Planning Applications" and then opening the appropriate project file number folder. The staff report will be available for review at this location no later than 5:00 PM on March 17, 2022.

Appeals: Per AMC 18.16.110, appeals of a final decision of the City of Anacortes or the Department of Ecology, once made, must be filed within 21-days of the date of filing of the final permit and will be heard by the Shoreline Hearings Board pursuant to the procedures and timelines of RCW 90.50.180.

For Project Information: Libby Grage, Planning Manager; 360-299-1986; libbyb@cityofanacortes.org; City of Anacortes Department of Planning, Community, & Economic Development, P.O. Box 547, Anacortes, WA 98221



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Heather Hernandez, Publisher

Affidavit of Publication in the matter of AA-203036

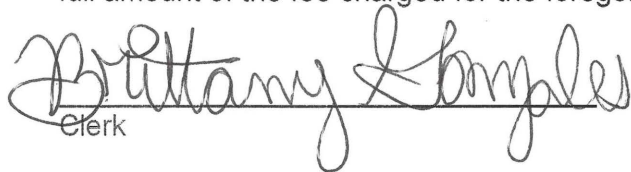
*In the Superior Court of the State of
Washington In and For Skagit County*

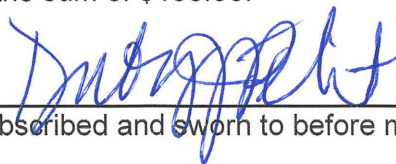
STATE OF WASHINGTON
County of Skagit ss

The undersigned, being first duly sworn on oath deposes that he/she is principal clerk of the Anacortes American, a weekly newspaper. That said newspaper has been approved as a legal newspaper by the Superior Court of Skagit County and is now and has been for more than six months prior to the publication hereinafter referred to, published in the English language continually as a weekly newspaper in Skagit County, Washington, and it is now and during all of said time was printed at an office maintained at the aforesaid place of publication of said newspaper.

That the annexed is a true copy of an advertisement, with publication dates, as it was published in regular issues (and not in supplemental form) of said newspaper commencing with the issue of February 16, 2022 and ending with the issue of February 16, 2022.

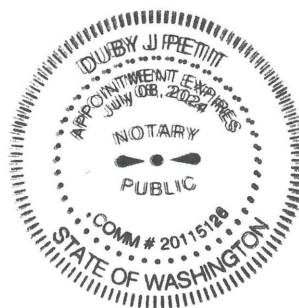
That such newspaper was regularly distributed to its subscribers during all of said period and the full amount of the fee charged for the foregoing is the sum of \$133.98.


Clerk


Subscribed and sworn to before me this

Date: February 16, 2022

16th day of February, 2022
Notary Public and for the State of Washington
Clerk's filing stamp



Public Notices

EMAIL: CLASSIFIED@SKAGITADS.COM • PHONE: (360) 424-4567

Legals

Legals

SUPERIOR COURT OF WASHINGTON, COUNTY OF SKAGIT

In Re the Estate of:

LOIS A. BERTOLINO,

Deceased.

NO. 22-4-00036-29
NOTICE TO CREDITORS

The personal representative named below has been appointed as personal representative of this estate. Any person having claims against the decedent must, before the time the claim would be barred by any otherwise applicable statute of limitations, present the claim in the manner as provided in RCW 11.40.070 by serving on or mailing to the personal representative or the personal representative's attorney at the address stated below, a copy of the claim and filing the original of the claim with the court in which the probate proceedings were commenced. The claim must be presented within the later of: (1) Thirty days after the personal representative served or mailed the notice to the creditors as provided under RCW 11.40.020(1)(c); or (2) four months after the date of the first publication of the notice. If the claim is not presented within this time frame, the claim is forever barred, except as otherwise provided in RCW 11.40.051 and 11.40.060. This bar is effective as to claims against both the decedent's probate assets and non-probate assets.

DATE OF FIRST PUBLICATION: February 2, 2022
PERSONAL REPRESENTATIVE:
Name: Larry Behling
Address: 308 Concord Drive
Oregon, WI 53575
ATTORNEY FOR ESTATE:
Name: Stephen C. Schutt
Address: PO Box 1032
Anacortes, WA 98221
Phone: (360) 293-5034

Published
February 2, 9 &
16, 2022
AA-196252

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON FOR SKAGIT COUNTY

In the Matter of the Estate of

Marjorie-Anne R. Luthiger,
Deceased.

Cause No. 22-4-00036-29
PROBATE NOTICE TO CREDITORS
(RCW 11.40.030)

The Personal Representative named below has been appointed as personal representative of this estate. Any person having a claim against the decedent must, before the time the claim would be barred by any otherwise applicable statute of limitations, present the claim in the manner as provided in RCW 11.40.070 by serving on or mailing to the personal representative or the personal representative's attorney at the address stated below, a copy of the claim and filing the original of the claim with the court. The claim must be presented within the later of: (1) thirty days after the personal representative served or mailed the notice to the creditor as provided under RCW 11.40.020(1)(c); or (2) four months after the date of first publication of the notice. If the claim is not presented within this time frame, the claim is forever barred, except as otherwise provided in RCW 11.40.051 and 11.40.060. This bar is effective as to claims against both the decedent's probate and

Legals

non-probate assets.

Date of First Publication: February 2, 2022
Personal Representative:
Aimee L. Luthiger-Frantz
Attorney for Personal Representative: Aaron M. Rasmussen, 500 N. Commercial St., Bellingham, WA 98225; Phone: 360-733-0212

Published
February 2, 9, 16, 2022
AA-196983

IN THE SUPERIOR COURT OF WASHINGTON FOR SAN JUAN COUNTY

In the Matter of the Estate of:

DEBORAH S. NEEDHAM,
Deceased

Probate No. 22-4-05010-28
PROBATE NOTICE TO CREDITORS
RCW 11.40.030

The Personal Representative named below has been appointed as Personal Representative of this estate. Any person having a claim against the decedent must, before the time the claim would be barred by any otherwise applicable statute of limitations, present the claim in the manner as provided in RCW 11.40.070 by serving on or mailing to the Personal Representative or the Personal Representative's attorney of record at the address stated below, a copy of the claim and filing the original of the claim with the court in which the probate proceedings were commenced. The claim must be presented within the later of: (1) Thirty (30) days after the Personal Representative served or mailed the notice to the creditor as provided under RCW 11.40.020(1)(c); or (2) four (4) months after the date of first publication of the Notice. If the claim is not presented within this time frame, the claim is forever barred, except as otherwise provided in RCW 11.40.051 and RCW 11.40.060. This bar is effective as to claims against both the probate assets and non-probate assets of the decedent.

DATE OF FIRST PUBLICATION: February 16, 2022.
David W. Needham,
Personal Representative
c/o Wagner Law Offices P.C.
P.O. Box 313
For Hand Delivery:
385 Court Street, Suite 4
Friday Harbor, WA 98250
Attorney for Personal Representative:
Mimi M. Wagner, WSBA #36377
P.O. Box 3019
Friday Harbor, WA 98250

Published
February 16, 23, 2022
March 2, 2022
AA-200868

LEGAL NOTICE

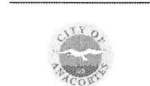
MJB Properties, LLC, 5050 1st Avenue South, Suite 102, Seattle, WA 98134, is seeking modification of coverage under the Washington State Department of Ecology's Construction Stormwater NPDES and State Waste Discharge General Permit. The proposed project, MJB North, is located at 1901 R Avenue in Anacortes, in Skagit County. This project involves 28 acres of soil disturbance for roadway, utility and grading construction activities. Storm water will be discharged to Fidalgo Bay and/or Groutwater. Any persons desiring to present their views to the Washington State Department of Ecology regarding this Application, or interested in Ecology's action

Legals

on this Application, may notify Ecology in writing no later than 30 days of the last date of publication of this notice. Ecology reviews public comments and considers whether discharges from this project would cause a measurable change in receiving water quality, and, if so, whether the project is necessary and in the overriding public interest according to Tier II anti-degradation requirements under WAC 173-201A-320.

Comments can be submitted to: ecw@ecology.wa.gov, or Department of Ecology Attn: Water Quality Program, Construction Stormwater, P.O. Box 47696, Olympia, WA 98504-7696

Published
February 9, 16, 2022
AA-198880



Public Notice Shoreline Master Program Periodic Review Including written comment period

Notice Date: February 16, 2022
Proposal Name: Shoreline Master Program (SMP) Periodic Review & Update 2nd Draft
Documents Available at: <https://www.anacorteswa.gov/1095/SMP-Update>
Lead Agency: City of Anacortes Planning, Community & Economic Development Department Contact Person: Libby Grage, Planning Manager
Written Comment Period: February 16, 2022 to March 9, 2022 at 5 p.m.

Proposal Description
The City of Anacortes is accepting comments on a periodic review of the City of Anacortes's shoreline master program (SMP). A public comment period and public hearing were previously held for Draft 1. Changes have been made to the proposal including those necessary to correspond with changes recommended or required and by the Department of Ecology. Draft 2 of the proposed SMP amendments and associated documents will be available for review at the above website address by February 16, 2022.

How to Comment
All written comments must be received by March 9, 2022, at 5:00 pm.

Email comments are preferred and must be sent to libbyg@cityofanacortes.org. Include your comments in the body of your email message rather than as attachments.
Paper comments may be mailed or delivered to: Planning, Community & Economic Development Department, Attn: Libby Grage, P.O. Box 547 / 904 6th St., Anacortes, WA 98221

Published
February 16, 2022
AA-203185

SUPERIOR COURT OF WASHINGTON FOR SKAGIT COUNTY

In the Matter of the Estate of

RODNEY ARCHER
Deceased.

NO. 22-4-00039-29
PROBATE NOTICE TO CREDITORS
RCW 11.40.030

The personal representative named below has been appointed as personal representative of

Legals

this estate. Any person having a claim against the decedent must, before the time the claim would be barred by any otherwise applicable statute of limitations, present the claim in the manner as provided in RCW 11.40.070 by serving on or mailing to the personal representative or the personal representative's attorney at the address stated below a copy of the claim and filing the original of the claim with the court. The claim must be presented within the later of: (1) Thirty days after the personal representative served or mailed the notice to the creditor as provided under RCW 11.40.020(1)(c); or (2) four months after the date of first publication of the notice. If the claim is not presented within this time frame, the claim is forever barred, except as otherwise provided in RCW 11.40.051 and 11.40.060. This bar is effective as to claims against both the decedent's probate and nonprobate assets.

DATE OF FIRST PUBLICATION: February 16, 2022
PERSONAL REPRESENTATIVE: Pok Soltysik
ATTORNEY FOR PERSONAL REPRESENTATIVE: William M. Zingarelli
WSBA #23568
27101 Pioneer Hwy, Ste B
PO Box 36
Stanwood, WA 98292
(360) 929-2424

Published
February 16, 3, 2022
March 2, 2022
AA-201898



NOTICE OF APPLICATION

File Number: CUP-2022-0001
Property Owner: Fiddlehead Properties, LLC
Applicant: Jodi Boyden, project agent
Date of Application: January 27, 2022
Date of Completeness: February 9, 2022
Project Location: 807 27th Street (P57246)

NOTICE IS HEREBY GIVEN THAT AN APPLICATION WAS MADE FOR THE FOLLOWING PROPOSAL:

The applicant on behalf of Fiddlehead Montessori Elementary School has applied for a Conditional Use Permit for the expansion of the school campus for the addition of a pre-school facility. The project proposes an approximately 1,065 sq. ft. modular classroom to accommodate up to 20 pre-school students. With the expansion, the applicant is proposing additional parking and landscaping. The subject property is located in the Residential High Density 4 (R4) zoning district.

Required Project Permits/Approvals: The following may be required in addition to the above Commercial Building Permit with Site Plan Approval including parking, access, landscaping, etc.: Stormwater/Drainage Approval, Transportation Concurrently.

SEPA Review: The proposed development is exempt from SEPA pursuant to WAC 197-11-800.

Public Hearing: Conditional Use Permit application is a Type I review which requires an Open Record Public Hearing with the Planning Commission and a Closed Record Decision Hearing with City Council. A subsequent Notice of Hearing would be published upon the completion of public comment period and project review.

Legals

Public Comment Period: The Notice of Application was published on February 16, 2022. Written comments must be submitted to the contact person listed below by 5:00 PM on March 9, 2022.

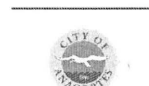
ANY PERSON HAS THE RIGHT TO RECEIVE NOTICE, PARTICIPATE IN ANY HEARINGS, REQUEST A COPY OF THE FINAL DECISION AND APPEAL THE DECISION AS PROVIDED BY LAW.

Document Availability: Application documents may also be reviewed at <https://www.anacorteswa.gov/1377/Current-Projects> by clicking under "Current Planning Applications" and then opening the appropriate project file number folder. The staff report will be available for review at this location no later than 5:00 PM on March 17, 2022.

Appeals: Any party with standing may appeal the decision once made within 14 calendar days after written notice of the decision is mailed, per the provisions in AMC 19.20.160, Appeals.

For Project Information: Emily Morgan, Senior Planner, 360-298-4350, emilym@cityofanacortes.org; City of Anacortes Department of Planning, Community, & Economic Development, P.O. Box 547, Anacortes, WA 98221

Published
February 16, 2022
AA-203025



NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a Pre-Decision Open Record Public Hearing will be held by the Anacortes Planning Commission on Wednesday, March 23, 2022, at 6:00 PM for the following proposal:

File Number: SDP-2021-0012
Project Name: Port of Anacortes UJL Parking Lot Improvements
Property Owner: Port of Anacortes
Applicant: Kevin Anderson, Port of Anacortes
Project Location: 600 T Avenue (APNs P53682, P56880, P56861, P32880)

Request: Shoreline substantial development permit and site plan review approval requested to improve an existing gravel parking lot with landscaping, paving, striping, storm drainage and treatment, and lighting. The property located is partially within "Urban" Shoreline Environment Designation and is zoned Commercial Marine.

Environmental Review: The SEPA lead agency for this proposal, the Port of Anacortes, issued a SEPA Determination of Nonsignificance (DNS) on June 17, 2021.

Public Hearing: Planning Commission Open Record Public Hearing, Wednesday, March 23, 2022, at 6:00 PM
City Council Closed Record Decision Hearing, Monday, April 4, 2022, at 6:00 PM

*Virtual meeting participation instructions and connection information can be viewed here: <https://www.anacorteswa.gov/700/Meeting-Documents-and-Video>. Meeting attendance options will be posted on the applicable agenda published the week before the meeting. Hearings will be conducted in accordance with the rules of procedure adopted by the hearing body.

*Members of the public who require special as-

sistance to participate in or access the public hearing may contact the City Clerk 24 hours before the meeting to make special arrangements. Dial 360-299-1960.

Availability: Application documents may be reviewed at <https://www.anacorteswa.gov/1377/Current-Projects> by clicking under "Current Planning Applications" and then opening the appropriate project file number folder. The staff report will be available for review at this location no later than 5:00 PM on March 17, 2022.

Appeals: Per AMC 18.16.110, appeals of a final decision of the City of Anacortes or the Department of Ecology, once made, must be filed within 21-days of the date of filing of the final permit and will be heard by the Shoreline Hearings Board pursuant to the procedures and timelines of RCW 90.50.180.

For Project Information: Libby Grage, Planning Manager, 360-299-1968; libbyg@cityofanacortes.org; City of Anacortes Department of Planning, Community, & Economic Development, P.O. Box 547, Anacortes, WA 98221

Published
February 16, 2022
AA-203036

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City of Anacortes Planning, Community, & Economic Development

I, **Libby Grage**, declare under the penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

That on **March 9, 2022**, the notice of public hearing for the land use action containing the permit #, applicant name and a description of the proposal for a **SDP-2021-0012**, was posted on the subject property.



Signature

March 10, 2022

Date



Land Use Permit Application - Departmental Review

Designated staff in each identified department review and comment on the permit application. Managing Planner uploads comments received from identified outside agencies and from the public during the comment period.

Application Information

Routing Date *

1/28/2022

Application Date *

12/21/2021

Managing Planner *

Libby Grage

Planner Phone

360-299-1986

Permit Number *

SDP-2021-0012

Applicant Name *

KEVIN ANDERSON PORT OF ANACORTES

Applicant Email *kevin.anderson@portofanacortes.com**Applicant Phone**

(360) 770-5194

Applicant Address *

100 COMMERCIAL AVE ANACORTES, WA 98221-1560

Parcel(s)

Parcel No.

P53862

Parcel No.

P56860

Parcel No.

P56861

Parcel No.

P32880

Project Name *

Port of Anacortes JKL Lot Improvements

Project Contact *

KEVIN ANDERSON PORT OF ANACORTES

Project Contact Email *kevin.anderson@portofanacortes.com**Project Address ***

600 T AVE ANACORTES, WA 98221

Project Description *

Improve existing gravel parking lot with landscaping, paving, striping, storm drains and treatment, and lighting.

Review Type *

Type 4

Review Type Description *

City Council Decisions

SEPA Type *

Standard

Is this permit related to other current or prior permit applications? *☒ Yes ☐ No**Child Permits**

Subordinate permits submitted for approval in conjunction with this primary permit

Permit**Description****Related Permits**

Previously approved permits related to this primary permit

Permit**Description**

PRE-2021-0041

Improve existing gravel parking lot with paving and utilities. Provide safety lighting, striped stalls, and interior pathways and green spaces.

Reviewer Selection**Comment Period (CD from NOA) ***

30

Comment Period End Date *

3/4/2022

Applicant Comment Response Due

3/11/2022

Departmental Review Required by *

Please check all City departments that must review this application. Other members of the DRG list will be notified of the application and will receive a link to view the application packet but the review process will not wait for their feedback.

- | | | |
|--|---|--|
| ☒ Building | ☒ Engineering | ☐ Fiber |
| ☒ Fire | ☒ Legal | ☒ Museum |
| ☒ Operations | ☒ Parks | ☒ Police |
| ☒ Sanitation | ☒ Streets | ☒ Water Distribution |
| ☒ WWTP | ☐ N/A | |

Outside Review

Select which outside agencies and utilities you would like to invite to comment on the application.

Type *	Agency *	Email *
County	Skagit Transit	bwindler@skagittransit.org
State	Department of Archaeology & Historic Preservation (DAHP)	sepa@dahp.wa.gov
State	Department of Ecology (DOE) - Shorelines	mari461@ecy.wa.gov
State	Department of Fish and Wildlife (WDFW) - Area habitat biologist (marine)	Robert.Warinner@dfw.wa.gov
Tribes	Samish Indian Nation - Chair	tomwooten@samishtribe.nsn.us
Tribes	Samish Indian Nation - Cultural Resources	jferry@samishtribe.nsn.us
Tribes	Skagit System Cooperative	swalsh@skagitcoop.org
Tribes	Swinomish Tribe - Historic Preservation	THPO@swinomish.nsn.us

Reviewer Comments

Application is *

☒ Complete ☐ Voided

Comments due by:

3/4/2022

Staff Comments

Enter your comments in the blank row below, or click Next Reviewer to create a new row for your remarks. You may Upload Word or PDF files with your remarks.

Commenter	Dept	Comments	Upload
Koegel, Matt	Sanitation	Good from Solid Waste	
Frisinger, Rob	Building	Building has no concerns at this time. Site plan indicates that the actual elevation of the site is well outside of the flood zone. City staff have visited the site and concur that no flood development permit is required based on actual existing site topography.	
Fuller, Chris	Police		
Lowry, Brandon	Streets	No concerns from streets	
Lange, Steve	Engineering	Public Works Engineering will be reviewing the Storm Water and Civil Plans. Will work all comments via the review. Otherwise, no Public Works Engineering issues at this time.	
Swetnam, Darcy	Legal	No issues from legal.	
Kennedy, Jack	Fire	No issues.	
Lunsford, Bret	Museum	No issues from museum	
Fox, Becky	WWTP	No issues	

Agency Comments

Commenters will automatically be emailed notification of the decision.

Commenter	Commenter Email	Comment
		I n i t i a l

Public Comments

Commenters will automatically be emailed notification of the decision.

Commenter	Commenter Email	Comment
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Grage, Libby

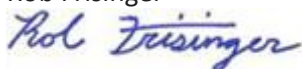
From: Frisinger, Rob
Sent: Tuesday, December 28, 2021 6:24 AM
To: Grage, Libby
Subject: RE: POA request for Interpretation of FIRM Boundaries

Hi Libby,

The base flood elevation matches the 11' topo line midway up the rock wall of the marina. The lowest point in the project is 2' higher, and most of it is 6' higher than the flood elevation.

I concur with their assessment that the FIRM map boundary does not accurately reflect existing shoreline topography, and that the project is out of the flood plain.

Thanks,
Rob Frisinger



Deputy Building Official
robf@cityofanacortes.org
Office (360) 588-8297
Cell (360) 391-1403



The preferred form of submittal is electronic/PDF.

Most application material can be found here:

<https://www.anacorteswa.gov/880/Applications-Handouts-Fees>

For fastest service, please submit digital copies of your documents to buildingpermit@cityofanacortes.org.

My incoming and outgoing email messages are subject to public disclosure requirements per RCW 42.56

From: Grage, Libby <LibbyB@cityofanacortes.org>
Sent: Monday, December 27, 2021 11:38 AM
To: Frisinger, Rob <robf@cityofanacortes.org>
Cc: Measamer, Don <don@cityofanacortes.org>
Subject: POA request for Interpretation of FIRM Boundaries

Hi Rob,

I received an application for a shoreline substantial development permit from the Port of Anacortes to make improvements to their JKL lot north of Cap Sante Marina. Within the application docs is the attached request regarding interpretation of the FEMA regulated floodplain boundary. Could you please take a look and let me know what you think?

Thanks,

Libby Grage | City of Anacortes
Planning, Community & Economic Development Department
Planning Manager
P.O. Box 547 | 904 6th Street | Anacortes, WA 98221
360.299.1986 (work) | 360-661-3505 (work cell)
libbyb@cityofanacortes.org | www.cityofanacortes.org

My incoming and outgoing email messages are subject to public disclosure requirements per RCW 42.56.



ANACORTES PLANNING COMMISSION

Findings of Fact, Conclusions of Law and Recommendation

File Number	SDP-2021-0012
Project Name	Port of Anacortes JKL Parking Lot Improvements
Proposal	Shoreline substantial development permit and site plan review & approval requested to improve an existing gravel parking lot with landscaping, paving, striping, storm drainage and treatment, and lighting.
Public Hearing & Decision Body	Anacortes Planning Commission
Public Hearing Date	March 23, 2022
PC Deliberations	March 23, 2022
Exhibits	A. Staff Report B. SSDP Application Materials C. Noticing Materials D. Comments

Documents are available at City Hall in the Planning, Community, and Economic Development Department or may be accessed on the public portal:

<https://docs.cityofanacortes.org/WebLink/Browse.aspx?dbid=0&startid=434848&row=1>

After considering the written and spoken comments and considering the record before it, the Planning Commission enters the following findings of fact, conclusions of law, and decision:

Findings of Fact & Conclusions of Law

1. The Staff report dated March 17, 2022, accurately describes the project proposal and is hereby incorporated by reference. (Exhibit A)
2. The following members of the public provided testimony during the public hearing: N/A
3. The following additional exhibits were entered into the record at the public hearing: N/A
4. The following additional Findings of Fact and/or Conclusions of Law are entered: N/A

Recommendation

Based on the foregoing findings and conclusions of law, and review of the City's regulatory authority to implement the policies, standards, and regulations of the Anacortes Municipal Code and Shoreline Master Program, the Planning Commission hereby makes the following recommendation regarding the subject Shoreline Substantial Development Permit and Site Plan:

- ☒ Approve with Conditions
☐ Approve

☐ Deny

Subject to staff's recommended conditions in the Staff Report dated March 17, 2022.

PLANNING COMMISSION VOTE				
Planning Commissioners	Support	Oppose	Absent	Abstain
Frank Jeretzky				
Jack Curtis				
Sarah Ruether				
Linda Martin				
Gary Molyneaux				
Jeff Graf				
Ward MacKenzie				
TOTAL				

ANACORTES PLANNING COMMISSION
Anacortes, Washington

Ward MacKenzie
Planning Commission Chair

Date

Appeals

Per AMC 18.16.110, appeals of a final decision of the City of Anacortes, once made, or the Department of Ecology shall be filed within twenty-one days of the filing of the final permit and shall be heard by the Shorelines Hearing Board pursuant to the procedures and timelines of RCW 90.58.180.



Planning Commission Agenda Bill

Meeting Date: March 23, 2022

Agenda Item: D.2.

Subject: Public Hearing: SDP-2022-0001 - Port of Anacortes Pier 2 Segregation Curb

Staff Contact: MORGAN EMILY

Approved for Submittal to Commission by

MORGAN EMILY

LIBBY GRAGE

DON MEASAMER

Action Type

Public Hearing

Summary Statement: The applicant has requested a shoreline substantial development permit for the installation of a segregation curb. The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties.

Background: A mandatory preapplication meeting was held on November 16, 2021 with the mandatory neighborhood meeting being held on December 7, 2021.

Previous Action: N/A

Competing Viewpoints Considered: N/A

Recommended Motion: I move to approve SDP-2022-0001, subject to the staff recommended Conditions of Approval contained within the staff report of record.

Alternative Actions: Approval with modified conditions or denial.

Attachments (listed in order presented):

1. Exhibit A - Staff Report
2. Exhibit B - Application Materials
3. Exhibit C - Noticing Materials
4. Exhibit D - Comments
5. SDP-2022-0001 - DRAFT PC Decision



Anacortes Planning, Community & Economic Development Department

904 6TH Street / P.O. Box 547, Anacortes, WA 98221

360.299-1984 - Office Hours: Mon-Fri 8:00 AM – 5:00 PM

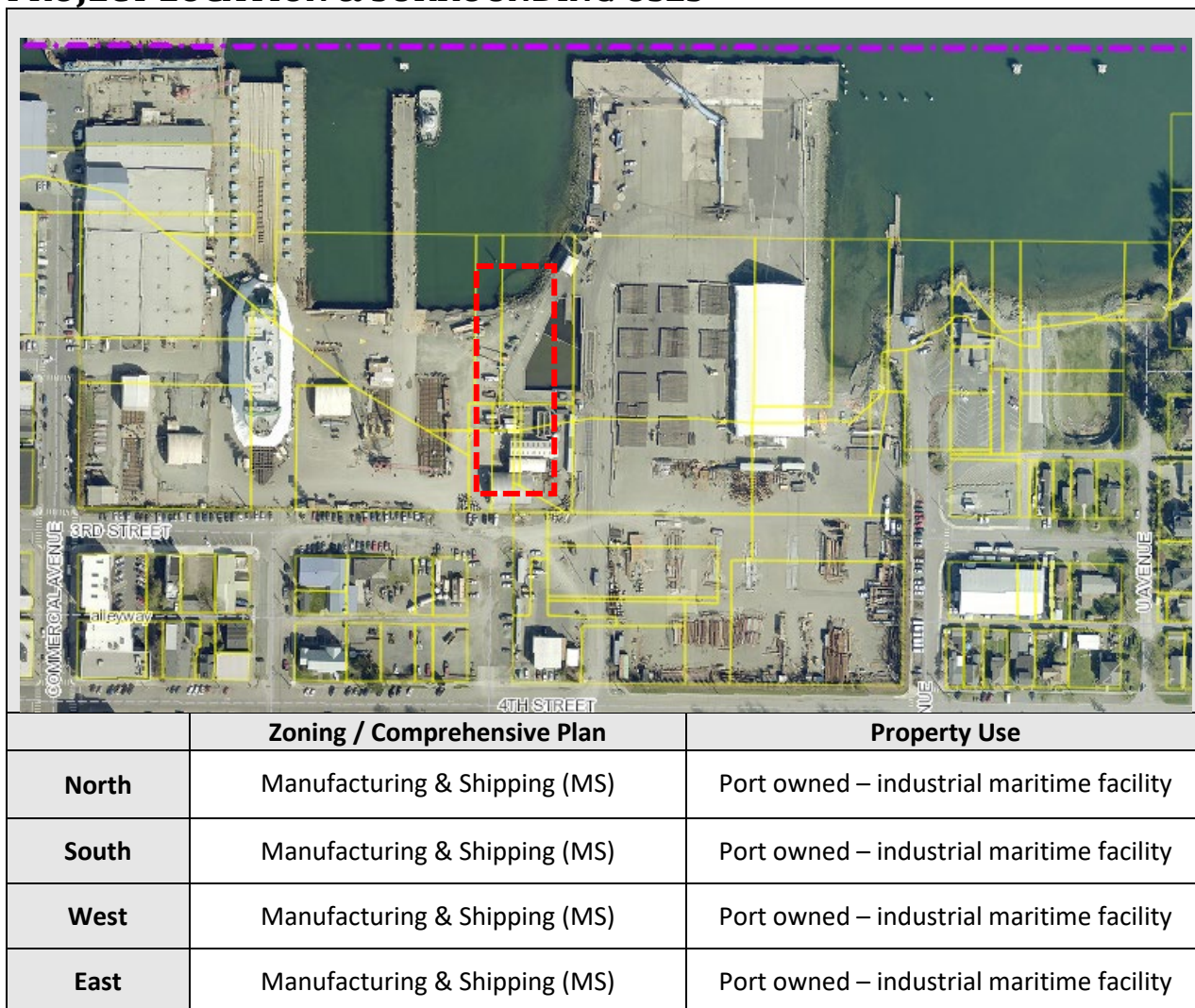
SHORELINE SUBSTANTIAL DEVELOPMENT PERMIT: STAFF REPORT

File Number	SDP-2022-0001	Date of Report	March 17, 2022
Project Title	POA Pier 2 Segregation Curb	Related File(s)	PRE-2021-0047
Project Location	718 4 th Street (P56533)		
Request	The Port of Anacortes has requested a shoreline substantial development permit for the installation of a segregation curb. The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties.		
Landowner	Port of Anacortes 100 Commercial Ave Anacortes, WA 98821		
Applicant	Kevin Anderson, POA 100 Commercial Ave Anacortes, WA 98821		

SITE INFORMATION

Zoning	Manufacturing & Shipping (MS)	Comprehensive Plan Designation	Manufacturing & Shipping (MS)
Present Use of Property	Marine bulk loading and shipping facility for petroleum coke and elemental sulfur.		
Critical Areas	Pursuant to Chapter 6 and Appendix “A” of the Shoreline Master Program (SMP) regulating critical areas, the subject development was reviewed for proximity to critical areas. SMP A-1: Frequently Flooded Areas Based on FEMA’s National Flood Hazard Mapping, the subject property is located within FIRM panels 5303170040A and 5301510225C. Per the provided FEMA Boundary Memo and Elevation Study prepared by PSE, INC on January 26, 2022, the proposed curb is to be located outside of the flood area, above the Base Flood Elevation; therefore, the provisions of this section would not apply. SMP A-3: Geologically Hazardous Areas Based on the City mapping system, the subject property is located in an identified area of tsunami hazard; however, the proposed curb would not trigger a critical area assessment. Therefore, the provisions of this section would not apply.		

PROJECT LOCATION & SURROUNDING USES



PROCEDURAL

1. **Type of Review.** According to AMC 19.20.030(1) and 18.16.100(B), shoreline substantial development permit applications for projects valued less than \$1 million are considered a Type 3 review. For Type 3 reviews, the Planning Commission holds the public hearing and renders the final decision regarding the proposed shoreline substantial development permit.
2. **Project History.** A mandatory preapplication meeting was held on November 16, 2021, with the mandatory neighborhood meeting being held on December 7, 2021.
3. **Environmental Review.** The Port of Anacortes, as lead agency, determined the scope of the curb installation project would be categorically exempt from SEPA Review per WAC 197-11-800(1)(a) and (23)(b).

4. **Public notice and reviewing departments/agencies.** A notice of application with a 30-day public was published in the Anacortes American, posted on the project site and mailed to property owners within 300 ft.

Application Submitted	February 1, 2022
Determination of Completeness Issued	February 3, 2022
Notice of Application & Public Hearing	February 9, 2022
Open Record Public Hearing (Planning Commission)	March 23, 2022

5. **Reviewing departments/agencies.** The project application was routed for review to applicable agencies and City departments.

REVIEWING DEPARTMENTS & AGENCIES			
City of Anacortes	Local Agencies	State & Federal	Other
• Building • PW – Operations • PW – WWTP • PW – Engineering • PW – Water	N/A	• USACE • DAHP • DOE • WDFW • WA DNR	• Samish Indian Nation • Sauk-Suiattle • Skagit System Cooperative • Stillaguamish Tribe • Swinomish Tribe

6. **Consideration of written comments and applicant responses.** The notice of application public comment period ended March 11, 2022. In making its recommendation, the Department considered timely received written comments and the applicant's responses, if any, as required in AMC 19.20.130(C).

6.1. Comments relaying no issue or concern were received from the City's Engineering, Water Distribution, Wastewater Treatment Plant, and Building Departments.

6.2. No public or agency comments, other than the referenced above, were received for the proposal.

DEPARTMENT REVIEW – FINDINGS OF FACT

- The application was submitted by Kevin Anderson with the Port of Anacortes for the installation of a site separation curb between Dakota Creek Industries (DCI) on the eastern boundary of Pier 1 and the project location on the western boundary of Pier 2. The two facilities operate under separate stormwater permits as issued and regulated by WA Department of Ecology (DOE).
- The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties.
 - The proposed concrete curb would be 2-feet tall by 387-feet long and installed adjacent to the existing chain link fence.
 - The curb, reinforced with rebar, would be built upon a sub-base of WSDOT Maintenance Rock and crushed surface base course with a geotextile liner.
 - Approximately 160 cubic yards of materials (sub-base materials, crushed rock, etc.) would be imported to the site with an equal amount of existing fill being removed.

3. SMP Chapter 4 provides goals and policies for specific elements of the Anacortes Shoreline Master Program.
4. The subject property is located within the Urban Maritime shoreline environment designation. According to Table 5.1 of the SMP, the segregation curb would be considered “upland fill” and is a permitted use in the Urban Maritime shoreline environment designation.
 - 4.1. Permitted, when meeting requirements for that use and shoreline area, may be subject to Shoreline Substantial Development Permit or shoreline exemption requirements.
 - 4.2. Due to the scope of work, the proposed development is not exempt from a Shoreline Substantial Development Permit.
5. SMP Chapter 6 provides policies and general regulations for environmental protection. Based on the application materials, the proposed project would not result in a loss of ecological function or an adverse impact to critical areas. Therefore, no compensatory mitigation measures are proposed with the installation of the segregation curb.
6. The placement of fill, upland or in water, is subject to the policies and development regulations of SMP 9.7, specifically the following:
 - 6.1. Per SMP DR-9.7.1, fill for water-dependent uses and for public use shall be given priority.

As noted in the project narrative, Pier 2 operates as a marine bulk loading facility. The SMP definition of “Water-dependent use” is *a use or a portion of a use, which, as its primary characteristic, cannot exist in any other location than on the water because it is dependent on the water by the intrinsic nature of its operations.*

Based on the above definition, the proposed fill via the installation of a segregation curb would be associated with the current water-dependent use of the project site.
 - 6.2. Per SMP DR-9.7.2, fill is permitted only when a proposal or activity is otherwise permitted under the SMP.

Upland fill is permitted to occur within the Urban Maritime shoreline environment designation. The proposed segregation curb is being placed to further support and protect a previously permitted stormwater facility, SDP-2011-0001, in addition to the current water dependent uses associated with Pier 2
 - 6.3. Per SMP DR-9.7.4, projects are to be located and designed to minimize the area of fill necessary to accommodate the use.

Based on the application materials, the proposed fill for the segregation curbing would be minimal and is limited to the necessary amounts for the installation of the curb.
 - 6.4. Per SMP DR-9.7.5, applications for fill should address impacts; fill that will result in significant adverse impacts that cannot be mitigated is prohibited.

The proposed fill via the installation of the curb would not result in adverse impacts, as the location of installation is a highly modified industrial site, and the use of the curb is to further prevent potential stormwater runoff from occurring. With the placement of the curb, all potential stormwater runoff would be entirely contained on-site.
 - 6.5. Per SMP DR-9.7.6, fill should be provided with some means for erosion control and/or shoreline stabilization.

Due to the highly developed nature of the site in addition to the proposed installation procedures, issues with shoreline stabilization or erosion would be unlikely. However, as proposed in the application materials, soil stabilization would be provided as needed in addition to TESC measures being in place during the installation to prevent the event of on-site erosion.

- 6.6. Per SMP DR-9.7.7, fill material is to be of sand, gravel, soil, rock, or similar material.

As stated in the project narrative, the proposed 387 linear ft. of concrete curb would be 2 ft. in height and would be installed upon a sub-base of WSDOT Maintenance Rock and crushed surface base course with a geotextile liner.

- 6.7. Per SMP SR-9.7.9, fill is to be located, designed, and constructed to protect ecological functions and ecosystem-wide processes.

As previously stated, the existing site is a highly developed with an industrial marine use. The proposed curbing would be a method to further protect the ecological function or ecosystem of the Guemes Channel, as it would result in all potential stormwater runoff being contained entirely on-site.

CONCLUSIONS OF LAW

1. According to AMC 19.20.030(1) and 18.16.100(B), shoreline substantial development permit applications for projects valued less than \$1 million are considered a Type 3 type of review. For Type 3 reviews, the Planning Commission holds the public hearing and provides the final decision regarding the proposed shoreline substantial development permit.
 - 1.1. The subject proposal is not exempt from obtaining an approved Shoreline Substantial Development Permit (SSDP) per WAC 173-27-040. Accordingly, on February 1, 2022, the City of Anacortes' Department of Planning, Community, & Economic Development received the subject application from the applicant.
 - 1.2. Pursuant to AMC 19.20.030, the Planning Commission has authority to render a decision on the proposal after conducting a pre-decision open record public hearing. The proposal requires a shoreline substantial development permit.
2. Property notice for the public hearing has been provided. The joint notice of application and hearing was posted on the property and published in the Anacortes American newspaper on February 9, 2022, more than 15 days prior to the date of the hearing.

SHORELINE MANAGEMENT ACT (RCW 90.58):

3. The proposed project lies within 200 ft. of a shoreline of statewide significance (RCW 90.58.030(2)(f)) and is therefore subject to conformance with the City of Anacortes' Shoreline Master Program (SMP).
4. The project site is located within the Urban Maritime shoreline environment designation.
5. The purpose of the Urban Maritime designation is to preserve a variety of water-dependent, water-oriented, and water-related public, commercial, and industrial uses such as those associated with the Port of Anacortes.
6. The subject shoreline permit was reviewed for conformance with all applicable Shoreline Master Program regulations, including but not limited to, Chapter 4, SMP Goals & Policies; Section 5.11, Urban Maritime; Chapter 6, Environmental Protection General Regulations; Chapter 8, Specific Use Policies and Development Regulations; and Section 9.7 that regulates the placement of upland or in-water fill.

7. The subject proposal is consistent with the Washington State's Shoreline Management Act, City of Anacortes' 2010 Shoreline Master Program and development regulations listed therein for developments within the Urban Maritime shoreline environment designation.
8. Any Finding of Fact that is more correctly a Conclusion of Law is hereby incorporated as such by this reference.
9. Staff reserves the right to supplement the record of the case to respond to matters and information raised subsequent to the writing of this report.

RECOMMENDATION

Based upon the application, Findings of Fact, and Conclusions of the staff report, staff recommends that the Planning Commission approve the shoreline substantial development permit subject to the following conditions of approval:

1. The scope of the project shall not exceed that as set out in the shoreline permit application shall be valid for the activities described within the application materials (Exhibit B), except as modified by this decision or other jurisdictional agencies.
2. All applicable permits (local, state, & federal) shall be secured before any construction activities begin onsite and copies provided to the City of Anacortes' PCED.
3. Hours of construction/work are limited to 7:00 AM to 10:00 PM, (7) days a week. If work must occur outside these hours, a noise variance shall be first obtained.
4. Noise levels shall not to exceed those standards as established by the state pursuant to Chapter 70.107 RCW and contained in Chapter 173.60 WAC.
5. The applicant /landowner shall comply with federal statutes including but not limited to: Endangered Species Act, Clean Water Act, Marine Mammal Protection Act, and other federal statutes.
6. The project shall comply with all applicable Shoreline Master Program regulations, including but not limited to, Section 5.11 Urban Maritime Environment, Chapter 5, Shoreline Environments & Associated Policies and Regulations, Chapter 6 Environmental Protection General Regulations, Chapter 8 Specific Use Policies and Development Regulations, and Chapter 9 Specific Shoreline Modification Policies and Development Regulations.
7. Development shall comply with SMP 9.7 regulating the development regulations for the placement of shoreline fill shall be as follows:
 - 7.1. Projects shall be located and designed to minimize the area of fill necessary to accommodate the use.
 - 7.2. Fill shall be provided with some means for erosion control and/or shoreline stabilization consistent with the policies and regulations of Section 9.11, Shoreline Stabilization Measures and Flood Protection Works.
 - 7.3. Fill material shall be sand, gravel, soil, rock, or similar material. Clean dredge material from a permitted dredging operation shall be permitted except for capping project(s) approved for clean-up under applicable federal and state regulatory programs.
 - 7.4. Fill shall be located, designed, and constructed to protect shoreline ecological functions and ecosystem-wide processes.

8. Development shall comply with AMC 18.16.130 regulating the time limit for shoreline permits as follows:
 - 8.1. *Construction, or substantial progress toward completion, must begin within two (2) years after approval of the permit. Substantial progress toward construction shall include, but not limited to, the letting of bids, making of contracts, purchasing of materials involved in development, but shall not include development or uses which are inconsistent with the Shoreline Management Act or the city's master program. In determining the running two-year period hereof, there shall not be included the time during which development was not actually pursued by construction and the pendency of litigation reasonably related thereto made it reasonable not to so pursue; provided, that the city may, in its discretion, extend the two-year time period for a reasonable time based on factors, including the inability to expeditiously obtain other governmental permits which are required prior to the commencement of construction.*
 - 8.2. *5-Year Permit Authorization: If construction has not been completed within five years of approval by the City of Anacortes, the city will review the permit, with prior notice to parties of record, and, upon showing of good cause, either extend the permit for one additional year, or terminate the permit. Prior to the city authorizing any permit extensions, it shall notify any parties of record and the Department of Ecology. Note: Only one single extension is permitted.*



PLANNING, COMMUNITY, & ECONOMIC DEVELOPMENT DEPARTMENT

Mailing Address: P.O. Box 547, Anacortes, WA 98221

Office Location: 904 6th Street, Anacortes WA 98221

Phone: (360) 299-1984

CITY OF ANACORTES

Planning, Community, &
Economic Development

Date Received:

02/01/2022

SDP-2022-0001

MASTER LAND USE PERMIT APPLICATION

TYPE OF APPLICATION (check all that apply):

☐ Binding Site Plan (Preliminary)** ☐ Boundary Line Adjustment (BLA)** ☐ BLA: Lot Consolidation** ☐ Conditional Use Permit (CUP) ** ☐ Critical Areas Exemption** ☐ Critical Areas Permitted Alteration** ☐ Critical Areas Reasonable Use Exception/Variance** ☐ Cottage Housing Development**	☐ Eligible Facility Request** ☐ Essential Public Facility ☐ Home Occupation Permit** ☐ Long Subdivision (Preliminary)** ☐ Plat Amendment /Modification ☐ SEPA Environmental Review** ☐ Shoreline Conditional Use Permit** ☐ Shoreline Exemption** ☒ Shoreline Substantial Development Permit**	☐ Shoreline Variance** ☐ Short Plat (Preliminary)** ☐ Site Plan Review ** ☐ Site-Specific Rezone Authorized by the Comprehensive Plan ☐ Stormwater Management Manual Adjustments & Exceptions ☐ Variance ** ☐ Wireless Conditional Use Permit (WCUP)** ☐ Wireless Service Facility (WSF) Permit**
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****Permit type has supplemental checklist that must be submitted with Master Land Use Permit Application**

PROJECT & SITE INFORMATION:

SITE ADDRESS: 718 4th St, Anacortes, WA 98221	PROJECT NAME: MRT-59 Pier 2 Segregation Curb
PARCEL NUMBER(S): P52904	SECTION, TOWNSHIP, & RANGE Section 18, Township 35, Range 02
LOT SQUARE FOOTAGE & ACREAGE: 47,025 sf (1.08 ac)	PROJECT VALUATION: \$41,000
LEGAL DESCRIPTION: (1.0800 ac) PTN BLK 296 CITY ANA TOGW PTN PLATE 9 TIDE & SHORELANDS, SECTION 18, TOWNSHIP 35 NORTH, RANGE 2 EAST, W.M., DAF	PRESENT ZONING: Commercial Marine
PRESENT USE OF PROPERTY: Marine terminal	CUT & FILL (CY) PROPOSED: Cut 160 CY Fill 160 CY
PRE-APPLICATION CONFERENCE HELD?: ☒ Yes, the City file # is <u>Pre-2021-0047</u> ☐ No	WATER SOURCE: ☒ City of Anacortes ☐ Private Well ☐ Community Well

SEWAGE DISPOSAL: ☒ City of Anacortes ☐ Septic		ROAD ACCESS: ☐ City Road ☐ State Highway ☐ Private Road	
CRITICAL AREAS OR BUFFERS ON SITE OR WITHIN 300 FEET: ☒ Yes* ☐ No ☐ Unknown <i>*If yes, please complete the Critical Area Identification Form</i>		SHORELINES WITHIN 200 FEET: ☒ Yes / Name: <u>Fidalgo Bay</u> ☐ No	
FLOODPLAIN: Flood Zone: <u>Flood Hazard</u> FIRM Panel # <u>5303170040</u> Date of Panel: <u>2003</u>			
LOT COVERAGE AREA CALCULATIONS: Existing Square Footage: <u>0</u> Proposed Square Footage: <u>0</u>			
IMPERVIOUS SURFACE AREA CALCULATIONS: Existing Impervious Square Footage: <u>47,025</u> New Impervious Surface: <u>47,025 SF total</u>			
DESCRIPTION OF SUBJECT PROPOSAL: ☒ Additional pages attached			
PROPOSED WORK: _____ Install a segregation curb between the subject property and adjoining port owned parcel (P32903). The segregation curb will prevent stormwater run on and runoff between the sites, prevent equipment from hitting the existing chain link fence, and serve as a durable demarcation between the two sites. See attached FEMA Flood plain memo, geo tech report, narrative, and project plan set.			
PROPERTY OWNER INFORMATION: ☐ Multiple owners attached			
NAME: Port of Anacortes		MAILING ADDRESS: 100 Commercial Ave	
CITY, STATE, ZIP: Anacortes, WA 98221		PHONE #: 360-770-5194	
FAX #:		EMAIL ADDRESS:	
APPLICANT INFORMATION: ☒ Same as property owner			
NAME:		MAILING ADDRESS:	
CITY, STATE, ZIP:		PHONE #:	
FAX #:		EMAIL ADDRESS:	
CONTACT PERSON: ☒ Same as property owner ☐ Same as applicant			
NAME: Kevin Anderson		MAILING ADDRESS: 100 Commercial Ave	
CITY, STATE, ZIP: Anacortes, WA 98221		PHONE #: 360-770-5194	
FAX #:		EMAIL ADDRESS: kevin.anderson@portofanacortes.com	

ACKNOWLEDGEMENTS & SIGNATURE	
Read and initial each of the following statements prior to signing this application:	
KDA	I understand that land use and/or planning permits do not authorize earth disturbing activities, the removal of vegetation, or the construction of buildings. I understand that additional permits will be required after my land use and/or planning permitting process is completed. I understand that no earth disturbing activities (including the removal of vegetation) may take place until after my land use and/or planning process is complete, and only after I have received additional permits such as Fill & Grade, Building Permit, or Right-of-Way permit(s).
KDA	I understand that if critical areas (wetlands, streams, steep slopes, etc.) are found on or near my property I am not authorized to impact these areas in any way and will be required to leave an undisturbed buffer area around the critical area, as determined according to the City's critical areas regulations.
KDA	I understand that depending on the size and scope of my project, I may be required to provide maintenance and/or performance bonds for items such as landscaping, critical areas, public roads and/or public utilities that I construct or install.
KDA	I understand that I am solely responsible for providing complete and accurate information to the City. I understand that if my application is missing information or if inaccurate materials are submitted, my permits will be delayed. I understand that depending on how inaccurate and how incomplete my application is or becomes, the Department may require an entirely new application be submitted. I understand that when and if conditions change from that which my application originally represented, I am responsible for letting the City staff person assigned to my project know.
KDA	I understand that I am applying for permits from the City of Anacortes only; and that additional permits from other Federal, State, and Local agencies could be required. I understand that the City of Anacortes cannot advise me of permits that are required from other agencies, and that I must contact these agencies to make sure I comply with their requirements. These agencies include (but are not limited to): Corps of Engineers, Department of Natural Resources, Department of Fish & Wildlife, Department of Ecology, and Northwest Clean Air Agency.
KDA	I understand that I will be responsible for paying consultants that the City may deem necessary to review certain aspects of my application. I understand that these consultant reviews could include special inspections, traffic concurrency, critical areas, landscaping, stormwater, etc.

Signature required on next page.

By affixing my signature hereto, I certify that I am the owner, or am acting as the Owner's authorized agent*, and that the application and documents contained with this submittal are complete and accurate to the best of my knowledge and abilities.

If your title report lists a company, partnership or other owners, you must submit evidence that you are authorized to sign on behalf of the entity or others that are listed.

Please attach additional signature sheets if there is more than one owner.

Under penalty of perjury, I certify that the information, statements, answers above regarding the subject application(s) are true and correct to the best of my knowledge and belief.

Property Owner Signature:

Printed Name:

Date:

Kevin Anderson

1/31/2022

Authorized Agent Signature*:

Printed Name:

Date:

***If you are an authorized agent (and not the property owner) you must submit a signed, notarized [Agent Authorization Form](#).**



Libby Grage, Planning Manager
Planning, Community, and Economic Development Department
PO BOX 547
Anacortes, WA
98221
1/31/2022

CITY OF ANACORTES

*Planning, Community, &
Economic Development*

Date Received:

02/01/2022

SDP-2022-0001

Dear Ms. Grage,

The Port of Anacortes (Port) submits this project narrative as part of our Shoreline Substantial Development Permit Application for MRT-59 Pier 2 Segregation Curb.

Introduction:

The Port operates Pier 2, a marine bulk loading facility, on the shores of the Guemes Channel. Currently, petroleum coke and elemental sulfur are shipped from the facility. This facility is directly adjacent to the Dakota Creek Industries' (DCI) shipyard, both facilities are highly modified industrial maritime shorelines built on imported fill materials. Currently, Pier 2 and DCI are segregated by a chain link fence and in some areas a concrete curb. The curb is not continuous and does not currently extend to the northernmost portion of the border between the sites (see figure 1). The Port proposes installing a new segregation curb to tie into to the existing curb and complete site segregation. The proposed curb will increase site safety and better segregate DCI from Pier 2, by reducing stormwater run on and runoff, preventing equipment from hitting the fence, and providing a durable visual demarcation between the two sites. The proposed curb will be a 2-foot tall by 387-feet long, concrete curb inside of the existing chain link fence. The curb will be built upon a sub-base of WSDOT Maintenance Rock (WSDOT Spec 9-03.9(4)) and crushed surface base course with a geotextile liner. The curb will be reinforced with rebar and is not designed for structural loads.

Project construction will commence once permits and approvals are issued and weather is suitable for ground preparation activities. Best estimates for construction to start are late winter/early spring 2022. Construction of the project will utilize equipment and methods typical for construction of this type, including a small excavator, compactors, and dump trucks. The duration of the construction phase of the project will last less than a month. Approximately 160 cubic yards of materials (sub base materials, crushed rock, etc.) will be imported to the site with an equal amount of existing fill being removed.

Shoreline Jurisdiction:

The proposed segregation curb will occur within shoreline zone. The site is zoned Marine Shipping (MS) and within the Urban Maritime (UM) shoreline environmental designation. Pier 2 is an active bulk loading facility and part of the Port's marine terminal, serving maritime commerce. The proposed curb will reduce stormwater run on and runoff improving stormwater permit compliance. The proposed curb supports the existing water dependent uses at the marine terminal and permitted in the UM shoreline designation.

Critical Areas:

No critical areas or environmentally sensitive areas are within the project footprint. The site is a FEMA mapped flood hazard zone; however, the area is above the flood elevation of +7 feet the floodplain. Please see the attached memo regarding the surveyed elevations of the site and the inaccuracies with the FEMA map.



Figure 1: Proposed Pier 2 segregation curb and existing segregation curb.

Special Note on DR 6.4.22:

Both Pier 2 and DCI operate under permits from the Department of Ecology for their industrial processes, stormwater, and wastewater. Pier 2 operates under a state waste discharge permit (ST0045500) and DCI under an individual permit (WA0031411). Pier 2 also operates within the Port of Anacortes Municipal Separate Storm Sewer (MS4) permit (WAR045711). These permits have language specific to each site and attendant operations. Both sites are required to meet the conditions of their respective permits and are in compliance with applicable stormwater standards. Pier 2 permits have both general and special conditions that do not permit comingling of stormwater and process water. Stormwater systems on both sites are designed and constructed to handle the stormwater and process water specific to each site. The proposed segregation curb is consistent with the City of Anacortes' Stormwater Management Plan, which requires industrial uses to obtain and operate under requirements for appropriate stormwater permits.

Chapter 4	MASTER PROGRAM ELEMENTS	RESPONSE
4.7.1	Preserve, protect, enhance and restore critical areas and shoreline ecological processes and functions through regulatory and non-regulatory means that may include required vegetated shoreline setbacks, acquisition of key properties, regulation of development, and incentives to encourage ecologically sound design and maintenance.	<i>The project site is a highly modified industrial site with no critical areas. Additional shoreline enhancements and protections are beyond the scope of the project.</i>
4.7.3	Achieve no net loss of shoreline ecological functions. This shall be accomplished by the use of Mitigation Sequencing, as defined in this master program, and as provided by WAC 173-26-201(2)(e).	<i>The project will not result in the loss of shoreline ecological functions. The project does not have a mechanism to impact shoreline ecological function.</i>
4.7.4	Identify unique and sensitive shoreline areas for permanent protection.	<i>No known unique or sensitive areas will be impacted.</i>
4.7.7	Develop and design performance standards which will minimize detrimental impacts of development upon the shoreline.	<i>Applicable performance standards will be followed.</i>
4.7.8	Encourage study and monitoring of waters and shoreline habitats; maintain awareness of existing conditions and future alterations.	<i>Beyond the scope of this project.</i>
4.7.11	All soils disturbed by use activities, and which are potentially erodible or unstable should be stabilized through seeding, mulching, terracing or other effective means.	<i>TESC measures will be used to prevent sedimentation of the construction runoff during construction of the project.</i>
4.7.12	Development on unique or fragile shoreline areas should be avoided unless it can be shown in the proposal that development will not degrade the shoreline, or that the development will enhance public use of shoreline resources while fully mitigating for impacts to fragile areas.	<i>The scope of the work does not extend to the shoreline. The site clearing limits are more separated from OHW and will not degrade unique or fragile shoreline areas.</i>
4.7.13	Shorelines are to be kept free of discarded waste materials.	<i>Contractors will practice good housekeeping BMPs and keep the project area clean and prevent waste from reaching the shoreline.</i>
4.7.14	Existing street rights-of-way or utility easements which offer physical or visual access to the shorelines or water body should be maintained in public ownership for resource conservation and as a recreational and public view resource.	<i>The site is closed to the public due to maritime safety concerns.</i>
4.7.18	The maximum width for either the wetland buffer or the shoreline setback must be applied for the portion of the wetland that lies within the shoreline setback.	<i>The project area, including the shoreline, does not contain any wetlands or wetland buffers.</i>

CHAPTER 5	URBAN MARATIME SHORELINE ENVIRONMENT DESIGNATION	RESPONSE
5.11.1	Give preference to water-dependent transportation, shipping, Port, and manufacturing uses due to their proximity to deep shipping berths and channels and to navigable waters.	The project supports is part of a Port sponsored project in support of water dependent shipping and transportation uses (bulk loading terminal and an industrial shipyard.
5.11.2	Encourage expansion of water-dependent and water-related uses.	<i>The project is support of water dependent uses.</i>
5.11.6	Industrial and commercial development along Urban Maritime shorelines should provide protection of existing ecological functions where practicable and mitigated. It should also provide public access opportunities only where appropriate and where public safety would not be compromised and alternative off-site provision has been made.	<i>The site is a highly modified industrial site with negligible ecological function. The project will not impact existing shoreline ecology or processes. Public access to the site is not appropriate for safety reasons.</i>
5.11.7	Where desirable and practicable, industrial and commercial facilities should be designed to facilitate pedestrian waterfront activities. The Port of Anacortes Integrated Approach to Public Access, October 2003 is incorporated by reference, and substitutes for uniform public access agreements.	<i>Public access to the site are neither appropriate nor desirable because of maritime and public safety concerns.</i>
DR 5.11.2	Require, where applicable, new development and/or redevelopment to include environmental cleanup (e.g., removal of contaminated soils) and restoration of the shoreline in accordance with state and federal requirements.	<i>Project site is not a known cleanup site.</i>
DR 5.11.3	No net loss of shoreline ecological function shall result from new development.	<i>The project will not impact ecological function of the shoreline from its construction or operation. The site is highly modified with no vegetation or natural substrates. The proposed curb is sited just inside the existing chain link fence and its construction will have a de minimus footprint. The project does not extend to OHW and will not impact shoreline processes. BMPs will be used during construction to prevent erosion and sedimentation (See 6.3.2).</i>
DR 5.11.5	Redevelopment and renewal of substandard, degraded, or obsolete urban shoreline areas shall be encouraged in order to make maximum use of the available shoreline resources and to accommodate future water-oriented uses.	<i>The project will provide improve site segregations between two disparate water dependent uses.</i>
DR 5.11.9	New, permanent buildings and structures shall be set back a minimum of twenty-five (25) feet from the ordinary high water mark. Setbacks are measured landward, on a horizontal plane, perpendicular to the shoreline. Shoreline setback requirements shall apply to non-water- dependent	The proposed curb supports water dependent industrial uses. See DR 5.11.10 below.

DR 5.11.10	Developments consisting of water-dependent scientific, historical, industrial, commercial, cultural, or educational research uses, public access, water-oriented recreation and ecological restoration are not required to meet the setback requirements, nor are piers, ramps or docks.	The proposed project supports water dependent industrial uses and is exempt from 5.11.09.
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CHAPTER 6	ENVIRONMENTAL PROTECTION IMPACTS, MITIGATION, BONDING	RESPONSE
6.3.1	Protect the environment through implementation of this Master Program including the use of the AMRRCM mitigation sequence.	<i>Acknowledged</i>
6.3.2	Minimize the adverse impacts of shoreline developments and activities on the shoreline environment during all phases of development (e.g., design, construction, operation, and management).	<i>TESC measures will be implemented during construction. The project will provide updated stormwater treatment to improve water quality. The site will have operations source control BMPs in place to prevent ongoing impacts.</i>
6.3.3	Assure, at a minimum, that development and use within shoreline jurisdiction results in no net loss of ecological functions necessary to sustain shoreline natural resources. Development activities shall protect existing ecological functions and ecosystem-wide processes.	<i>The site has limited ecological value and the scope of the work will not result in a net loss of ecological function.</i>
DR - 6.3.1	All shoreline development and activity shall be located, designed, constructed, and managed in a manner that avoids, minimizes and/or mitigates adverse impacts to the environment. The preferred mitigation sequence (avoid, minimize, rectify, reduce, or compensate for the environmental impact) shall follow that listed in WAC 173-26-201((2) (e), see also definition of "Mitigation" listed in this Master Program, Chapter 12).	<i>Acknowledged. The project is sited to avoid impacts to critical areas and sensitive habitats.</i>
DR - 6.3.2	In approving shoreline developments, the City of Anacortes shall ensure that shoreline development, use, and/or activities will result in no net loss of ecological functions necessary to sustain shoreline resources, including loss that may result from the cumulative impacts of similar developments over time to the extent consistent with constitutional and statutory limitations on the regulation of private property. To this end, the City may require modifications to the site plan and/or adjust or prescribe project dimensions, intensity of use, and screening as deemed appropriate. If impacts cannot be avoided through design modifications, the City shall require mitigation commensurate with the project's adverse impacts.	<i>Acknowledged, the proposed curb is continuation of the existing use of the site and will not result in a net loss of ecological function. The site is already highly modified from the natural state and the improvements will be entirely within the footprint of the existing pier.</i>
6.4.1	Protect against adverse impacts to the public health, to the land and its vegetation and wildlife, and to waters of the state and their aquatic life. In-stream structures that protect and preserve ecosystem-wide processes, ecological functions, and cultural resources, including, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas are of particular importance.	<i>Acknowledged.</i>

DR-6.4.2	All shoreline permits shall contain provisions that require developers to comply with all applicable state law requirements regarding preservation of archaeological and historic resources, including provisions to stop work and notify the appropriate agencies should protected resources be uncovered during excavation.	<i>The site is not of known cultural resource or historic value. An inadvertent discovery plan will be implemented for the construction phase of the project.</i>
DR-6.4.3	Archaeological sites located both in and outside shoreline jurisdiction are potentially subject to chapter 27.44 RCW (Indian graves and records) and chapter 27.53 (Archaeological sites and records) and chapter 25.48 WAC (Archaeological excavation and removal permits) as well as the provisions of this section.	<i>The site is not of known cultural resource or historic value.</i>
DR-6.4.4	Where archaeological or historic sites have been identified, the City may require public access consistent with constitutional and statutory limitations, provided the development is consistent with the provisions for public access and provided further it is determined that public access to the site will not damage or reduce the cultural value of the site.	<i>The site is not of known cultural resource or historic value.</i>
DR-6.4.5	All shoreline uses and activities shall be located, designed, constructed and managed to minimize interference with beneficial natural shoreline processes such as littoral drift, sand and gravel movement, erosion, and accretion. For projects proposing clearing and grading see Section 6.5 Vegetation Conservation, Chapter 9 Specific Modification Policies and Development Regulations.	<i>This project's construction and operation will not affect shoreline processes as designed.</i>
DR-6.4.6	Gravel and sand bars and other accretion shore forms are naturally unstable environments. They are valued for recreation and in some cases may provide habitat. Therefore, new development on these shore forms is prohibited and modification shall be allowed only to protect existing occupied structures. Furthermore, developments that could disrupt the processes benefiting these shore forms shall be carefully evaluated and allowed only when the impacts of such disruption can be adequately mitigated, and where there is a demonstrated public benefit.	<i>Project will not extend to or below the OHW mark.</i>
DR-6.4.7	An erosion and sedimentation control plan shall be submitted with a permit application for activities that involve the removal of vegetation, stockpiling of earth or other materials, or any activity that could result in shoreline erosion or siltation. Said program shall conform to the City of Anacortes' Engineering Design Standards and shall at minimum, utilize Best Management Practices (BMPs) to prevent shoreline erosion and siltation.	<i>A detailed TESC plan is included on the site plans.</i>

DR-6.4.8	Noise emanating from a shoreline use/activity shall be muffled so as to not to interfere with the designated use of adjoining properties. This determination shall take into consideration ambient noise levels, intermittent beat, frequency, and shrillness. Shoreline developments/activities shall comply with the maximum permissible noise levels and time limits set forth in Anacortes Municipal Code Chapter 17.54. Exception: This regulation does not apply to fog horns, tsunami warning or other emergency warning systems	<i>Construction noise associated with a variety of construction equipment would occur for the duration of the project. This could include truck engines, generators and other small engines, excavators, backhoes, and other equipment. Construction noise would occur during daylight hours as permitted by City of Anacortes noise ordinances. The expected noise levels are not significantly different than those from the uses at Pier 2 or DCI.</i>
DR-6.4.15	All shoreline developments shall be located, designed, constructed, and operated so as not to be a hazard to public health and safety.	<i>The project as designed is unlikely to be a public health hazard.</i>
DR-6.4.22	All development activities approved under this Shoreline Master Program shall be designed and maintained consistent with the City's Stormwater Management Plan and Engineering Design Standards.	<i>Acknowledged. See Narrative about regarding DR-6.4.22.</i>
6.5.2	Limit alteration of the natural landscape to the minimum necessary to accommodate the shoreline development or a landscape plan developed in conjunction with the shoreline development, or to remove invasive vegetation.	<i>The site is highly modified and far removed from its natural state; there is no vegetation on site presently.</i>
6.5.4	Tree removal is to be minimized on City shorelines. Place priority on retention of snags and live trees that provide nesting or perching for eagles, other raptors, or priority species.	<i>No trees at the site.</i>
6.5.5	Use best management practices (BMPs) during clearing and grading to control erosion.	<i>TESC BMPs will be used during construction per the TESC plan.</i>
DR-6.5.3	All clearing and grading activities shall be limited to the minimum necessary for the intended development.	<i>Acknowledged. Clearing and grading are expensive enterprises and we will limit these activities to the largest degree possible.</i>
DR-6.5.4	Exposed soils shall be immediately developed or revegetated to prevent erosion.	<i>TESC BMPs will be used during construction per the TESC plan. Scheduling will avoid exposure of bare soils to rainfall to prevent erosion to the largest degree possible.</i>

DR-6.5.11	All shoreline development and activity shall use effective measures to minimize increases in surface water runoff that may result from clearing and grading activity. The applicant must implement best management practices in compliance with Chapter 5, Clearing, Grading, and Erosion Control under the City's Engineering Design Standards. Submittal requirements may include a plan addressing species removal, revegetation, irrigation, erosion and sedimentation control, and other methods of nearshore/riparian corridor protection in accordance with the City's Engineering Design Standards.	<i>Construction of the project will follow a TESC plan that meets all applicable requirements.</i>
6.6.1	Protect unique, rare, and fragile environments, including wetlands and fish and wildlife habitat conservation areas, from impacts associated with development.	<i>The project will not impact any unique, rare, or fragile environments. None of these are within the project footprint.</i>
6.6.2	Locate and design development to minimize risks to people, property and other critical areas associated with geologically hazardous areas, frequently flooded areas, and tsunamis.	<i>The project is located outside of frequently flooded areas (see attached memo on the floodplain mapping) and proposed use is appropriate for the degree of geological hazard.</i>

Chapter 9	FILL	RESPONSE
9.7.1	Fill should be located, designed, and constructed to protect shoreline ecological processes and functions.	<i>Minor structural fill will be imported as needed to support on-site use and will not interrupt shoreline processes.</i>
9.7.2	Fill landward of the ordinary high water mark should be permitted when necessary to support permitted uses, and when significant impacts can be avoided or mitigated.	<i>Fill is needed to support the current uses on subject property.</i>
9.7.3	Fill waterward of the ordinary high water mark should be permitted only by Shoreline Conditional Use Permit when necessary to accommodate water-dependent uses; public access; expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible; a transportation facility, utility, or navigational structure with no feasible alternative; cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan; disposal of dredged material considered suitable under and conducted in accordance with the Dredged Material Management Program of the Department of Natural Resources, Department of Ecology and U.S. Army Corps of Engineers; and public access.	<i>No fill waterward of OWH is proposed.</i>
DR-9.7.1	Fill for water-dependent uses and for public use shall be given priority.	<i>Acknowledged. The proposed curb will support water dependent uses at Pier 2 and DCI.</i>
DR-9.7.2	Fill shall be permitted only when in conjunction with a proposal or activity otherwise permitted under the SMP.	<i>Pier 2 is an allowable water dependent use within the MS zone and urban maritime SED.</i>
DR-9.7.3	Fill waterward of the ordinary high water mark is permitted by Shoreline Conditional Use Permit only when necessary	<i>No fill waterward of OHWM is proposed.</i>

	to accommodate water-dependent uses, and for maintenance and repair of existing structures; expansion or alternation of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible; a transportation facility, utility, or navigational structure with no feasible alternative; cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan; disposal of dredged material considered suitable under and conducted in accordance with the Dredged Material Management Program of the Department of Natural Resources; mitigation or compensation actions and ecological restoration including beach nourishment or enhancement projects when significant impacts can be mitigated; and public access.	
DR-9.7.4	Projects shall be located and designed to minimize the area of fill necessary to accommodate the use.	<i>Fill for the project is minimal and limited to required amounts for to installation of the segregation curb</i>
DR-9.7.5	Applications for fill shall address impacts to wetlands and streams; aquatic habitats; flooding; sediment transport; navigation, and public access. The following information may be required: physical and biological characteristics of the fill site, source and quality of fill material, grading plan showing the site, adjacent properties and waters, method of placement and compaction, type of proposed surfacing and runoff control, method of erosion control and stabilization, and proposed use of the fill area. Fill that will result in significant adverse impacts that cannot be mitigated is prohibited.	<i>No adverse impacts will result from fill placement.</i>
DR-9.7.6	Fill shall be provided with some means for erosion control and/or shoreline stabilization consistent with the policies and regulations of Section 9.11, Shoreline Stabilization Measures and Flood Protection Works.	<i>Soil stabilization will be provided as needed. TESC measures will be in place during construction to prevent erosion on site.</i>



NOTICE OF DETERMINATION OF NON-SIGNIFICANCE (DNS)

Project Name: Pier 2 Stormwater Retrofit Project

Location: The project area (Pier 2) is owned by the Port of Anacortes and is located just north of 4th Street between R and T Avenues on the south side of the Guemes Channel.

Proponent: Port of Anacortes

Description of Proposal: The proposed action is to eliminate stormwater discharge from Pier 2 directly into the Guemes Channel. This requires increasing the size of the existing stormwater detention pond by 25,000 cubic feet to facilitate settling of solids prior to sending the stormwater to the City of Anacortes wastewater treatment plant for additional treatment. The project includes demolition of the existing detention pond and creation of a deeper pond with vertical side walls, installation of two new pumps, two new 12-foot diameter manholes upstream of the detention pond to capture solids, instrumentation and control panels, and curbing on the pier to create a secondary containment area to store stormwater from extreme flood events. A building permit and substantial development permit under the City of Anacortes Shoreline Management Program will be obtained. An NPDES permit from the Washington State Department of Ecology is also required to discharge industrial wastewater to a publicly-owned treatment works.

Lead Agency: The lead agency under the State Environmental Policy Act is the Port of Anacortes.

Determination: The Port of Anacortes has determined that the Pier 2 stormwater retrofit project will 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 SEPA environmental checklist and other supporting documents on file with the lead agency. This information is available to the public on request, and is available for public review at the Port's administrative offices located at First St. & Commercial Ave., Anacortes WA, 98221. The Port's office is open 8:00 AM to 5:00 PM on weekdays. The SEPA Checklist can also be reviewed on the Port's website: www.portofanacortes.com.

Comment Period: This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 21 days from the date of publication listed below. Agencies, affected tribes, and members of the public are invited to comment on the DNS. Written comments must be postmarked no later than September 24th, 2010 and should be mailed to the Port's Environmental Administrator:

Connie Thoman, Environmental Administrator
Port of Anacortes
P.O. Box 297
Anacortes, WA 98221

Comments may also be submitted to the Port by:

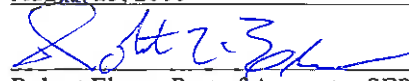
(a) E-mail to connie@portofanacortes.com or, (b) Fax to (360) 293-9608. Comments will not otherwise be accepted by telephone or personal conversation.

Signed and dated this 25th day of August, 2010 by Robert Elsner, Port of Anacortes SEPA Responsible Official.

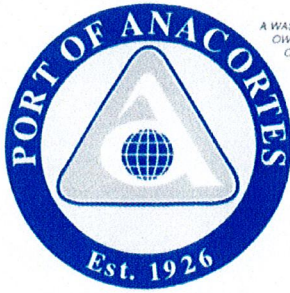
DATE (Effective):

August 25, 2010

SIGNED:



Robert Elsner, Port of Anacortes SEPA Responsible Official



100 COMMERCIAL AVENUE • ANACORTES, WA 98221 USA
(360) 293-3134 • FAX (360) 293-9608 • WWW.PORTOFANACORTES.COM

CITY OF ANACORTES

*Planning, Community, &
Economic Development*

Date Received:

02/03/2022

SDP-2022-0001

Date: January 5, 2022
To: Port of Anacortes SEPA Files
MRT-52 Pier 2 Stormwater Curb
From: Kevin Anderson, Environmental Specialist
Re: SEPA Review of Pier 2 Stormwater Curb

The Port of Anacortes proposes utility-related actions encompassing installation of a site separation curb between the Port's Pier 2 and the adjacent Pier 1. Stormwater segregation is necessary between these two sites that operate under permits from the Washington State Department of Ecology.

The proposed utility-related project involves installation of a 2-foot tall concrete curb around the western fence at Pier 2. The curb will total 380 feet in length and will be constructed of reinforced concrete with sealed expansion joints. The curb will segregate the two sites to prevent preventing equipment from hitting the fence, reduce stormwater run on and runoff, and providing a durable and visual demarcation between the two sites. The curb will enable the Port and tenants to better meet permit requirements.

The proposed utility-related actions constitute the improvement of existing shoreline structures. The work is required to ensure stormwater and permit compliance.

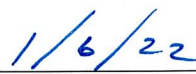
The Port of Anacortes, as lead agency, has determined that this project is categorically exempt from SEPA review based on the criteria described in WAC 197-11-800 (1) (a) and (23) (b):

Minor new construction-flexible thresholds

Utilities. The utility-related actions listed below shall be exempt, except for installation, construction, or alteration on lands covered by water. The exemption includes installation and construction, relocation when required by other governmental bodies, repair, replacement, maintenance, operation or alteration that does not change the action from an exempt class.

- (b) All stormwater, water and sewer facilities, lines, equipment, hookups or appurtenances including, utilizing or related to lines twelve inches or less in diameter.


Daniel C. Worra, SEPA Responsible Official


Date



Pacific Surveying & Engineering, Inc

land surveying • civil engineering • consulting • environmental
909 Squalicum Way #111, Bellingham, WA 98225
Phone 360.671.7387 Facsimile 360.671.4685 Email info@psurvey.com

January 26, 2022

Kevin Anderson
Port of Anacortes
100 Commercial Ave
Anacortes, WA 98221

RE: Pier 2 and DCI Segregation Curb Design- FEMA Boundary

Dear Kevin,

At your request, I have attached for City of Anacortes review and approval our existing conditions exhibit map depicting the difference between FEMA and surveyed floodplain boundaries in the vicinity of our proposed Segregation Curb project at Pier 2. Pursuant to the provisions of City of Anacortes Municipal Code 19.74.040(C)(5) you should use this information to request a formal determination from the City that the proposed project is not actually located in the floodplain (despite current FIRM map designations) and may continue without the need for a Flood Development Permit.

The attached map depicts the following features for your review:

- ... Draft Curb Design Drawings
- ... FEMA Firm Map for the Pier 2 Area
- ... Ground Survey results with FEMA flood boundary superimposed

As can plainly be seen on the attached exhibit map and based on the results of an actual ground survey using the methods prescribed in WAC 332-130-145, it has become evident that the FEMA FIRM Maps for this area are inaccurate and not based on reliable topographic data.

Please take note that our Curb Design project survey datum is NAVD 88. A conversion factor of +0.5 feet was used to convert FEMA datum (NGVD 29) to project datum (NAVD 88) for this exercise. The translated Base Flood Elevation would represent the 9.5' contour (rounded) on our existing conditions map, which actually lands closer to the bottom of the steep slope to Guemes Channel. The lowest elevation discovered in the proposed curb installation project area (located near the top of slope) was 12.4', or 2.9' above Base Flood Elevation.

Vertical Datum conversions were determined using a published elevation benchmark records and verified using NOAA's VDatum conversion tool.

CITY OF ANACORTES

*Planning, Community, &
Economic Development*

Date Received:

02/01/2022

SDP-2022-0001

Please let us know if you have any questions or need additional information to support your project permit.

Sincerely,
Pacific Surveying and Engineering

A handwritten signature in blue ink, appearing to read "Adam Morrow", with a stylized flourish at the end.

Adam Morrow, PLS
Survey Project Manager
Principal

Enclosures



TEMPORARY EROSION CONTROL & SEDIMENTATION CONTROL NOTES:

1. THE BOUNDARIES OF THE CONSTRUCTION LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CONSTRUCTION LIMITS SHALL BE PERMITTED. MARKINGS TO DELINEATE THE CONSTRUCTION LIMITS (E.G. STAKES, FLAGGING, ETC.) SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY LOCATIONS WHERE EROSION PREVENTION AND CONTROL ARE REQUIRED AND IMPLEMENT PRACTICES AS NEEDED TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE DURING CONSTRUCTION.
3. INSPECT EROSION PREVENTION AND CONTROL MEASURES AT THE BEGINNING AND END OF EACH WORKING DAY AND MORE FREQUENTLY DURING HEAVY RAINFALL AND WET WEATHER CONDITIONS. REPAIR AND REPLACE BEST MANAGEMENT PRACTICES AS NECESSARY TO ENSURE PROPER FUNCTION.
4. THE IMPLEMENTATION OF TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, UPGRADE, AND REMOVAL OF TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED, AND THE ENTIRE SITE IS STABILIZED.
5. ALL TESC FACILITIES SHALL BE CONSTRUCTED PRIOR TO AND/OR IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
6. THE TESC FACILITIES SHOWN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED FOR A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A MAJOR STORM EVENT OR AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTION.
8. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO SYSTEM START-UP. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER IN THE DOWNSTREAM SYSTEM.
9. IF EXCAVATED MATERIAL IS STOCKPILED ONSITE, STOCKPILES SHALL BE PROTECTED FROM RAIN. STOCKPILE LOCATION SHALL BE COORDINATED WITH THE PORT.

POST CONSTRUCTION:

1. REMOVE ALL TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL FACILITIES INCLUDING, BUT NOT LIMITED TO, STOCKPILED MATERIAL, CATCH BASIN FILTERS, AND FILTER FABRIC FENCE.
2. CLEAN AND REMOVE ALL SILT AND DEBRIS FORM ALL AREAS INCLUDING CATCH BASINS, PIPES, MANHOLES, AND VALVE VAULTS.

EROSION AND SEDIMENTATION CONTROL LEGEND:

STRAW WATTLES:

CONSTRUCTION LIMITS:

CATCH BASIN FILTER:

GENERAL NOTES:

1. SITE IS AN OPERATIONAL BULK LOADING FACILITY. CONTRACTOR SHALL BE AWARE OF SITE OPERATION REQUIREMENTS AND COORDINATE CONTRACTOR ACCESS AND OPERATION WITH PORT SO AS TO LIMIT IMPACTS ON PIER OPERATIONS.
2. CONTRACTOR SHALL COORDINATE WITH PORT TO IDENTIFY CONTRACTOR LAYDOWN AND OPERATIONAL SPACES.
3. CONTRACTOR SHALL COORDINATE WITH KENNEDY JENKS AND PORT TO DELINEATE CONSTRUCTION LIMITS.
4. THE REINFORCED CURB IS TO BE CONSTRUCTED INSIDE OF EXISTING FENCE LINE, AND EXISTING FENCE IS TO BE PROTECTED IN PLACE.
5. CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL EXCAVATED MATERIAL AND DEBRIS AS NECESSARY TO INSTALL THE REINFORCED CONCRETE CURB AS SHOWN ON THE PLAN.
6. CONTRACTOR AND ANY SUBCONTRACTORS SHALL CALL 811 IN ADVANCE OF PERFORMING ANY WORK.
7. CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT EXISTING FEATURES AND UTILITIES WHICH ARE TO REMAIN IN PLACE. ALL NEW AND EXISTING IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
8. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A NEAT AND ORDERLY CONDITION.

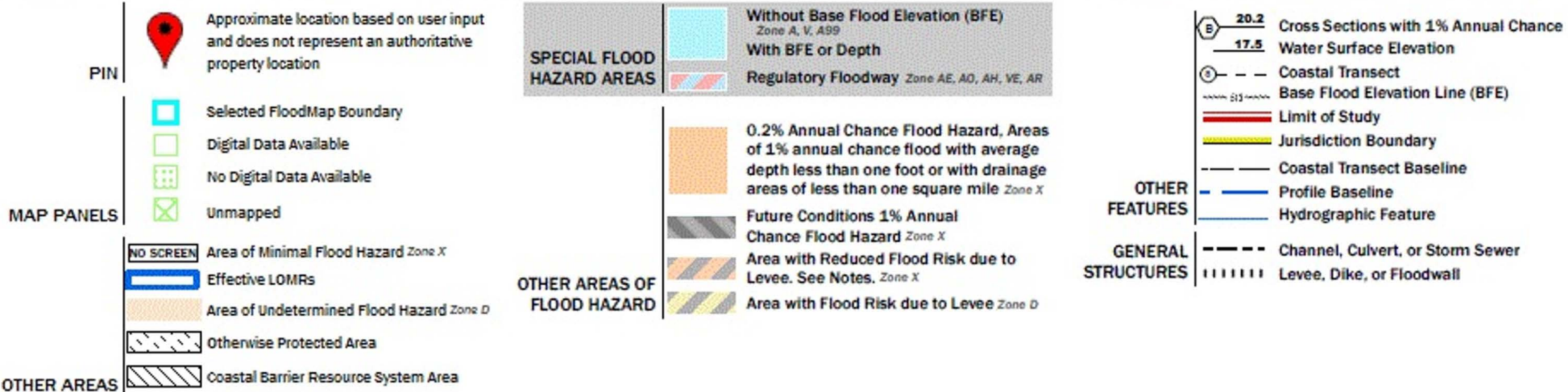
LEGEND:

(E) FENCE LINE:

P:\CAD\19\1996021.08 Port of Anacortes Pier 2 Curb\1996021.08_C1.dwg
LAURA WEIDEN
10/12/2021 1:30 PM

USE OF DOCUMENTS THIS DOCUMENT, INCLUDING THE INCORPORATED DESIGNS, IS AN INSTRUMENT OF SERVICE FOR THIS PROJECT AND SHALL NOT BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF KENNEDY/JENKS CONSULTANTS ©.					SCALES 0 1" 0 25mm IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.	PRELIMINARY	DESIGNED	PORT OF ANACORTES ANACORTES, WASHINGTON PIER 2 AND DCI SEGREGATION CURB DESIGN	PORT OF ANACORTES PIER 2 AND DCI SEGREGATION CURB DESIGN	FILE NAME
	LMW	1996021.08_C1								
	DRAWN	JOB NO.								
	CSM	1996021*08								
	CHECKED	DATE								
LMW	Kennedy/Jenks Consultants®	FEBRUARY 2021								
	32001 32ND AVENUE SOUTH, SUITE 100, FEDERAL WAY, WASHINGTON 98001									SHEET
NO.	REVISION	DATE	BY							OF
										C1

PIER 2 FLOOD MAP (2003)- NGVD 29



EXHIBIT

SITUATE IN A PORTION OF THE WEST 1/2 OF SECTION 18, TOWNSHIP 35 NORTH,
RANGE 2 EAST, W.M., CITY OF ANACORTES, SKAGIT COUNTY, WASHINGTON

LINE LEGEND

- = EXISTING EDGE OF ASPHALT
- — ○ = EXISTING CHAINLINK FENCE
- 120— = EXISTING GRADE INDEX CONTOUR
- 118— = EXISTING GRADE INTERVAL CONTOUR
- — — = FEMA FLOODPLAIN BOUNDARY
- — — = PROPOSED CURB

SYMBOL LEGEND

- ⊙ = SET MAG NAIL
- *123.45 = SPOT ELEVATION ON EXISTING GROUND

ZONE AE

EFF. 9/17/2003

BFE = 9.0' NGVD 29
BFE = 9.5' NAVD 88

P32904
PORT OF ANACORTES
PIER 2

SURVEY NOTES:

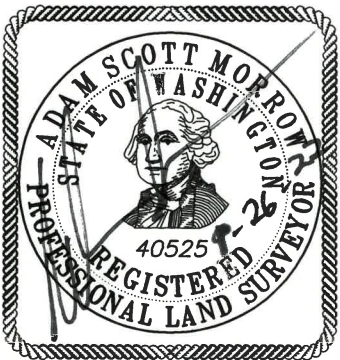
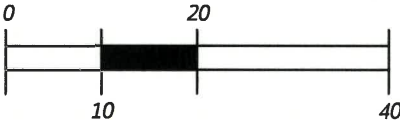
- 1) THIS TOPOGRAPHIC SURVEY WAS PERFORMED AND PREPARED IN ACCORDANCE WITH WAC 332-130-145.
- 2) DATA FOR THIS SURVEY WAS GATHERED BY FIELD TRAVERSE UTILIZING ELECTRONIC DATA COLLECTION IN JANUARY 2022.
- 3) EQUIPMENT USED: THEOMAT 00'01.5" EDM: ± 2 PPM, ± 3 MM
- 4) HORIZONTAL DATUM: NAD 83/91, WASHINGTON STATE PLANE NORTH ZONE
- 5) VERTICAL DATUM: NAVD88 (TO CONVERT TO MLLW TIDAL DATUM, ADD 0.55'.)
- 6) FEMA FLOOD ZONE AE : BASE FLOOD ELEVATION = 9.0' (NGVD 29) BFE CONVERTED TO NAVD88 = 9.5'



PACIFIC SURVEYING
& ENGINEERING, INC.

909 Squilicum Way, Suite 111 | BELLINGHAM, WA 98225
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WWW.PSESURVEY.COM | INFO@PSESURVEY.COM

GRAPHIC SCALE
(US SURVEY FEET)



EXHIBIT

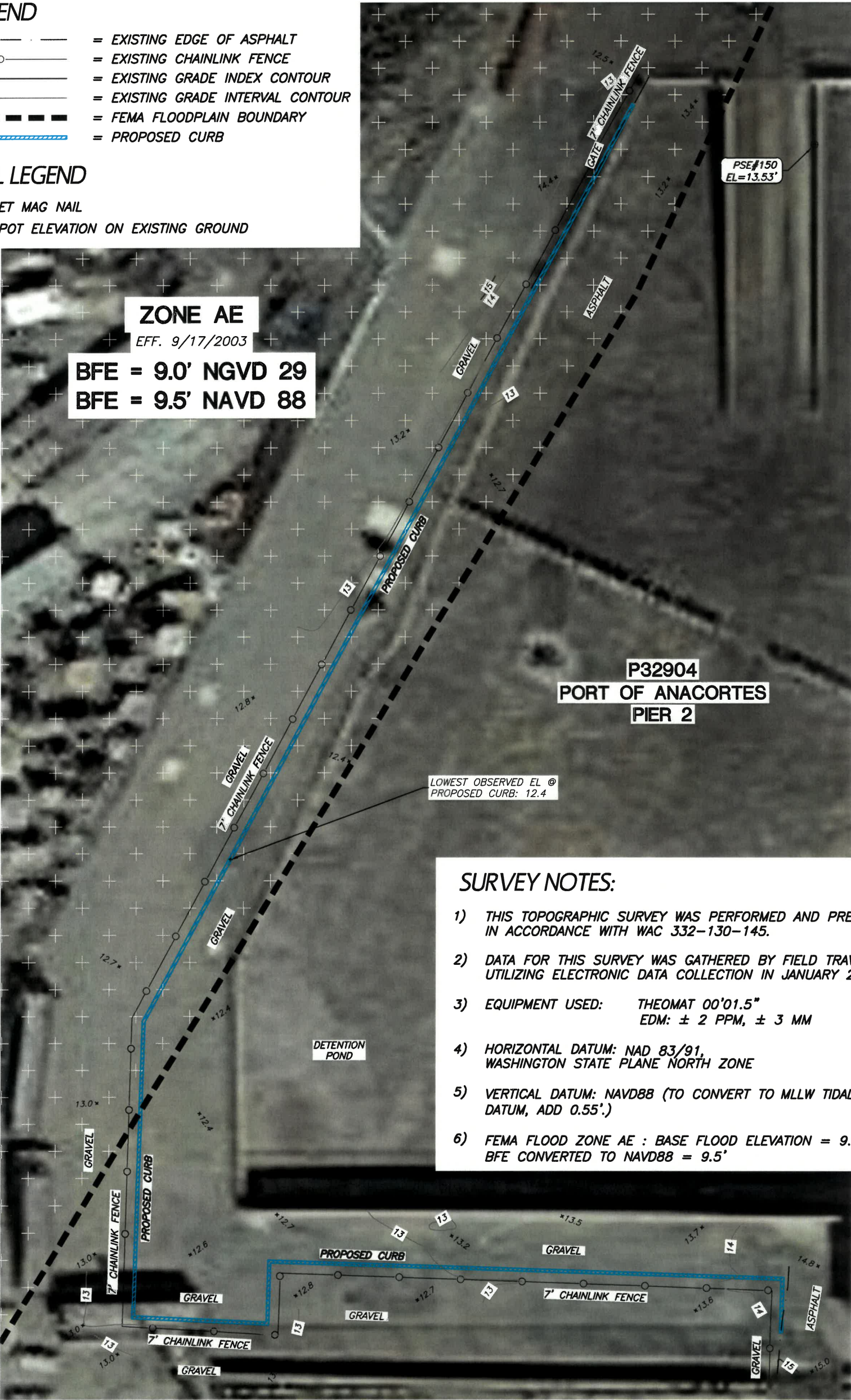
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RANGE 2 EAST, W.M., CITY OF ANACORTES, SKAGIT COUNTY, WASHINGTON

LINE LEGEND

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- = EXISTING CHAINLINK FENCE
- 120- = EXISTING GRADE INDEX CONTOUR
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- = FEMA FLOODPLAIN BOUNDARY
- = PROPOSED CURB

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- ⊕ = SET MAG NAIL
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SURVEY NOTES:

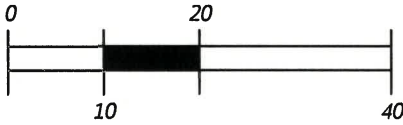
- 1) THIS TOPOGRAPHIC SURVEY WAS PERFORMED AND PREPARED IN ACCORDANCE WITH WAC 332-130-145.
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GRAPHIC SCALE
(US SURVEY FEET)



CITY OF ANACORTES

*Planning, Community, &
Economic Development*

Date Received:

02/01/2022

SDP-2022-0001

Geotechnical Engineering Services

Pier 2 Stormwater Conveyance Design
Anacortes, Washington

for

Port of Anacortes

March 19, 2010



600 Dupont Street
Bellingham, Washington 98225
360-647-1510

600 Dupont Street
Bellingham, Washington 98225
360-647-1510

March 19, 2010

Port of Anacortes
PO Box 297
Anacortes, Washington 98221

Attention: Connie Thoman

Subject: Geotechnical Engineering Services
Pier 2 Stormwater Conveyance Design
Anacortes, Washington
File No. 5147-004-03

We are pleased to submit our report, "Geotechnical Engineering Services, Pier 2 Stormwater Conveyance Design, Anacortes, Washington." Our geotechnical services were completed in general accordance with Task Order 53-10 pursuant to the Contract for Professional Services #72-00-07 dated June 7, 2007 between the Port of Anacortes and GeoEngineers. Our services were authorized by Robert Hyde on February 2, 2010. Preliminary information was discussed with the design team as the information became available.

We appreciate the opportunity to provide geotechnical engineering services on this project. Please call if you have any questions regarding this report.

Sincerely,

GeoEngineers, Inc.



John Herzog, PhD
Principal

AKM:JRG:ims
<https://projects.geoengineers.com/sites/0514704003/Final/Report>

Cc: Kennedy/Jenks Consultants
32001 32nd Avenue South, Suite 100
Federal Way, WA 98001
Attn: Abby Barnes

Geotechnical Engineering Services
Pier 2 Stormwater Conveyance Design
Anacortes, Washington

File No. 05147-004-03

March 19, 2010

Prepared for:

Port of Anacortes
PO Box 297
Anacortes, Washington 98221

Attention: Connie Thoman

Prepared by:

GeoEngineers, Inc.
600 Dupont Street
Bellingham, Washington 98225
360-647-1510



Aaron K. McCain, PE
Senior Geotechnical Engineer

J. Robert Gordon, PE
Principal

AKM:JRG:ims
<https://projects.geoengineers.com/sites/0514700403/Final/Report>

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

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INTRODUCTION

This report presents the results of our geotechnical engineering services related to the proposed improvements to the stormwater conveyance system for the Port of Anacortes on the western portion of Pier 2 located northeast of the intersection of R Avenue and 3rd Street in Anacortes, Washington. The project location is shown in the Vicinity Map, Figure 1.

Kennedy/Jenks Consultants is designing the subject stormwater improvements which consist of enlarging the existing stormwater pond and the installation of a new manhole structure. No new pipelines will be installed as part of this project. The new pond will be built with vertical concrete retaining walls on three sides and a sloping surface on the fourth side to provide access for maintenance. The existing wall that abuts an adjacent stormwater pond to the south will remain. The existing ground surface is approximately Elevation 16 to 16.5 feet. The minimum elevation for the pond subgrade surface will be Elevation 5.5 feet. The base of the vault will be constructed of precast concrete slabs. The manhole will have a subgrade elevation of approximately 3.5 feet.

The purpose of our geotechnical engineering services was to explore subsurface conditions at the site as a basis for developing geotechnical recommendations for the design and construction of the proposed stormwater conveyance improvements. The scope of our services for the project included completing three borings, completing laboratory testing on samples obtained from the explorations, performing analyses and preparing this report. Our specific scope of services is described in our task order 53-10 for the project dated February 2, 2010.

SITE CONDITIONS

Surface Conditions

The project site is located in an area zoned as manufacturing and shipping at the waterfront in Anacortes, Washington. The site is bordered by Guemes Channel to the north, Port of Anacortes Pier 2 to the west, 4th Street to the south, and a waterway and commercial marine and residential properties to the west. Existing site conditions are shown in the Site and Exploration Plan, Figure 2.

The site consists of an asphalt and concrete paved area with a shipping dock, conveyor line, truck loading areas, equipment and parts storage areas, office trailer, and other shipping and loading infrastructure. The site is generally level with elevations ranging from approximately 13 to 16 feet.

Anecdotal information from a dock worker indicates a lumber mill was formerly located at the site. Our review of a fire insurance map dated 1925 indicates that Anacortes Lumber & Box Company with a box factory, planing mill, a wharf on pilings, and platforms on sawdust fill were formerly located at the site.

Geology

Our interpretation of the geologic/hydrogeologic conditions at the site vicinity is based on a review of the "Geologic Map of Bellingham 1:100,000 Quadrangle, Washington," by Thomas J. Lappen (2000). The geologic soil deposits are the result of both glacial and nonglacial processes that have occurred during the last 12,000 years.

The site is mapped as artificial fill. The area west of the site is mapped as glaciomarine drift from the Everson interstade of the Fraser glaciation. Sea level fluctuated significantly relative to the land surface and present-day sea level, in response to the glacial advance and retreat (melting). Glaciomarine drift typically consists of unsorted, unstratified silt and clay with varying amounts of sand, gravel, cobbles and occasional boulders. Glaciomarine drift is derived from sediment melted out of floating glacial ice that was deposited on the sea floor during periods of glacial retreat, while the land surface was depressed 500 to 600 feet from previous glaciations. This material locally contains shells and wood, and large erratics (boulders) can be present sporadically or even in a cluster. The upper 5 to 15 feet of the glaciomarine drift unit in upland areas or overlying very dense glacial till is typically stiff. This is generally attributed to desiccation, although some consolidation from ice-contact loading may have occurred. The stiff layer possesses relatively high shear strength and low compressibility characteristics. The lower layer is generally medium stiff to soft and has low shear strength and high compressibility characteristics. Glaciomarine drift may locally be underlain by glacial till from the Vashon Stade of the Fraser Glaciation. Glacial till is generally a non-sorted, non-stratified mixture of sand, gravel and silt that has been overridden by several thousand feet of ice. Glacial till locally contains interbeds of laminated silt and fine sand. It typically has high shear strength and low consolidation characteristics in the undisturbed state.

Subsurface Explorations

Subsurface soil and groundwater conditions were evaluated by completing three geotechnical borings at the site. The borings extended to 31.5 feet below the ground surface (bgs). The borings were completed with a drill rig subcontracted to GeoEngineers on February 11, 2010. The approximate locations of the explorations are shown in Figure 2. Details of the field exploration program, laboratory testing and the exploration logs are presented in Appendix A.

Subsurface Conditions

Soil Conditions

The soil conditions at the site consisted of asphalt pavement and gravel base (pavement section) overlying fill material overlying beach deposits overlying glaciomarine drift. The pavement section consisted of approximately 4 to 8 inches of asphalt concrete underlain by 2.5 to 3 feet of gravel base at the boring locations.

The upper portion of the fill unit encountered below the pavement section primarily consisted loose to medium dense silty fine gravel with sand and fine gravel with silt and sand. The upper granular fill extended to depths varying from 8.5 to 14 feet bgs at the boring locations. Fill consisting of loose silty sand or sand silt overlying approximately 2 feet of lumber mill wood fibers or sawdust was encountered in B-1 and B-3 underlying the granular fill. Beach deposits consisting of loose to medium dense silty fine sand with shell and wood fragments was encountered at approximately 12 to 17½ feet bgs. The beach deposits extended to depths varying from approximately 19 to 24.5 feet bgs. Stiff to very stiff silt with occasional shell and wood fragments and medium dense to dense silty fine sand was encountered underlying the beach deposits in the borings to the full depth explored. We interpret this soil to be representative of glaciomarine drift.

Groundwater Conditions

Groundwater was encountered approximately 8.5 to 11.5 feet bgs in all three borings. The borings were not left open long enough for the groundwater to stabilize and no monitoring wells were installed. We expect that the groundwater is hydraulically connected to Guemes Channel and the groundwater level should be expected to fluctuate as a function of season, tides, precipitation and other factors.

CONCLUSIONS AND RECOMMENDATIONS

General

We conclude that the proposed improvements to the Pier 2 conveyance system in Anacortes, Washington may be satisfactorily constructed as proposed. All procedures and materials should be in accordance with the most recent Washington State Department of Transportation (WSDOT) Standard Specifications (hereafter referred to as WSDOT Standard Specifications), unless another version is specifically referenced or dictated by project documents.

The stormwater pond walls and the manhole have design subgrade elevations that are below groundwater levels encountered and we anticipate may be below the groundwater during the summer. The lowest groundwater levels are in the late summer and early fall and will limit dewatering effort and costs.

Seismicity

General

The site is located within the Puget Sound region, which is seismically active. Seismicity in this region is attributed primarily to the interaction between the Pacific, Juan de Fuca and North American plates. The Juan de Fuca Plate is subducting beneath the North American Plate. It is thought that the resulting deformation and breakup of the Juan de Fuca Plate might account for the deep focus earthquakes in the region. Hundreds of earthquakes have been recorded in the Puget Sound area.

Research has concluded that historical large magnitude subduction-related earthquake activity has occurred along the Washington and Oregon coasts. Evidence suggests several large magnitude earthquakes (Richter magnitude 8 to 9) have occurred in the last 1,500 years, the most recent of which occurred about 300 years ago. No earthquakes of this magnitude have been documented during the recorded history of the Pacific Northwest. However, current codes include this type of event.

Fault Hazards

Local design practice in Puget Sound and local building codes now include the possible effect of a very large subduction earthquake and local known faults in the design of structures. There is a small unknown fault that runs in a northwesterly direction to the east of the site. Based on review of USGS and DNR maps the fault does not appear to be connected to any named fault system. Based on the unknown nature of the fault it likely represents low to moderate risk of ground fault rupture.

Liquefaction Potential

Liquefaction refers to a condition where vibration or shaking of the ground, usually from earthquake forces, results in the development of excess pore pressures in saturated soils and subsequent loss of strength. This can result in vertical oscillations and/or lateral spreading of the affected soils, with accompanying surface subsidence and/or heaving. In general, soils that are susceptible to liquefaction include loose to medium dense clean to silty sands that are saturated (that is, below the water table).

The soils encountered within our explorations for the project include medium dense granular fill, wood products, loose to medium dense granular beach deposits, and very stiff silt. The granular fill we encountered was not below the water table and limited in thickness, however the beach deposits are saturated and susceptible to liquefaction. The cost to mitigate the liquefaction hazard at the site is considerable and generally not considered reasonable for this type of project; therefore we recommend that the Port develop a contingency plan in the event that liquefaction occurs resulting in subsidence and/or lateral spread and damage to the walls of the stormwater pond.

Stormwater Pond Considerations

Subgrade Preparation

We understand that the base of the pond will vary from close to the existing elevation along the south wall down to a deepest elevation of 5.5 feet. Our borings indicate that the subgrade soils may consist of either granular structural fill overlying wood waste at the north end of the pond (B-1) or wood waste (sawdust) at the south end of the pond (B-3). Generally, it is preferable to remove wood waste because it represents a risk of settlement as decomposition of the material occurs. However, we conclude that the wood waste will remain submerged below the groundwater table which essentially prevents decomposition. The wood waste has been present on the site for a number of years and there hasn't been significant settlement or maintenance of the existing surface.

It is our opinion that it is not necessary to excavate the wood waste. We recommend that footings and the precast slabs bear on at least 2 feet of compacted granular material. In some places this will require overexcavation of the woodwaste at the foundation depth in order to place the 2 feet of granular material. We recommend that any fill placed as subgrade soils be compacted to at least 95 percent of the maximum dry density (MDD) per ASTM D-1557 and be consistent with the recommendations provided in the subsequent earthwork section of this report. The lower 1 foot may need to be compacted to 90 percent compaction level at the discretion of the field geotechnical engineer.

Footing Design Parameters

Continuous spread footings founded on soils prepared in accordance with our recommendations in this report will provide adequate support for the proposed retaining wall. We recommend that the footings founded as described above founded on at least 2 feet of granular material be designed using a maximum allowable soil bearing pressure of 2,000 pounds per square foot (psf) for dead plus live loads. The allowable soil bearing pressures may be increased by up to one-third for wind or seismic loads.

Due to the underlying wood waste, it is difficult to estimate the settlement. While we do not anticipate any decomposition, some elastic deformation could occur. We estimate that the total settlement of the wall footings bearing on soils prepared in accordance with our recommendations in this report will be less than about 1 inch, and should occur as wall backfill is applied.

Lateral Resistance

Resistance to lateral loads can be developed through passive pressure on the embedded portion of the retaining walls. If the backfill within the passive zone is compacted to about 90 percent of the maximum dry density (MDD) in accordance with ASTM D-1557, passive soil pressures may be computed using equivalent fluid density values of 150 pounds per cubic foot (pcf) assuming saturated backfill conditions. We recommend an allowable frictional resistance be computed using a coefficient of friction of 0.40 applied to vertical dead-load forces. The above values include a factor of safety of about 1.5.

Lateral Earth Pressures

Lateral soil pressures acting on the retaining walls will depend on the nature and density of soil behind the wall, amount of lateral wall movement, which occurs as backfill is placed, and the inclination of the backfill surface. For walls free to yield at the top at least one thousandth of the wall height (i.e., wall height times 0.001), soil pressures will be less than if movement is restrained. We recommend that walls free to yield at the top and supporting horizontal backfill be designed using an equivalent fluid density of 35 pounds per cubic foot (pcf). We recommend that the wall below Elevation 8.5 feet be designed using an equivalent fluid density of 80 pcf to account for hydrostatic pressures. We also recommend a uniformly distributed seismic surcharge of $10H$ psf (H = Height of wall) be applied to the wall with a corresponding reduction in the factors of safety to 1.1 or greater. Lateral pressure resulting from seismic surcharge loading is additive to lateral soil pressures computed as recommended above. Surcharge loading should be added to all walls where appropriate. If traffic can be within about 10 feet of the top of the wall, we recommend that the walls be designed for a 250 psf surcharge load. This is equivalent to assuming an extra approximate 2 feet of soil above site grades.

The recommended equivalent fluid densities presented above are based on the assumption that fill behind the walls is placed and compacted as recommended herein. Compaction against the retaining walls should be in the range of 90 to 92 percent of the MDD. Overcompaction of fill placed directly behind walls should be avoided. We recommend use of hand-operated compaction equipment and maximum 6 inch loose lift thickness when compacting fill within about 5 feet of the walls.

Bouyancy Considerations

We anticipate that the base of the stormwater vault will be below the permanent groundwater table. As a result the base of the vault will be subject to uplift buoyancy forces from groundwater at approximately Elevation 8.5 feet. We recommend that the base slab of the vault be designed to resist these forces.

Manhole Foundation Support

We anticipate the subgrade soil conditions (Elevation 3.5 feet) will consist of medium dense silty fine sand. In order to provide adequate bearing for the structure and a stable work platform, we recommend that a 1-foot layer of imported structural fill be placed as foundation material beneath all structures.

We recommend that crushed rock with low fines such as crushed surfacing base course (WSDOT 9-03.9(3) or shoulder ballast (WSDOT 9-03.9(2) be used. The interlocking of this size angular rock will provide strength for bearing capacity, resist lateral spreading, and will also limit intrusion of the loose sandy soils into the void space (better than larger sized rock).

Additional foundation material may be required if very soft silts and/or organic soils are encountered at the invert elevation of the pipe. When such conditions are encountered, we recommend that a representative of GeoEngineers observe the excavation conditions and evaluate the requirements for overexcavation and replacement with structural fill.

Temporary Shoring Considerations

General

We understand that the excavation for the stormwater pond will extend approximately 10 to 12 feet below the existing site grade. Shoring will likely be required and may be preferable to an extensive dewatering system. We anticipate sheet piles will be used. A sheet pile system extending into the underlying silt and silty sand at the site will retain the soils and serve as a groundwater cutoff. We recommend that the shoring be designed by a professional engineer (PE) licensed in Washington. The following paragraphs present recommendations for the design parameters based on conditions at the site.

Sheet Pile Design Parameters

The soil conditions encountered within our explorations generally consist of loose to medium dense fill and beach deposits overlying very stiff silt. Groundwater is assumed to be at approximately Elevation 8.5 feet bgs. We recommend that temporary shoring be designed in accordance with the lateral earth pressure diagrams provided as Figure 3. The Active Pressure Diagram, Figure 3, includes active pressure where wall movement equal to 0.1 to 0.2 percent of the wall height is allowable, hydrostatic pressure below 8.5 feet bgs, and a traffic surcharge. Our design assumes that the very stiff silt will be encountered at a depth of approximately 25 feet bgs, however it is possible that the silt will be encountered as shallow as 19 feet bgs.

Shoring Installation and Monitoring

We anticipate that the sheet piles will be installed using a vibratory hammer. During installation some localized liquefaction will occur around the sheet piles due to the vibration of installation. On similar projects we have seen settlement that extends out about 3 to 5 feet from the sheets.

The site soils contain wood debris and potential obstructions. It is our understanding that the wood debris on the site likely consists of chips or sawdust, not large diameter trees. It is our opinion that sheet piles can be installed at the site. We anticipate that any obstructions are likely going to occur in the upper 10 feet and can be excavated and removed with an excavator if needed.

We recommend that a shoring monitoring and instrumentation program be established prior to construction. This should include a series of survey points to monitor horizontal and vertical movements of the shoring, surrounding streets, buildings and any other adjacent facilities. Locations of the monitoring points should be established when the final shoring design is complete. Monitoring points are typically established within a lateral distance of half the height of the shoring, and on all adjacent structures. In addition to survey monitoring points, a complete inspection of the site and adjacent facilities should be completed prior to construction. The inspection should include photographic documentation and complete notes or diagrams of the condition of all adjacent facilities.

Earthwork

General

Excavation will be required for the improvements to the stormwater pond and the installation of the new manhole structure. Temporary shoring may be necessary to limit the extent of the excavation. The site soils that will be excavated generally consist of loose to medium dense gravel with silt, silty sand and stiff silt. Except for the gravel fill, the materials are moisture-sensitive soils and are susceptible to disturbance by construction equipment during wet weather. We expect that stormwater would be contained in the excavations, especially after the sheet pile wall is installed.

Because of the proximity to the shoreline, temporary erosion control measures should be used during construction depending on the water, location, soil type and other factors. Temporary erosion protection (for example, straw, plastic or rolled erosion control products [RECPs]) may be necessary to reduce sediment transport until vegetation is established or permanent surfacing applied. Appropriate best management practices (BMPs) should be incorporated into the temporary erosion and sediment control plan developed by the civil engineer. We are available to provide input if requested.

Excavation Considerations

The excavation for the pond and the manhole will extend primarily through the gravel and possibly through woodwaste and into loose to medium dense silty sand. Excavation of this material can be completed using conventional earthwork equipment.

Regardless of the soil type encountered in the excavation, shoring, trench boxes or sloped sidewalls will be required for excavations deeper than 4 feet under Washington Administrative Code (WAC) 296-155, Part N. The stability of open-cut slopes is a function of soil type,

groundwater level, slope inclination and nearby surface loads. The use of inadequately designed open cuts could impact the stability of adjacent structures and existing utilities and could endanger personnel.

For excavations less than 20 feet deep, the state regulations allow temporary slopes from 0.75H:1V to 1.5H:1V, depending on soil type. The regulations assume that surface loads such as construction equipment and storage loads will be kept a sufficient distance away from the top of the cut so that the stability of the excavation is not affected. It is important to note that the regulations assume that no groundwater is present. Based on our explorations, the fill soils at the site are considered to be a "Type C" soil by the regulations, which has an allowable temporary maximum slope angle of 1.5H:1V above the groundwater table. The soils will be unstable below the groundwater table unless they are dewatered.

It should be expected that unsupported cut slopes would experience some sloughing and raveling if exposed to surface water. Berms, hay bales, plastic sheeting, fencing laid over the slope or other provisions could be installed along the top and sides of the excavation to reduce the potential for sloughing and erosion of cut slopes during wet weather.

In our opinion, the contractor will be in the best position to observe subsurface conditions continuously throughout the construction process and to respond to the variable soil and groundwater conditions. Construction site safety is generally the sole responsibility of the contractor, who also is solely responsible for the means, methods and sequencing of the construction operations and choices regarding temporary excavations and shoring. We are providing this information only as a service to our client. Under no circumstances should the information provided in this report be interpreted to mean that GeoEngineers, Inc. is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Dewatering Considerations

The depth to groundwater at the site varied from 8.5 to 11.5 feet bgs and dewatering must be considered for any excavations that extend deeper than 8.5 feet. We recommend that this project be completed during the dry summer months if possible, preferably July through September when the groundwater elevation is at or near the seasonal low to minimize dewatering costs.

The dewatering measures necessary will be dependent upon the time of construction, length of time and the size of excavations that will remain open, soil type, groundwater level and other factors. If shoring is used with a tip elevation in the very stiff silt, then the shoring will serve as a cofferdam and the inside annular space can be dewatered with little water intrusion after initial dewatering. The gravel fill has a very high permeability such that very aggressive dewatering would be required in absence of shoring. In our opinion, the contractor should be responsible for designing and installing the appropriate dewatering system needed to complete the work based on the time of year and proposed construction techniques. Any dewatering system should include provisions for disposal of the collected water in accordance with applicable regulations.

We recommend that the groundwater be drawn 2 feet below the base elevation of the pond or the manhole structure so that the overexcavation and foundation material placement can occur in the dry.

Structural Fill

GENERAL

All fill placed on the site should be placed and compacted as structural fill. All structural fill material should be free of organic matter, debris and other deleterious material. The maximum particle size diameter should be the lesser of either 4 inches or one-half of the loose lift thickness.

As the amount of fines (material passing the U.S. No. 200 sieve) increases in a soil, it becomes more sensitive to small changes in moisture content, and adequate compaction becomes more difficult to achieve during wet conditions. Generally, soils containing more than about 5 percent fines by weight cannot be properly compacted when the moisture content is more than a few percent from optimum.

The fill should be placed in horizontal lifts not exceeding 10 inches in loose thickness or the thickness necessary to obtain the specified compaction with the equipment used. Each lift must be thoroughly and uniformly compacted to a percentage of the MDD as determined by the ASTM D 1557 test procedure. We recommend that fill placed in parking or pavement areas be compacted to at least 90 percent of the MDD up to 2 feet below the pavement subgrade elevation. Fill placed beneath footings or within 2 feet of the pavement subgrade elevation should be compacted to 95 percent of the MDD.

Sufficient earthwork monitoring and a sufficient number of in-place density tests should be performed to evaluate fill placement and compaction operations and to confirm that the required compaction is being achieved.

SUITABILITY OF ON-SITE SOIL

The majority of the soils encountered at the site consisted of granular fill consisting of gravel with silt and sand extending to a depth of at least 8 feet bgs. This material has a high fines content, but it is our opinion that this material can be reused as structural fill provided it is properly moisture-conditioned. Silty fill, wood waste, and silty sand may be encountered underlying the upper gravel. This material has a moisture content higher than the optimal value for compaction and it is our opinion that this material should not be considered as structural fill for planning purposes. If needed, a representative from our firm can evaluate the excavated material during construction and make a determination in the field. Care should be taken to separate out the different soil layers.

SELECT IMPORT FILL

Imported soil should conform to the recommendations provided in the “General” section above. We recommend using a select import fill: a sand and gravel base with a fines content of less than 5 percent on that portion passing the $\frac{3}{4}$ -inch sieve and at least 30 percent gravel (retained on the U.S. No. 4 sieve). We recommend that import material consist of gravel base in accordance with previous recommendations or gravel borrow per WSDOT *Standard Specifications* 9-03.14. It would be appropriate to limit that portion passing the U.S. No. 200 sieve to less than 5 percent during wet

weather construction. Other import soils may be submitted for approval by the geotechnical engineer.

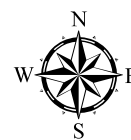
LIMITATIONS

We have prepared this report for use by Port of Anacortes and other members of the design team for use in design of the Pier 2 Stormwater Conveyance Design in Anacortes, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted geotechnical practices in this area at the time the report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

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Vicinity Map

Pier 2 Stormwater Conveyance Design
Anacortes, Washington



Figure 1

- Notes:
1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
 3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

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Legend

B-1 BORING NUMBER AND APPROXIMATE LOCATION

SYMBOLS LEGEND

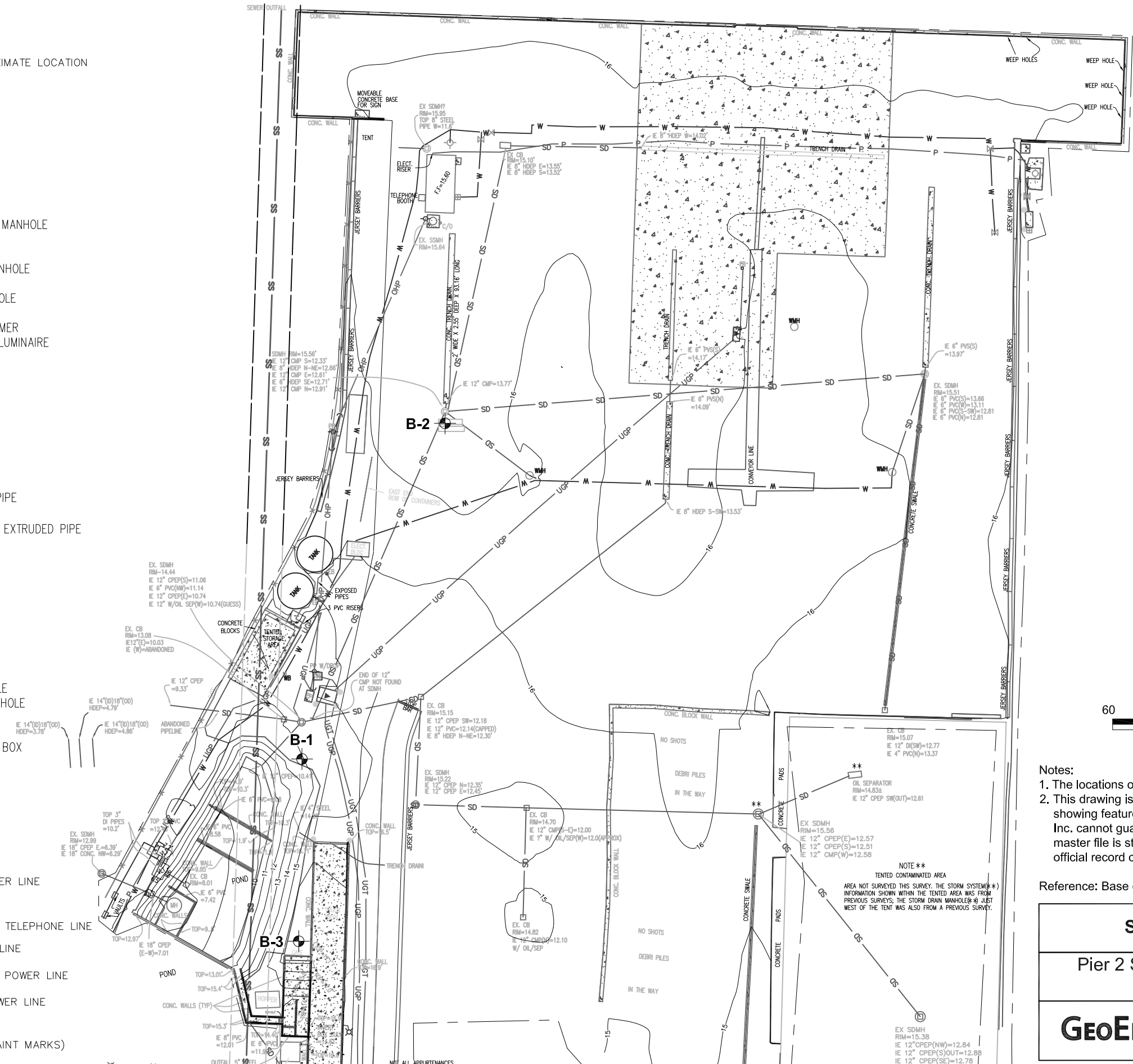
- EXISTING BOLLARD
- EXISTING FIRE HYDRANT
- EXISTING WATER VAVLE
- EXISTING WATER METER
- EXISTING SANITARY SEWER MANHOLE
- EXISTING CLEAN OUT
- EXISTING CATCH BASIN
- EXISTING STORM DRAIN MANHOLE
- EXISTING POWER POLE
- EXISTING TELEPHONE MANHOLE
- EXISTING POWER VAULT
- EXISTING POWER TRANSFORMER
- EXISTING POWER POLE W/ LUMINAIRE
- EXISTING LUMINAIRE

ABBREVIATIONS

- CB ----- CATCH BASIN
- CMP ----- CORRUGATED METAL PIPE
- CONC ----- CONCRETE
- CPEP ----- CORRUGATED PLASTIC EXTRUDED PIPE
- CULV ----- CULVERT
- EB ----- ELECTRICAL BOX
- EM ----- ELECTRICAL METER
- EP ----- ELECTRICAL PANEL
- EV ----- ELECTRICAL VAULT
- ELECT. ----- ELECTRICAL
- EX ----- EXISTING
- I.E. ----- INVERT ELEVATION
- PP ----- POWER POLE
- PVC ----- POLY VINYL CHLORIDE
- SDMH ----- STORM DRAIN MANHOLE
- SSMH ----- SANITARY SEWER MANHOLE
- TELE ----- TELEPHONE
- TB ----- TELEPHONE BOX
- TJB ----- TELEPHONE JUNCTION BOX
- TYP ----- TYPICAL
- WV ----- WATER VALVE

LINE LEGEND

- SS ----- EXISTING SANITARY SEWER LINE
- G ----- EXISTING GAS LINE
- UGT ----- EXISTING UNDERGROUND TELEPHONE LINE
- SD ----- EXISTING STORM DRAIN LINE
- UGP ----- EXISTING UNDERGROUND POWER LINE
- OHP ----- EXISTING OVERHEAD POWER LINE
- x ----- EXISTING FENCE LINE
- w ----- EXISTING WATER LINE(PAINT MARKS)



Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base drawing provided by Leonard, Boudinot, & Skodje Inc.

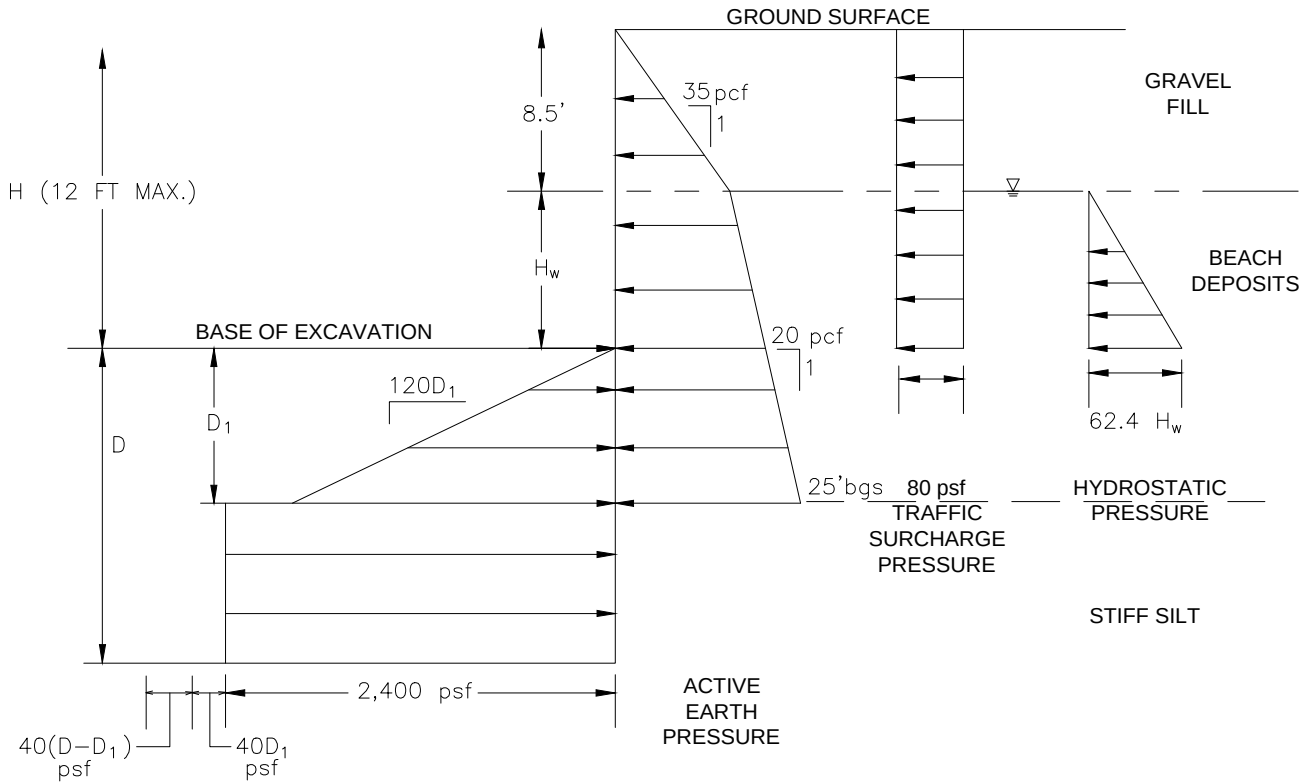
Site and Exploration Plan

Pier 2 Stormwater Conveyance Design
Anacortes, Washington

GEOENGINEERS

Figure 2

ACTIVE EARTH PRESSURES (TEMPORARY, NO SEISMIC, NO STRUCTURE)



Definitions:

H = Height of excavation (12' max.)

D = Depth of embedment

D_1 = Depth of embedment where

D_1 (max.) = 25ft - H

Not to Scale

Lateral Earth Pressure Diagrams

Pier 2-Stormwater Conveyance Design
Anacortes, Washington

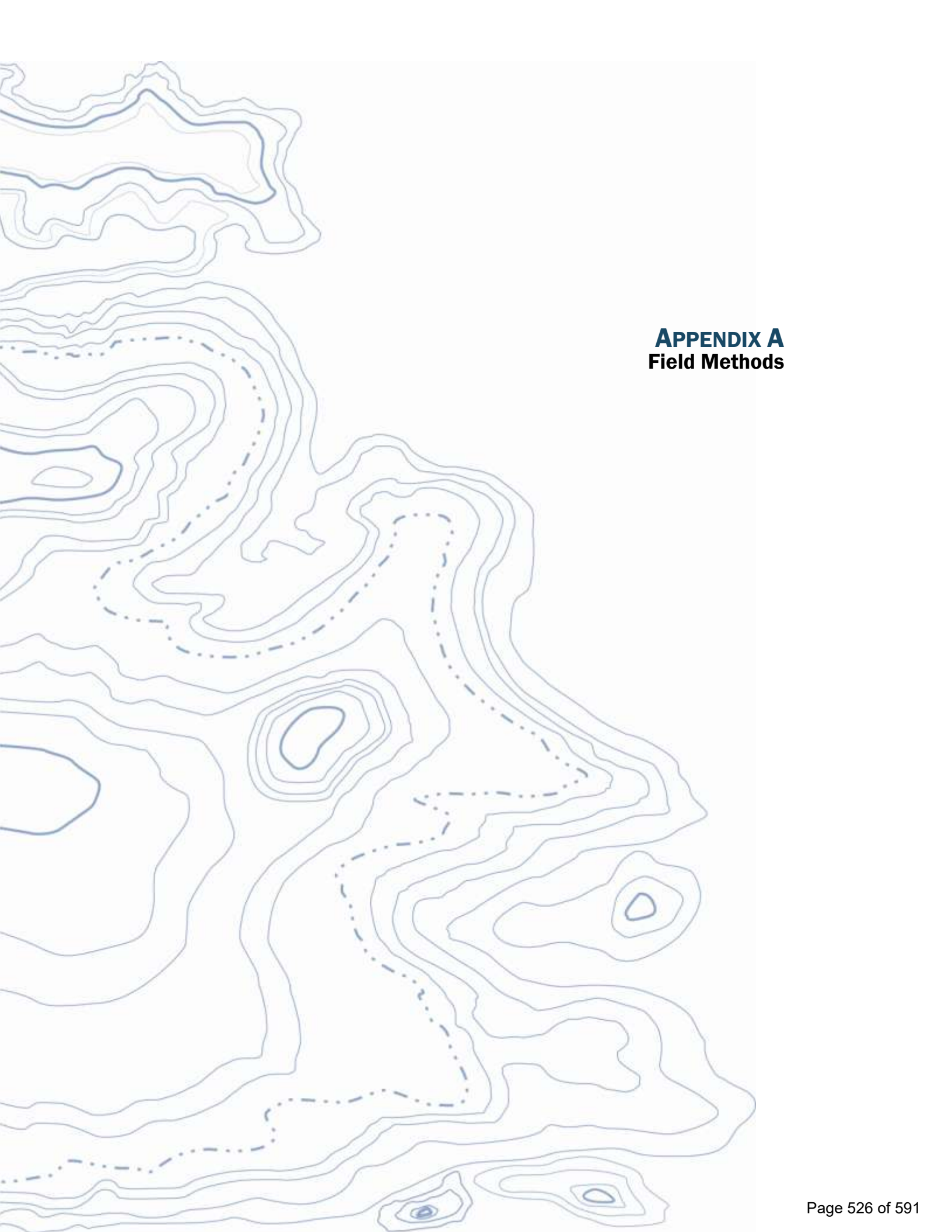
GEOENGINEERS

Figure 3

4-10-2009

AKM:IMJ:MS

SEA:Projects/5/5147-00710/514700710 F3.dwg



APPENDIX A

Field Methods

FIELD EXPLORATIONS

Subsurface soil and groundwater conditions for the project were evaluated by completing three geotechnical borings at the site. The borings extended to 31.5 feet below the existing ground surface (bgs). The borings were completed on February 11, 2010 using a track-mounted drill rig subcontracted to GeoEngineers, Inc. The exploration locations were chosen based on our understanding of the project at the time of the exploration program. The locations of the explorations were determined by taping and pacing from existing structures, and therefore the locations shown in Figure 2 should be considered approximate.

The boring samples were obtained by driving a standard penetration test (SPT) split-spoon sampler 18 inches with a 140 pound hammer falling 30 inches with two wraps around the cathead. The samples were placed in plastic bags to maintain the moisture content and transported back to our laboratory for analysis and testing.

The explorations were continuously monitored by a licensed geologist from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration. Soils were visually classified in general accordance with American Society for Testing and Materials (ASTM) D 2488-90, which is described in Figure A-1. An explanation of our exploration log symbols is also shown in Figure A-1.

The logs of explorations are presented in Figures A-2 through A-4. The logs are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered. They also indicate the depths at which these soils or their characteristics change, although the change might actually be gradual. If the change occurred between samples in the boring, it was interpreted.

GEOTECHNICAL LABORATORY TESTING

Representative laboratory testing was completed on selected samples from the explorations. The testing consisted of moisture content determinations, percent fines determinations, and sieve analyses. The results of the moisture content determinations and percent fines determinations are summarized on the boring logs. The results of the sieve analyses are presented in Figure A-5.

SOIL CLASSIFICATION

DDNNLELSLS

SOIL DESCRIPTIONS			SOILS		DESIGNATIONS		
			PO	LE			
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)				WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)				POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)				SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
						CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
		SAND AND SANDY SOILS	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)				WELL-GRADED SANDS, GRAVELLY SANDS
						POORLY-GRADED SANDS, GRAVELLY SAND	
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50				INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY	
						INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
						ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50				INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
							INORGANIC CLAYS OF HIGH PLASTICITY
							ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS						PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	Standard Penetration Test (SPT)
	Shell tube
	Piston
	Direct Push
	Auger or Grab

Log count is recorded for drive samplers as the number of blows required to advance sampler 10 inches or distance noted. See exploration log for hammer weight and drop.

P indicates sampler pushed using the weight of the drill rig.

SOILS		DESIGNATIONS	
PO	LE		
			Cement Concrete
			Asphalt Concrete
			Crushed Rock/Quarry Spalls
	S		Topsoil/Forest Duff/Sod



Measure groundwater level in exploration well or piezometer



Rough water observation at time of exploration



Perched water observation at time of exploration



Measure free product in well or piezometer

Radiologic Log Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Material Description Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Laboratory Field Tests

F	Permeability
L	Atterberg limits
	Chemical analysis
P	Laboratory compaction test
S	Consolidation test
DS	Direct shear
	Piezometer analysis
	Moisture content
D	Moisture content at or near site
	Organic content
P	Permeability or hydraulic conductivity
PP	Pocket penetrometer
S	Shear analysis
	Triaxial compression
	Unconfined compression
S	Angle shear

Shrinkage Classification

NS	No visible shrinkage
SS	Slight shrinkage
S	Moderate shrinkage
S	Severe shrinkage
N	Not tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ENGINEERING PLAN



FIGURE

Bellingham: Date: 3/19/10 Path: P:\55147004\GINT\514700403 BORINGS.GPJ DBT template\B Template\GEOENGINEERS8.CDT\GEIS_GEO TECH_STANDARD

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
20	18	7	5						26		SA
25	18	27	6				ML	Gray silt with sand lenses, occasional organic matter and trace shell fragments (very stiff, wet) (glaciomarine drift)	20		
30	12	21	7				SM	Gray silty fine sand with occasional wood and trace shell fragments (medium dense, wet) (glaciomarine drift)	20		

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-1 (continued)



Project: Pier 2 Stormwater Conveyance Design
Project Location: Anacortes, Washington
Project Number: 5147-004-03

Figure A-2
Sheet 2 of 2

Drilled	<u>Start</u> 2/11/2010	<u>End</u>	Total Depth (ft)	31.5	Logged By Checked By	RMB AKM	Driller	Borettec, Inc.		Drilling Method	Hollow-stem Auger	
Surface Elevation (ft) Vertical Datum			16.0		Hammer Data			140 (lbs) / 30 (in) Drop		Drilling Equipment	EC Limited Access Rig	
Easting (X) Northing (Y)				System Datum				<u>Groundwater</u>		Depth to Water (ft)		
Notes: SPT								<u>Date Measured</u>		<u>Elevation (ft)</u>		
								11.5		4.5		

Elevation (feet)	FIELD DATA					MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample Sample Name Testing	Water Level Graphic Log				
0						AC			
2.5		6		1		GP			
						GP-GM			
5		5	50/5"	2					
7.5									
10		10	6	3			12		
12.5									
15		16	11	4		SM		24	
17.5									
20						ML			

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-2



Project: Pier 2 Stormwater Conveyance Design
Project Location: Anacortes, Washington
Project Number: 5147-004-03

Figure A-3
Sheet 1 of 2

Drilled	<u>Start</u> 2/11/2010	<u>End</u>	Total Depth (ft)	31.5	Logged By Checked By	RMB AKM	Driller	Borettec, Inc.		Drilling Method	Hollow-stem Auger		
Surface Elevation (ft) Vertical Datum			16.5		Hammer Data			140 (lbs) / 30 (in) Drop			Drilling Equipment	EC Limited Access Rig	
Easting (X) Northing (Y)					System Datum					<u>Groundwater</u> Depth to <u>Water (ft)</u> <u>Date Measured</u>			<u>Elevation (ft)</u>
Notes: SPT										8.5			8.0

Elevation (feet)	FIELD DATA					Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing							
0								AC	4 inches of asphalt concrete			
1/3								GP	Gray fine gravel with sand and trace silt (medium dense, moist) (gravel base)			
		6			1			GM	Brown silty fine gravel with sand (medium dense, moist) (fill)			
5		6	27		2			ML	Gray sandy silt with trace shell fragments (soft, wet) (fill)	12		
10		10	3		3			WD	Dark brown saw dust (fill)	27		
15		4	4		4			SM	Gray silty fine sand with occasional shell and wood fragments (very loose, wet) (beach deposits)	200		
20								ML	Gray sandy silt with trace shell fragments (very stiff, wet) (glaciomarine drift)	32		

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-3



Project: Pier 2 Stormwater Conveyance Design
Project Location: Anacortes, Washington
Project Number: 5147-004-03

Figure A-4
Sheet 1 of 2

Bellingham: Date: 3/19/10 Path: P:\55147004\GINT\514700403 BORINGS.GPJ DBT template\B Template\GEOENGINEERS8.CDT\GEIS_GEO TECH_STANDARD

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level				
20		18	24		5			23		
25		18	11		6		ML Gray and brown silt with sand and occasional gravel and wood fragments (stiff, wet)	24		
30		12	43		7		SM Brown silty fine sand (dense, moist to wet)	22		

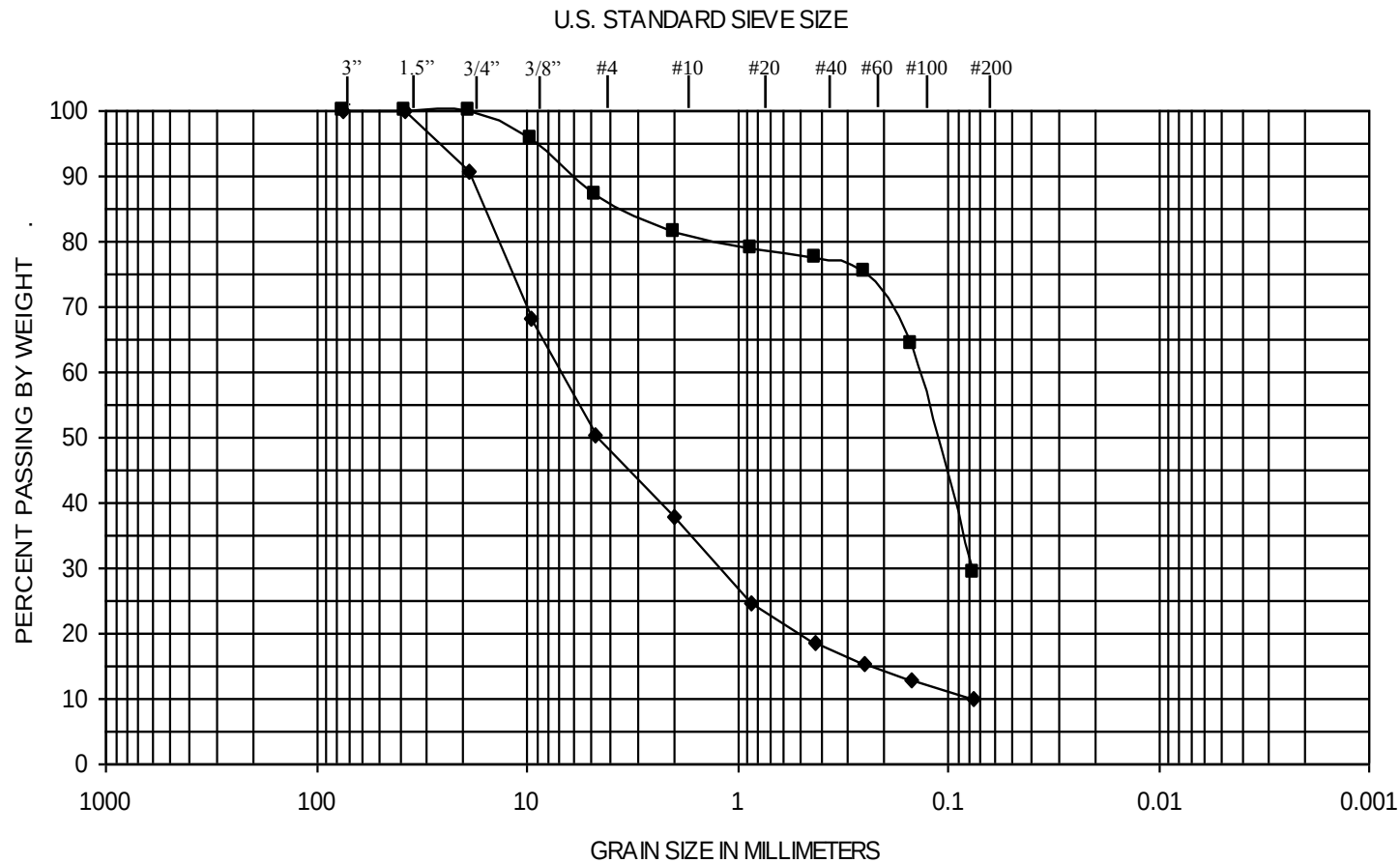
Note: See Figure A-1 for explanation of symbols.

Log of Boring B-3 (continued)



Project: Pier 2 Stormwater Conveyance Design
Project Location: Anacortes, Washington
Project Number: 5147-004-03

Figure A-4
Sheet 2 of 2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

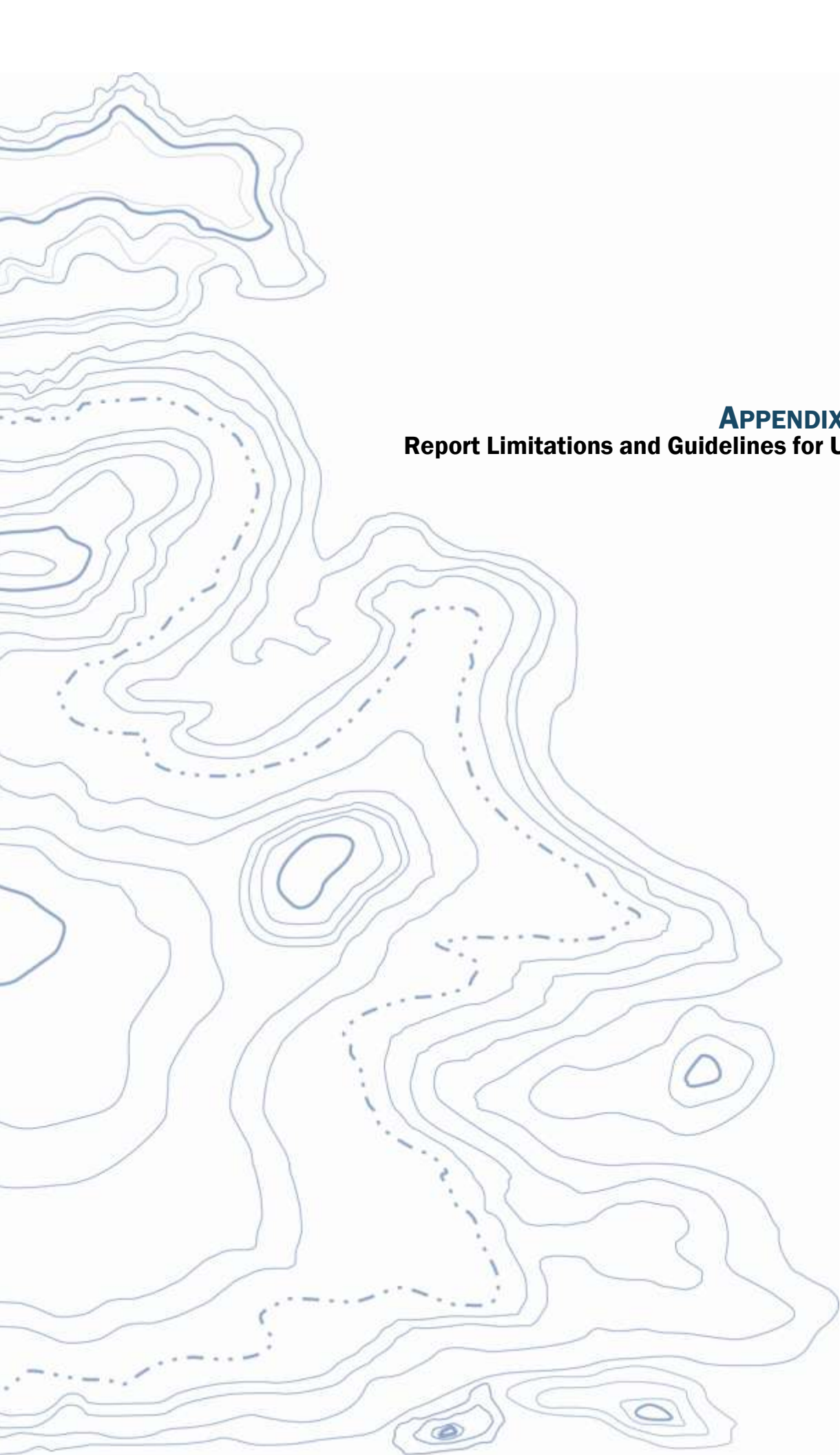
Symbol	Exploration Number	Sample Depth (feet)	Soil Classification
◆	B-1	5½	Gray fine gravel with silt and sand (GW-GM)
■	B-1	20½	Gray silty fine sand with shells, gravel and wood (SM)

Note: This report may not be reproduced, except in full, without written approval of GeoEngineers, Inc. Test results are applicable only to the specific sample on which they were performed, and should not be interpreted as representative of any other samples obtained at other times, depths or locations, or generated by separate operations or processes.

Sieve Analysis Results

Pier 2 Stormwater Conveyance Design
Anacortes, Washington

**Figure A-5**

A decorative background on the left side of the page featuring a topographic map with blue contour lines and a dashed blue line winding through the terrain.

APPENDIX B

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Port of Anacortes and their authorized agents. This report may be made available to other members of the design team. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-specific Factors

This report has been prepared for the Pier 2 Stormwater Conveyance Design northeast of the intersection of R Avenue and 3rd Street in Anacortes, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or

¹ Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of biological pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of biological pollutants and no conclusions or inferences should be drawn regarding biological pollutants, as they may relate to this project. The term "biological pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

August 23, 2010

Port of Anacortes
PO Box 297
Anacortes, Washington 98221

Attention: Connie Thoman

Subject: Evaluation of Tidal Groundwater Monitoring
Pier 2 Stormwater Conveyance Dewatering
Port of Anacortes
Anacortes, Washington
File No. 05147-004-04

This letter presents supplement information, findings, conclusions and recommendations regarding the evaluation of monitoring data collected for a tidal analysis of groundwater at Pier 2, where expansion of a stormwater pond will likely require temporary construction dewatering.

The findings were developed by Michael Kenrick, Principal Hydrogeologist with GeoEngineers based on data collected by Aaron McCain and Aaron Hartvigsen of GeoEngineers Bellingham Office. The work has been performed under Task Order #07-10 issued pursuant to the Contract for Professional Services #16-00-10 between the Port and GeoEngineers, dated March 23, 2010.

PROJECT UNDERSTANDING

We previously provided a geotechnical engineering report for the project dated March 19, 2010. In the report we provided recommendations for the construction of a new stormwater pond that has a base elevation of approximately 5.5 feet. Groundwater was encountered at elevations ranging from 3.5 to 8 feet (MLLW) in our explorations at the time of drilling. This task was established to provide a better understanding of the groundwater table and the fluctuations associated with the tide. In addition, the estimation of hydraulic conductivity from analysis of the observed tidal fluctuations in groundwater would provide additional information on appropriate methods to control groundwater during pond construction.

SCOPE OF SERVICES

The purposes of our services are to provide sufficient observation, testing and consultation to evaluate the impact of groundwater on the project plans and specifications and the recommendations we provided in our geotechnical engineering report. Our specific scope of services includes the following tasks:

- Install two groundwater monitoring wells at the north end of the existing storm water pond to a depth of approximately 20 feet below the ground surface.
- Install automated pressure transducers to record the natural variation in groundwater levels as driven by tides over a period of 3 to 4 days.
- Compare the measured data to the recorded tide data available from NOAA at the Friday Harbor Station to develop estimates of time lag and amplitude attenuation in the tidal cycle as it affects groundwater levels at each monitoring well location.
- Develop approximate permeabilities based on the tidal analysis. Apply tidal groundwater flow theory, using the calculated time lag and amplitude attenuation, to calculate the apparent hydraulic diffusivity of the permeable gravels underlying the proposed stormwater pond that are expected to be tidally influenced. From this, the transmissivity and hydraulic conductivity of the gravels can then be estimated.
- Provide an assessment of the dewatering requirements that will likely be needed to safely construct the stormwater pond in dry conditions.

DATA COLLECTION

Field Exploration

Two groundwater monitoring wells (MW-1 and MW-2) were installed on July 28, 2010 to 20 feet below the existing ground surface (bgs) using an Mobile B-61 truck-mounted drill rig subcontracted to GeoEngineers. The borings were completed at the approximate locations shown in the Site Plan, Figure 1. The locations of the borings were determined by licensed surveyors and therefore should be considered accurate. The elevations shown on the logs are based on measurements obtained by the surveyors. We previously completed a boring on February 11, 2010 in the vicinity labeled B-1 which is also included as an attachment to this report.

Soil samples for MW-2 were obtained from the geotechnical borings using a 2-inch outside diameter split spoon in accordance with Standard Penetration Test (SPT) procedures. The samples were placed in plastic bags to maintain the moisture content and transported back to our laboratory for analysis and testing. Only grab samples were obtained from MW-1 due to the oversized auger used for drilling.

The explorations were continuously monitored by a representative from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration. Soils encountered were classified visually in general accordance with ASTM D-2488-90, which is described in Figure 2. The logs of the borings are presented in Figures 3, 4, and 5. The exploration logs are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered. They also indicate the depths at which these soils or their characteristics change, although the change might actually be gradual. If the change occurred between samples in the borings, it was interpreted.

Groundwater Monitoring

We installed a pore pressure transducer (Aquistar PT2X) in each of the monitoring wells to record the water levels. The transducer measures the water pressure and temperature and then calculates the

height of the water column above the transducer level. Water level measurements were recorded every 6 minutes for approximately 9 days and stored in internal memory until we downloaded the data at the end of the measuring period.

HYDROGEOLOGIC ANALYSIS

Tidal Monitoring

Groundwater levels in monitoring wells MW-1 and MW-2 were monitored over a period of approximately 9 days at the beginning of August 2010. Data was collected using pressure transducers with in-built data loggers that read water level every 6 minutes. The chart shown in Figure 6 depicts a hydrograph showing the resulting variation in water level, expressed as elevation in feet relative to Mean Low Low Water (MLLW) at Anacortes.

The diurnal tidal cycle is clearly recorded in both data sets, although the range of variation observed in MW-1 is significantly greater than in MW-2. MW-1 is located closer to the shoreline of Pier 2; however, the contrast in tidal response is much greater than anticipated and likely reflects a transition in geologic conditions between the two well locations.

Tide Data

Figure 6 also includes a record of tide levels recorded at Friday Harbor, San Juan Island, over approximately the same period. Friday Harbor is the closest location we could identify nearby where a continuous recorded tidegauge is maintained by NOAA. The correspondence between tide level variations and the tidal fluctuations measured in groundwater levels in both wells is clearly evident. In fact, the range of variation groundwater level appears slightly larger than the tidal variation, which is unusual.

To examine this phenomenon further, we obtained data on predicted tide levels (high and low only) at both Friday Harbor and Anacortes for the period of monitoring. These are plotted in Figure 7. The data show that high tides are somewhat higher at Anacortes compared with Friday Harbor, although the low tides are more similar. The timing of the tidal highs and lows at the two locations varies by up to half-an-hour or more, but over this period, high and low arrive at Friday Harbor on average approximately 6 minutes later than at Anacortes.

To establish a quantitative relationship between tides at the two locations, we developed an approximate conversion algorithm that mathematically expanded the range of the Friday Harbor tide data, also including a small difference in the apparent mean sea level (MSL) as the base reference. The resulting algorithm that provides a reasonable match (Figure 8) to the predicted tides at Anacortes includes an upward shift of 0.365 feet in MSL, and an increase in tidal amplitude of 7%.

We then applied the algorithm to the full record of actual tide data recorded at Friday Harbor, generating a synthetic tidal record for Anacortes over the period of monitoring. This is plotted in Figure 9, together with the predicted tidal peaks and troughs at Anacortes. The fit is relatively good, with deviations generally similar in both Figure 8 and Figure 9. Deviations are caused mainly by meteorological conditions (barometric pressure, temperature and wind) that result in relatively small differences between predicted and actual tides.

Tidal Analysis of Monitoring Well Data

Using the synthetic tidal record for actual water levels at Anacortes (developed from the verified record collected at Friday Harbor) we are able to perform a tidal analysis of the monitoring well data.

Monitoring Well MW-1

Using a similar methodology to the matching algorithm described above, we adjusted the synthetic Anacortes tide record until it gave a reasonable match with the data collected from MW-1. We used the Solver Add-In in Microsoft Excel to adjust the shift and amplitude parameters to give the closest fit considering all data points in the full monitoring well data record. The result is shown in Figure 10. This is obtained with an upward shift (above MSL) of 0.725 feet and amplitude reduction of 6% smaller than the synthesized Anacortes tide record. The slightly elevated mean groundwater level relative to mean sea level is typical for groundwater systems that are hydraulically connected to tidal surface waters; they receive recharge from precipitation that typically produces a net discharge of groundwater from the aquifer to the sea (Puget Sound).

Although the amplitude of tidal variation in MW-1 is slightly greater than the Friday Harbor tide, when the data is matched to the synthesized Anacortes tide, the average amplitude of groundwater fluctuation is smaller than the corresponding tidal range in the adjacent body of tidal surface water. In groundwater terms, this is referred to as the tidal efficiency of the well, and in the case of MW-1 is determined to be 94% of the full tidal range. There is little to no apparent time lag between the tidal peaks and the highest groundwater levels; based on the reading interval, we estimate the time lag to be between 1 and 5 minutes.

Monitoring Well MW-2

Using the same procedure to adjust the synthetic Anacortes tide record, we obtained a reasonable match with the groundwater monitoring data collected from MW-2. However, we had to make a different assumption regarding mean groundwater level at MW-2, which Figure 6 shows appears to be declining during the period of monitoring. This is likely attributable to the progressively lower low tides occurring over the monitoring period. In addition to comparing the mean tide and groundwater levels, we added a long-period sinusoidal trend to the comparison algorithm, to reflect the period of decline, corresponding to the lunar cycle.

We used the Solver Add-In in Microsoft Excel to adjust the shift and amplitude parameters controlling the algorithm, as well as the parameters of the sinusoidal base curve to give the closest fit considering all data points in the full monitoring well data record. The result is shown in Figure 11. This is obtained with a net upward shift (above MSL) of 2.28 feet and amplitude reduction of 91% of the synthesized Anacortes tide record. The tidal efficiency of the well, in the case of MW-2 is determined to be only 9% of the full tidal range. The tidal time lag is approximately 2 hours.

Tidal Efficiency and Tidal Lag

The tidal attenuation and tidal lag observed in a tidally affected groundwater monitoring well hydrograph are directly related to fundamental hydraulic properties of the groundwater body, including:

- The permeability (measured as hydraulic conductivity)
- The saturated thickness of the most pervious material

■ The storativity or drainable porosity of the material

The tidal responses observed in MW-1 and MW-2 are very different and do not appear to correspond to the same geologic formation.

Examination of the monitoring well logs suggests that the sand and silt content of the gravel at MW-2 may control its hydraulic properties, whereas the coarse gravel and occasional cobbles encountered at MW-1 may be considerably more permeable resulting in greater tidal attenuation a longer time lag. In more uniform geologic conditions, the tidal response observed in both wells would normally have been more similar, with a smaller difference in attenuation and lag time that would have allowed a more unique solution for these material properties. One disadvantage of the drilling and sampling methods employed is that they may not obtain representative samples or descriptions of material that contains a significant coarse fraction (coarse gravel, cobbles or boulders) where these exceed the size of the drilling and sampling equipment; this may explain the higher permeability of materials apparent at MW-1.

With these considerations in mind, we used the tidal attenuation and tidal lag values to develop separate permeability estimates from each set of monitoring data, with assumed values for aquifer thickness of 10 feet.

Analysis of MW-1

For MW-1, we assumed storativity values in the range 0.1 to 0.3, corresponding to very porous, possibly openwork gravels, with an effective distance of between 10 and 30 feet from the shoreline. This results in high estimates for hydraulic conductivity in the range of 0.5 to 5 centimeters per second. Increasing the effective distance from the shoreline would require even higher values of hydraulic conductivity, which are considered to be unlikely.

Analysis of MW-2

For MW-2, we assumed lower storativity values in the range 0.05 to 0.01, which are more typical of sands or silty sands that may dominate the soil matrix around the well. We assumed an effective distance of between 30 and 40 feet from the shoreline. This results in lower estimates for hydraulic conductivity in the range of 0.001 to 0.005 centimeters per second. Increasing the effective distance from the shoreline would result in higher values of hydraulic conductivity, as would increasing the assumed storativity values, both of which may be possible.

Dewatering Considerations

The tidal monitoring data suggests that at least a portion of the site for the stormwater pond improvements (possibly most of the western side) has a very effective hydraulic connection to Puget Sound through highly permeable materials. Groundwater inflows to the excavation during high tides may be difficult to control by pumping groundwater from wells, and some form of hydraulic cutoff may be required.

Conversely, on the eastern side of the pond, there appears to be a geologic transition into sandy material that has a more moderate permeability. Inflows from this side of the excavation will be considerably smaller and could be controlled by wells or wellpoints.

CONCLUSIONS AND RECOMMENDATIONS

The tidal monitoring of groundwater fluctuations in monitoring wells MW-1 and MW-2 has provided information from which we have estimated the hydraulic properties of water-bearing formations that will need to be dewatered to facilitate construction of the Pier 2 stormwater conveyance pond.

MW-1 is located in highly permeable material that exhibits a strong hydraulic connection to the tidal waters of Puget Sound. Required discharges from dewatering wells in this material would likely be high or very high, suggesting that construction of a cut-off wall may be required.

Cutoff walls are typically far more expensive to construct than dewatering wells, even when the wells need to be pumped at very high discharge rates to maintain temporary drawdown during construction. However, the indications from the high tidal efficiency and very short time lag observed at MW-1, suggest that highly permeable materials are present which may be close to the limit of dewatering well technology. Furthermore, the extent of these materials on the western side of the proposed stormwater pond has not been delineated through current explorations.

LIMITATIONS

We have prepared this analysis for the exclusive use of the Port of Anacortes, as it applies to the Pier 2 Stormwater Conveyance project. Our analysis addresses the evaluation of hydrogeologic conditions based on groundwater information collected from monitoring wells and compared with tidal measurements and predictions prepared by others. Our review should not be used for any other purpose. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in hydrogeology at the time of this review. No warranty or other conditions, express or implied, should be understood.



If you have any questions, please contact us.

Sincerely,
GeoEngineers, Inc.



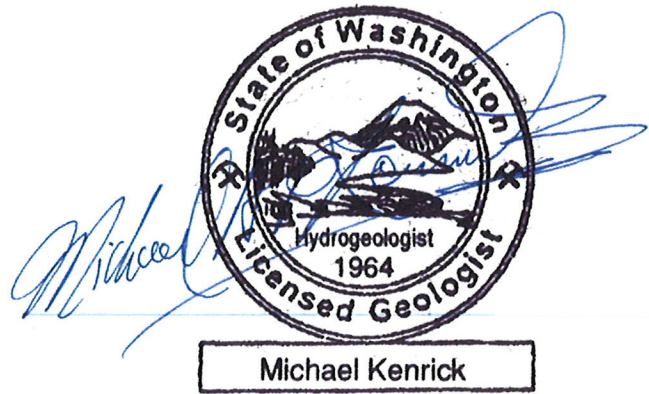
Aaron K. McCain, PE
Senior Geotechnical Engineer

AKM:MAPK:ims
<https://projects.geoengineers.com/sites/0514700404/Finals/Letter Report>

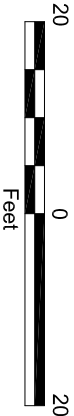
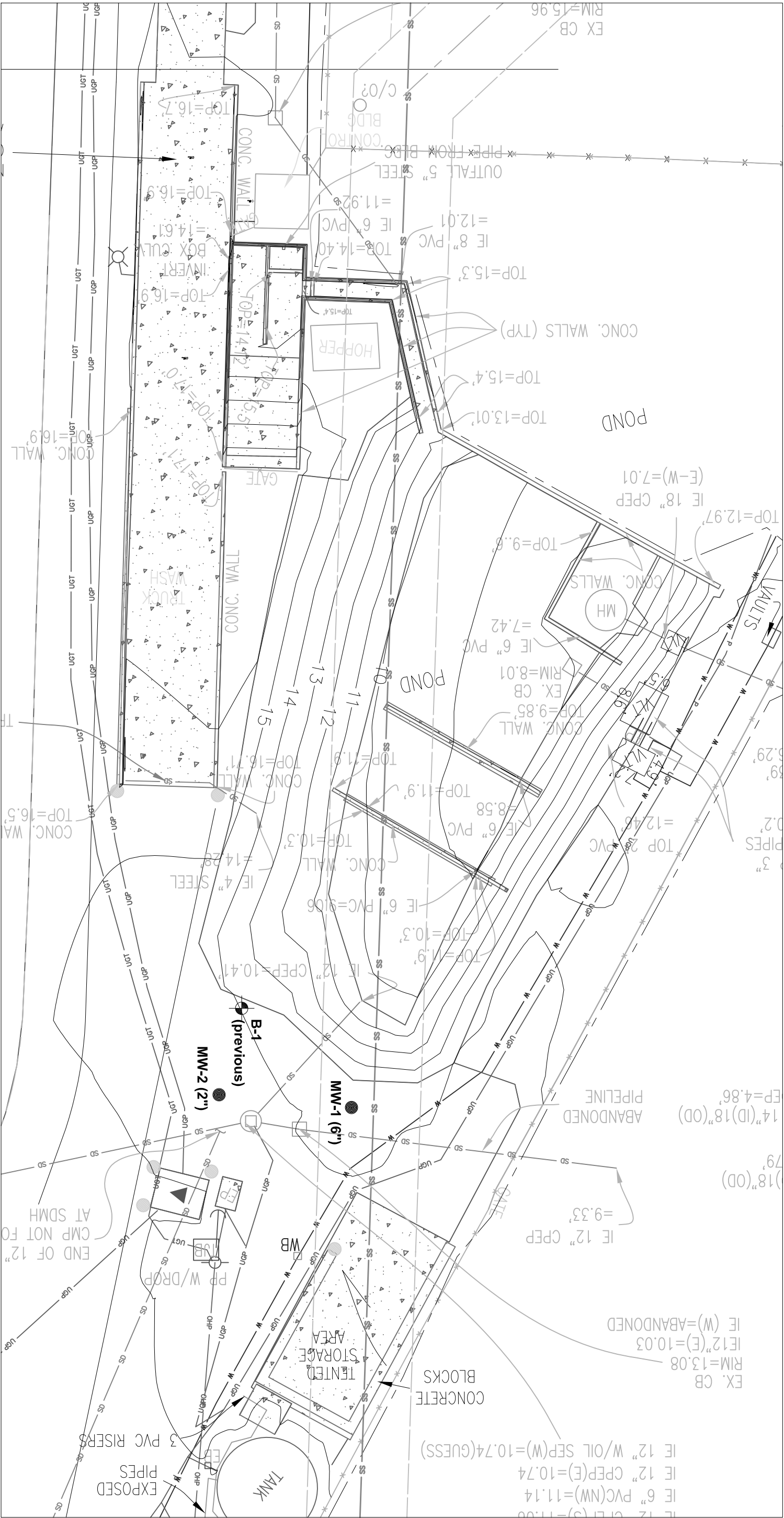
Attachments:

- Figure 1. Site and Exploration Plan
- Figure 2. Key to Exploration Logs
- Figures 3 and 4. Log of Monitoring Wells
- Figure 5. Log of Boring (from previous study)
- Figure 6. Monitored Tidal Effect, MW-1 & MW-2
- Figure 7. Predicted Tides: Anacortes and Friday Harbor
- Figure 8. Friday Harbor Tides: Predicted and Actual
- Figure 9. Anacortes Tide generated from Friday Harbor
- Figure 10. Tidal Evaluation for MW-1
- Figure 11. Tidal Evaluation for MW-2

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



Michael A.P. Kenrick, PE, LHG
Principal Hydrogeologist



- Legend**
- B-1 = Boring number and approximate location
 - MW-1 = Monitoring well number and approximate location

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base drawing provided by Kennedy/Jenks Consultants, Federal Way, Washington

Site and Exploration Plan	
Pier 2 Groundwater Stormwater Study Anacortes,, Washington	
	Figure 1

SOIL CLASSIFICATION

DDNONLESL

SOIL DESCRIPTIONS			SOILS		DESIGNATIONS	
			PO	LE		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)			WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		P	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)			SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
					CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
		SAND AND SANDY SOILS		S	WELL-GRADED SANDS, GRAVELLY SANDS	
				SP	POORLY-GRADED SANDS, GRAVELLY SAND	
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50			SILTY SANDS, SAND - SILT MIXTURES	
				S	CLAYEY SANDS, SAND - CLAY MIXTURES	
					INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY	
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50			INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
					ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
					INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS	
HIGHLY ORGANIC SOILS					INORGANIC CLAYS OF HIGH PLASTICITY	
					ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY	
				P	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	Standard Penetration Test (SPT)
	Shell tube
	Piston
	Direct Push
	Auger or Grab

Log count is recorded for drive samplers as the number of blows required to advance sampler 10 inches or distance noted. See exploration log for hammer weight and drop.

P indicates sampler pushed using the weight of the drill rig.

SOILS		DESIGNATIONS	
PO	LE		
		Cement Concrete	
		Asphalt Concrete	
		Crushed Rock/Quarry Spalls	
	S	Topsoil/Forest Duff/Sod	

- Measure groundwater level in exploration well or piezometer
- Groundwater observation at time of exploration
- Perched water observation at time of exploration
- Measure free product in well or piezometer
- Radiologic Log Contact
- Distinct contact between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Material Description Contact

- Distinct contact between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Laboratory Field Tests

- F Percent fines
- L Atterberg limits
- Chemical analysis
- P Laboratory compaction test
- S Consolidation test
- DS Direct shear
- Compressometer analysis
- Moisture content
- Moisture content at air-dry
- D Organic content
- P Permeability or hydraulic conductivity
- PP Pocket penetrometer
- S Sieve analysis
- Compressibility
- Compressive strength
- Shear

Shrinkage Classification

- NS No visible shrinkage
- SS Slight shrinkage
- S Moderate shrinkage
- S Severe shrinkage
- N Not tested

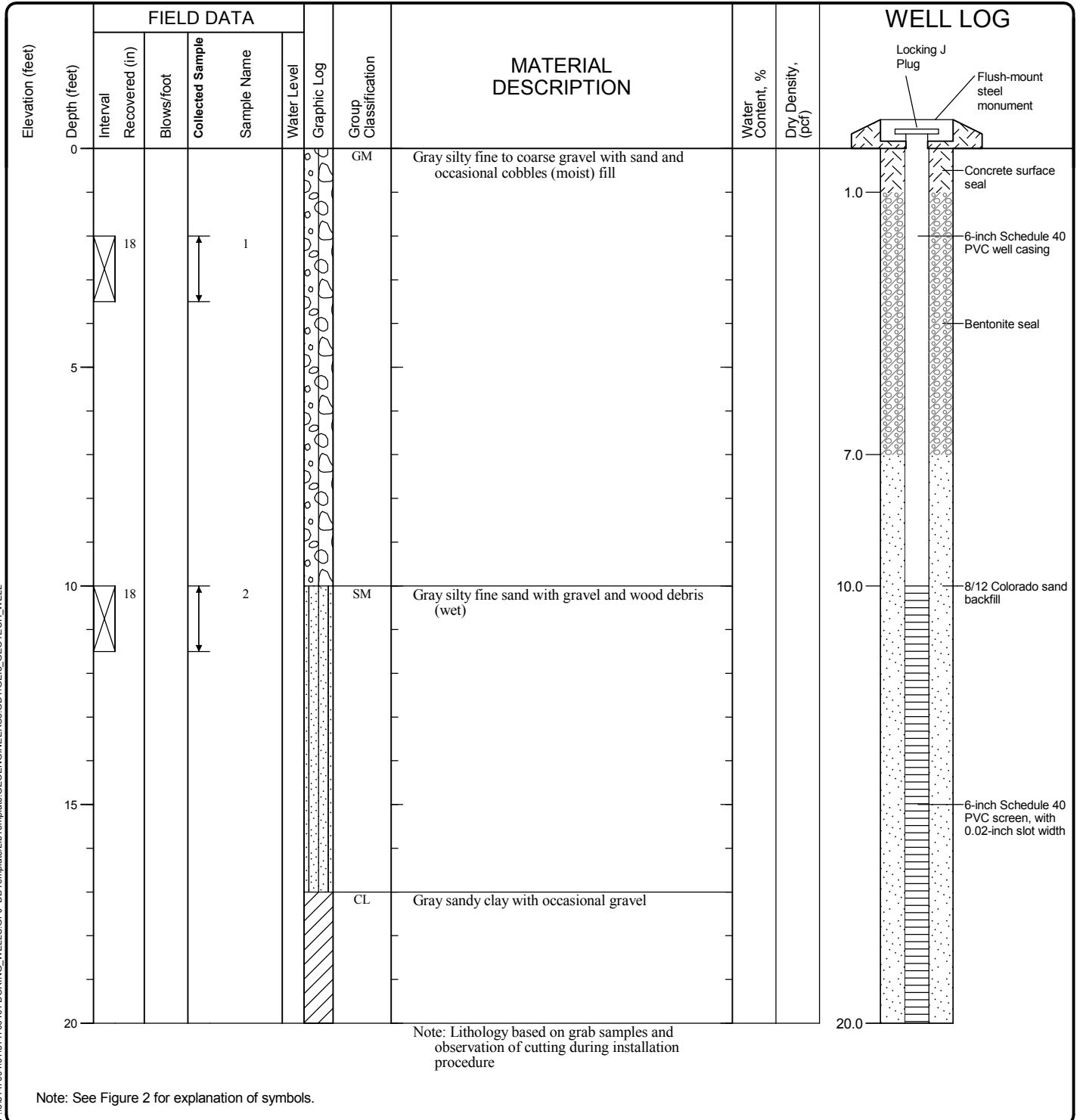
NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ENGINEERING PLANNING

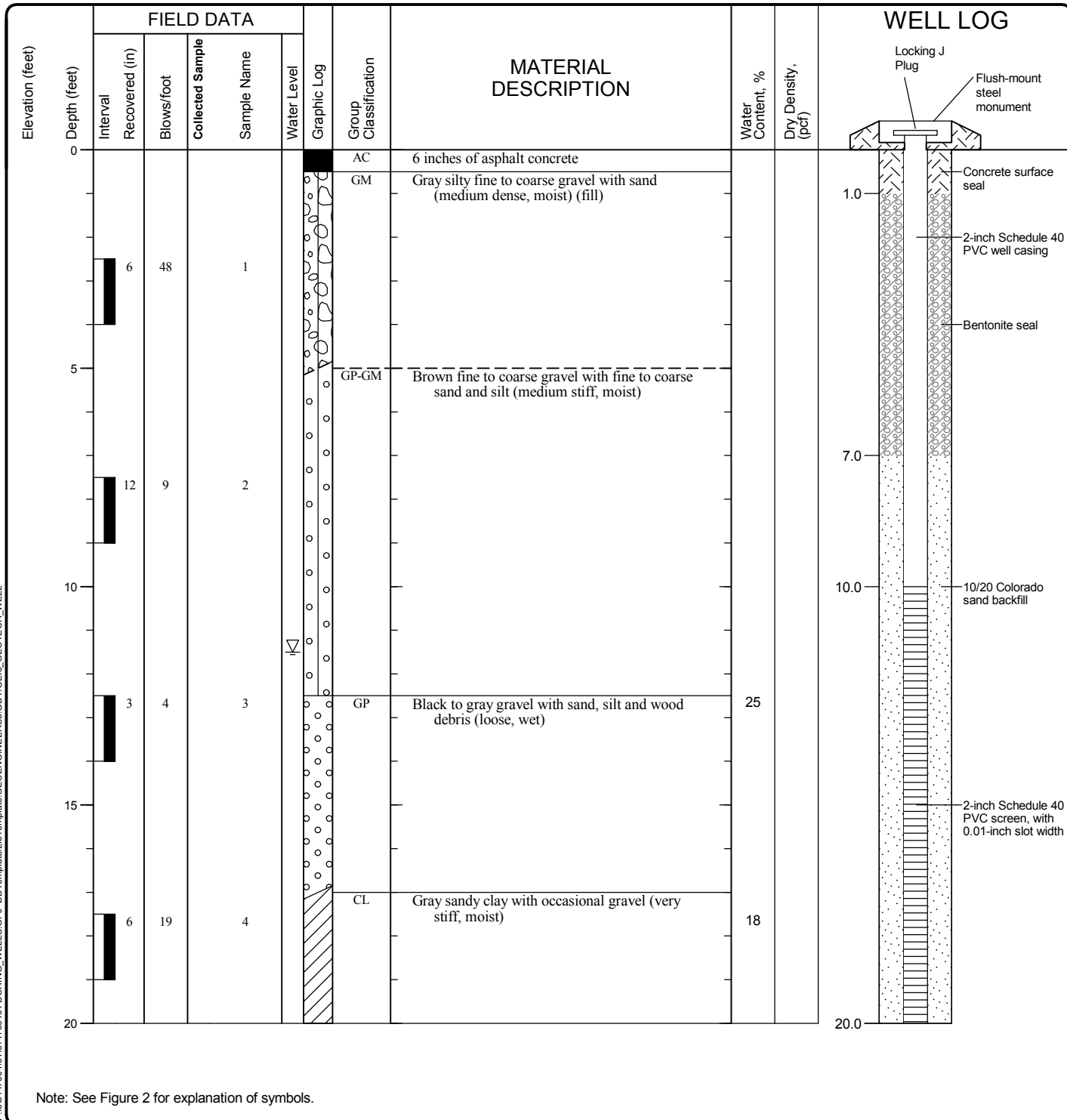


FEE

Drilled	<u>Start</u> 7/28/2010	<u>End</u>	Total Depth (ft)	20	Logged By Checked By	AJH AKM	Driller	EDI	Drilling Method	Hollow-stem Auger
Hammer Data	140 lb Autohammer			Drilling Equipment	Mobile B-61			Licencing agency well number: BCB-686 A 2 (in) well was installed on 7/28/2010 to a depth of 20 (ft).		
Surface Elevation (ft) Vertical Datum	Undetermined			Top of Casing Elevation (ft)	13.8			<u>Groundwater</u>		
Easting (X) Northing (Y)				System Datum				<u>Date Measured</u>	Depth to Water (ft)	Elevation (ft) Undetermined
Notes: Note: Lithology based on grab samples and observation of cutting during installation procedure										



Drilled	Start 7/28/2010	End		Total Depth (ft)	20	Logged By Checked By	AJH AKM	Driller	EDI	Drilling Method	Hollow-stem Auger
Hammer Data	140 lb Autohammer			Drilling Equipment	Mobile B-61			Licencing agency well number: BCB-687 A 2 (in) well was installed on 7/28/2010 to a depth of 20 (ft).			
Surface Elevation (ft) Vertical Datum				Undetermined		Top of Casing Elevation (ft)		14.4			
Easting (X) Northing (Y)						System Datum		Groundwater Date Measured: 7/28/2010 Depth to Water (ft): 11.5 Elevation (ft): Undetermined			
Notes:											



Log of Monitoring Well MW-2



Project: Pier 2 Stormwater Groundwater Study
 Project Location: Anacortes, Washington
 Project Number: 5147-004-04

Figure 4
 Sheet 1 of 1

Drilled <u>Start</u> 2/11/2010	<u>End</u>	Total Depth (ft) 31.5	Logged By RMB Checked By AKM	Driller Borettec, Inc.	Drilling Method Hollow-stem Auger
Hammer Data 140 (lbs) / 30 (in) Drop		Drilling Equipment EC Limited Access Rig		A (in) well was installed on to a depth of (ft).	
Surface Elevation (ft) Vertical Datum 14.0		Top of Casing Elevation (ft)		<u>Groundwater</u> Date Measured Depth to Water (ft) Elevation (ft) 10.5 3.50	
Easting (X) Northing (Y)		System Datum			
Notes: SPT					

FIELD DATA										WELL LOG		
Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)
0									AC	7 inches of asphalt concrete		
		6				1			GP	Gray fine gravel with sand and trace silt (medium dense, moist) (gravel base)		
									GW-GM	Brown fine gravel with silt and sand (medium dense, moist) (fill)		
5		12		55		2					6	
10		6		22		3				- becomes wet	16	
15		12		10		4			SM	Gray silty fine to medium sand with occasional shell fragments (loose, wet) (fill)		
									WD	Lumber mill wood fibers (fill)	21	
									SM	Gray silty fine sand with gravel, shell and wood fragments and silt lenses (loose, wet) (beach deposits)		
20												

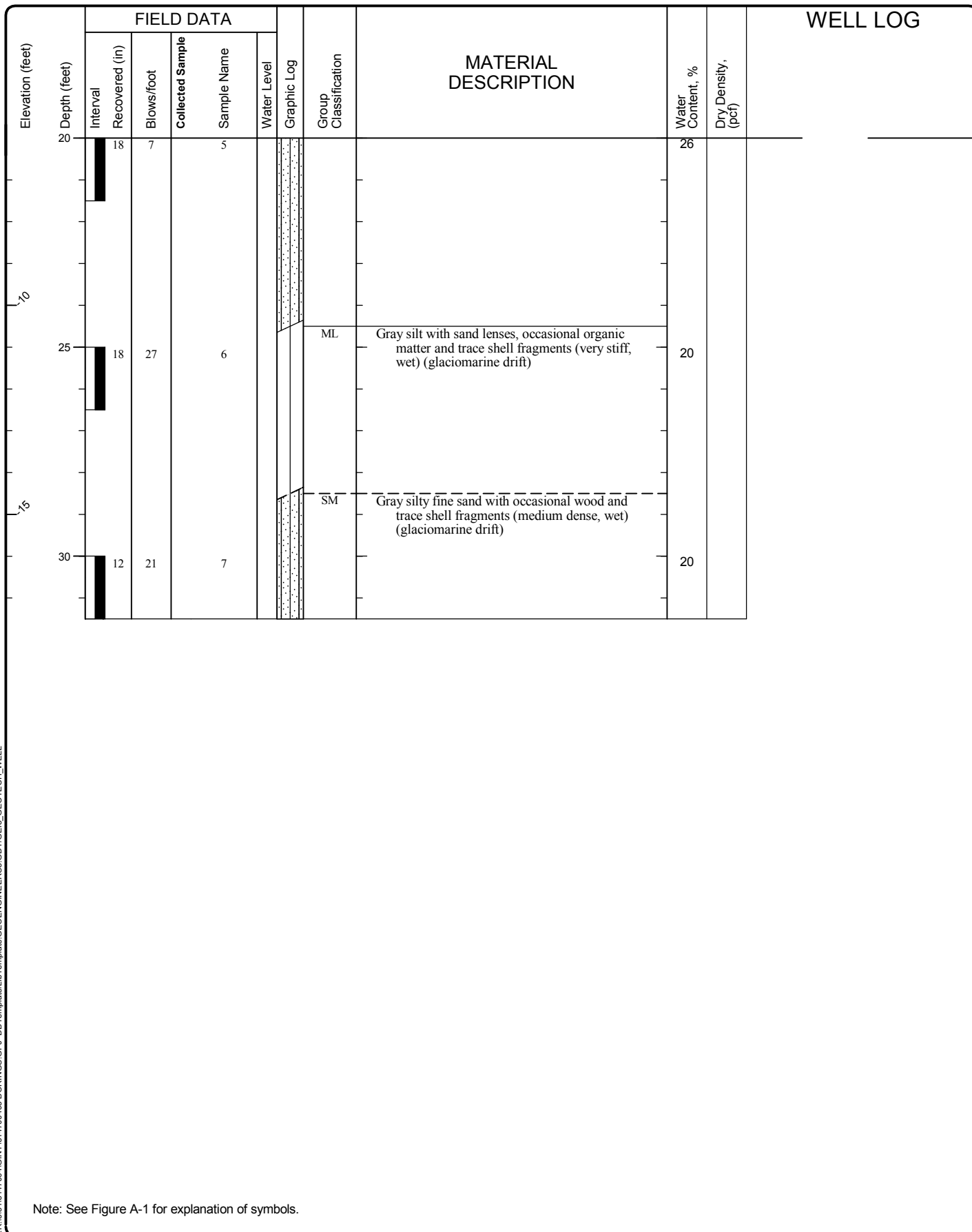
Note: See Figure A-1 for explanation of symbols.

Log of Boring B-1



Project: Pier 2 Stormwater Conveyance Design
 Project Location: Anacortes, Washington
 Project Number: 5147-004-04

Figure 5
 Sheet 1 of 2

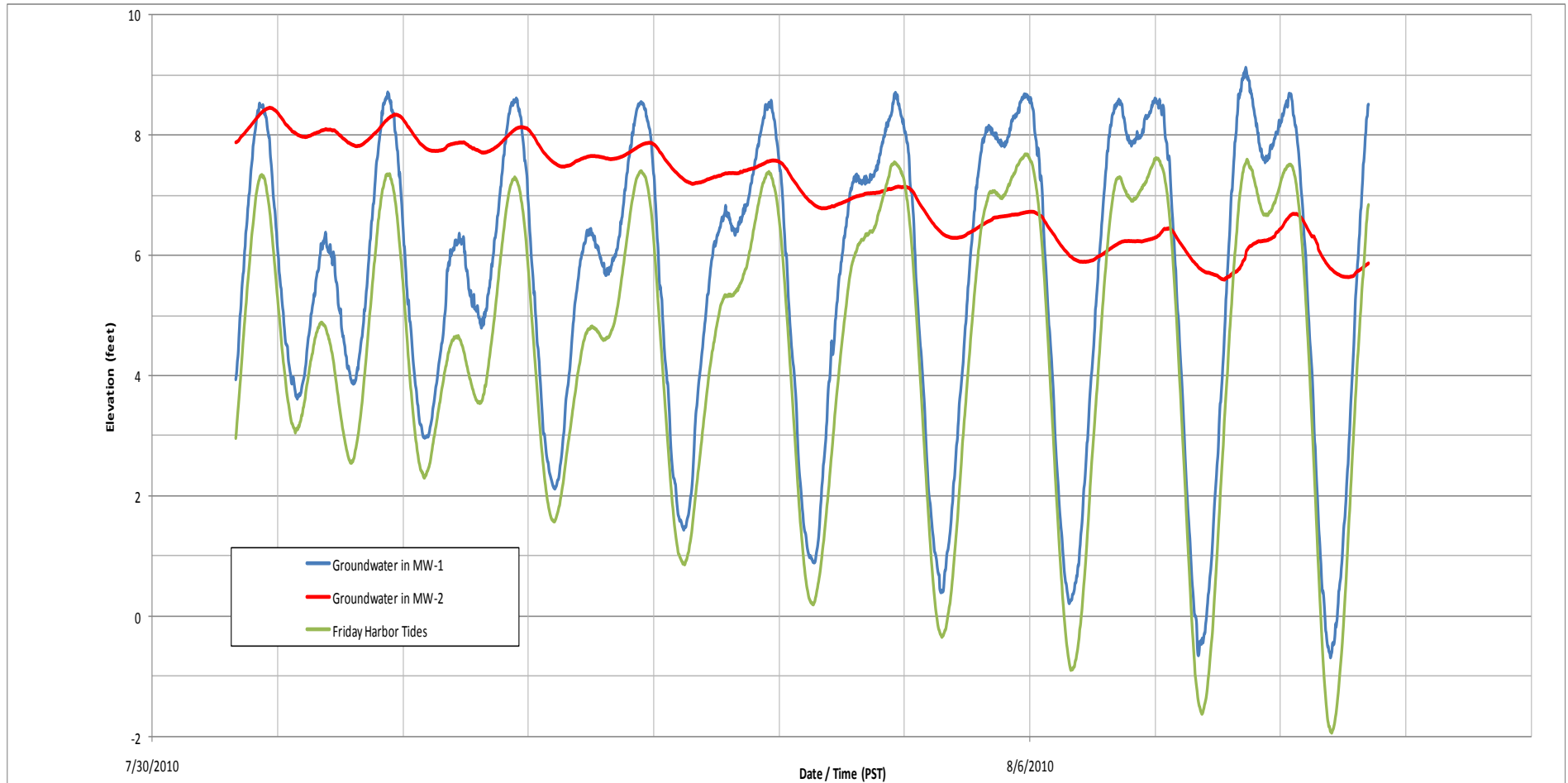


Log of Boring B-1 (continued)



Project: Pier 2 Stormwater Conveyance Design
 Project Location: Anacortes, Washington
 Project Number: 5147-004-04

Figure 5
 Sheet 2 of 2

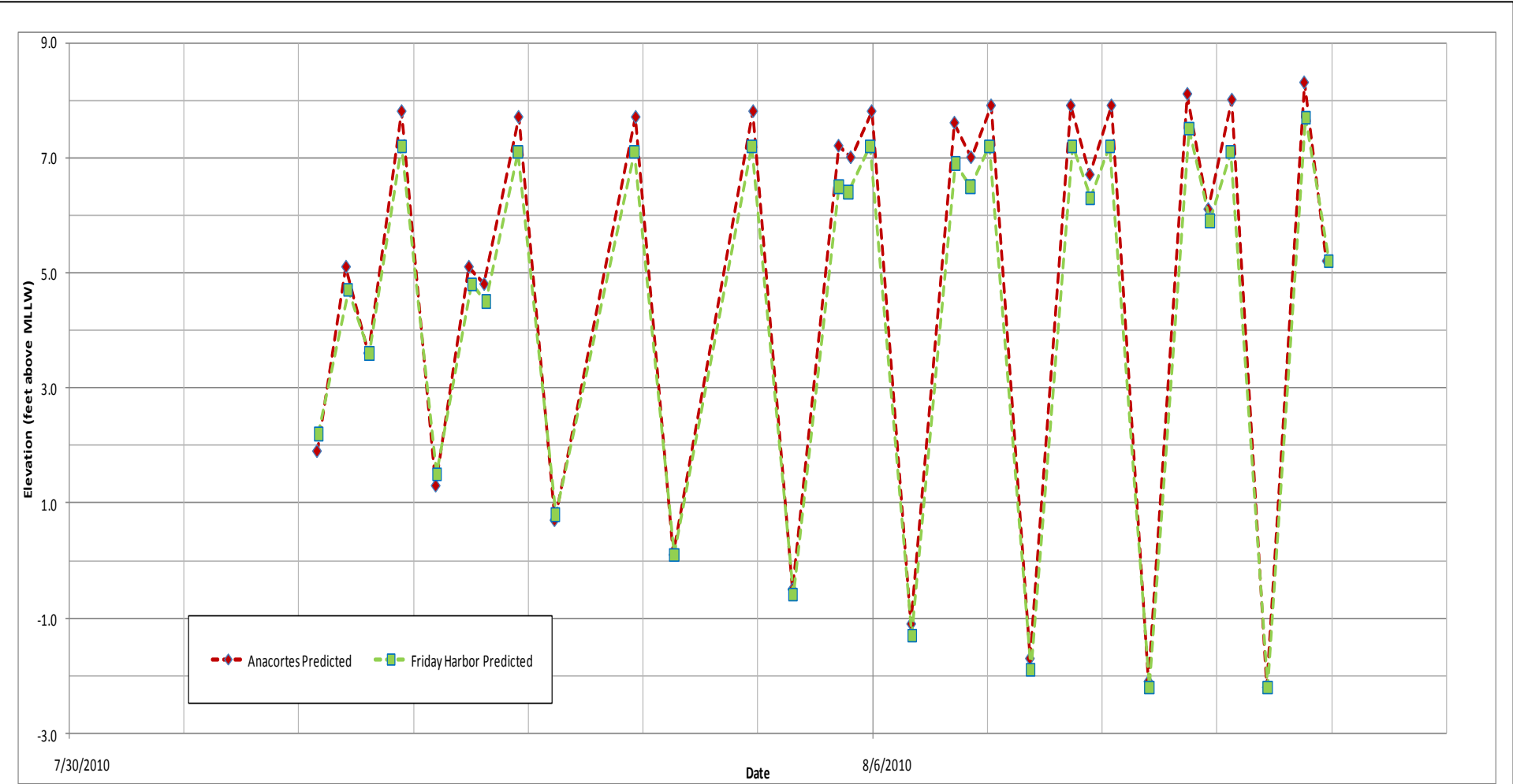


Monitored Tidal Effect: MW-1 and MW-2

Pier 2 Stormwater Groundwater Study
Anacortes, Washington



Figure 6

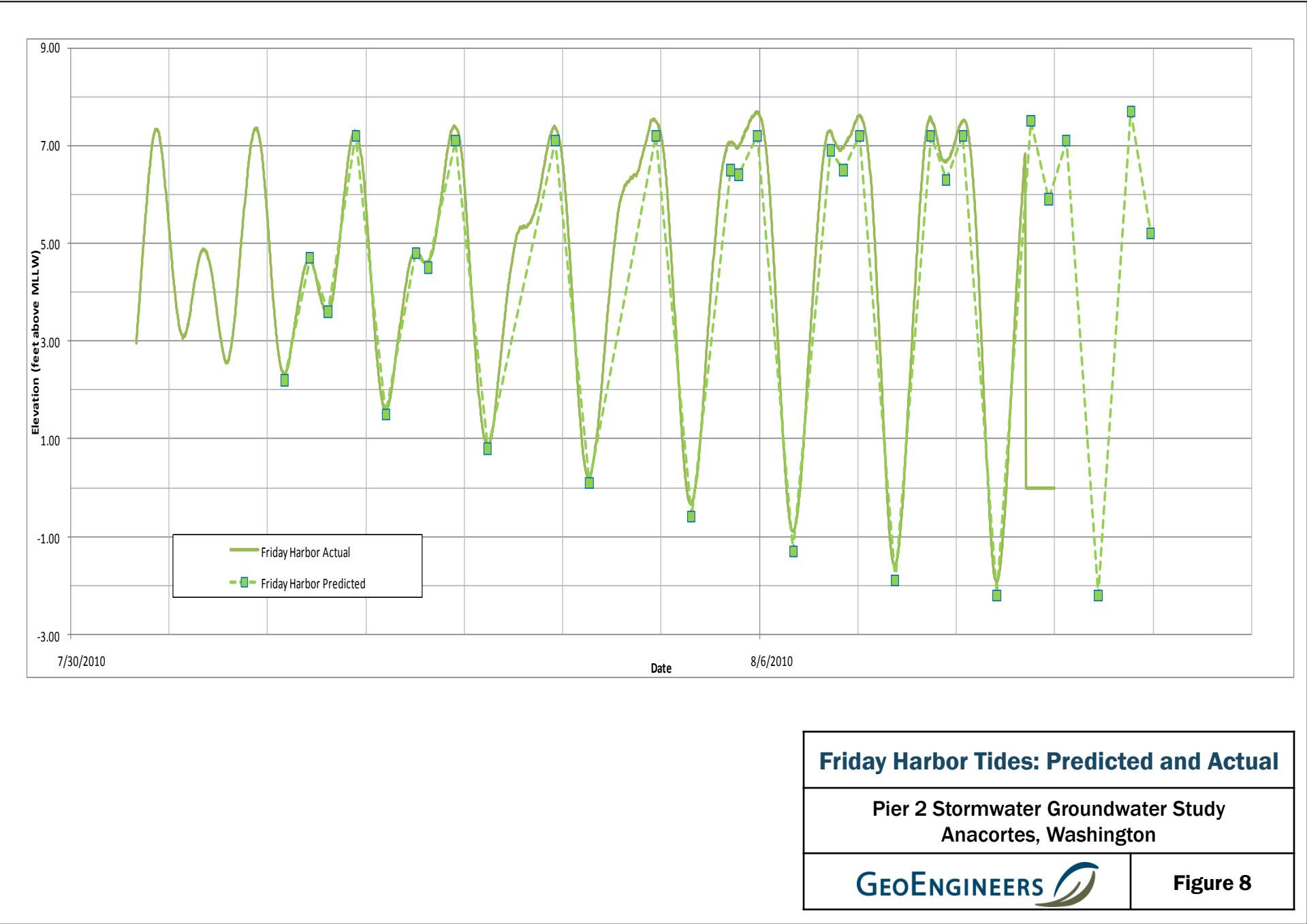


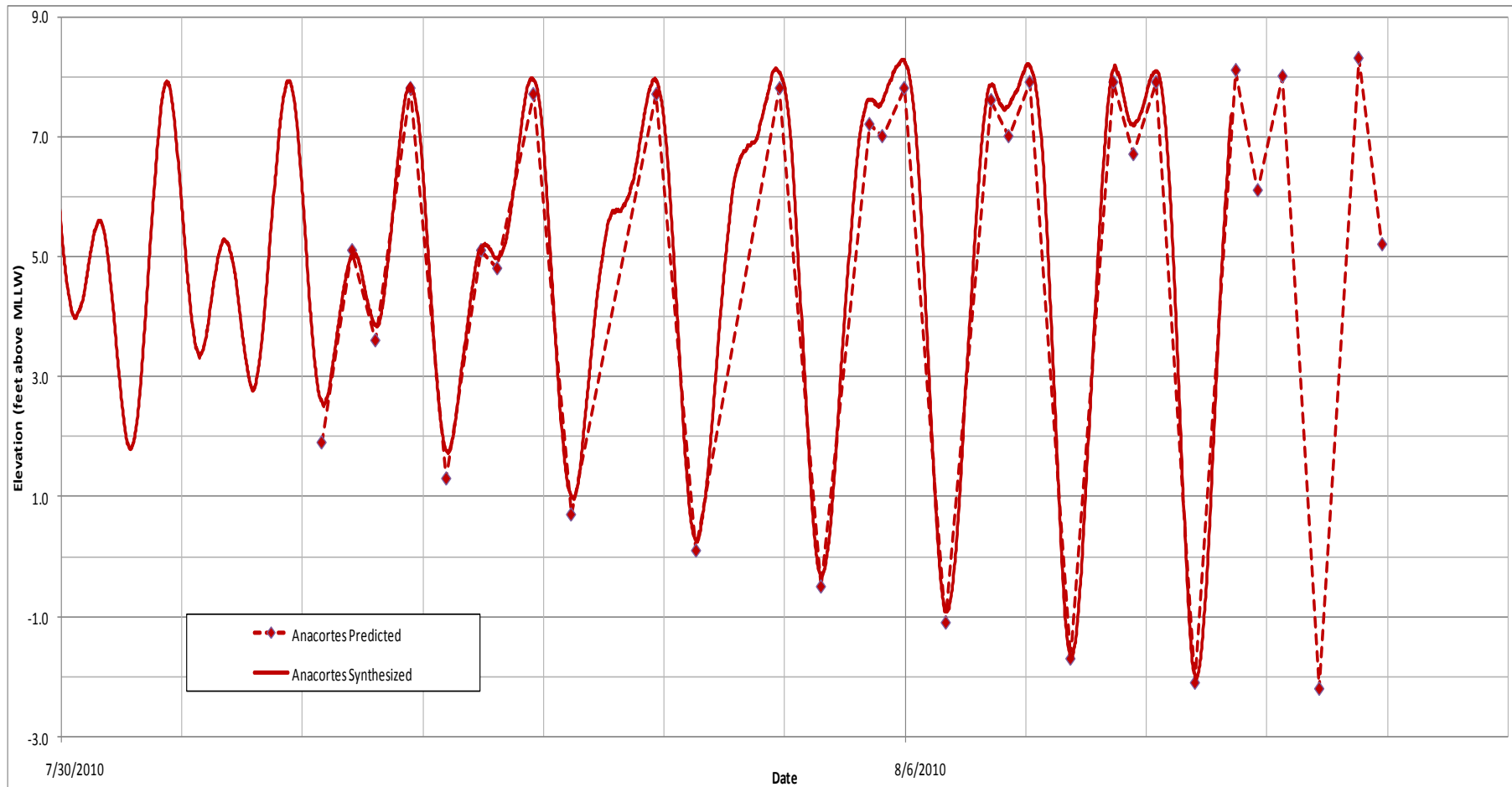
Predicted Tides: Anacortes and Friday Harbor

Pier 2 Stormwater Groundwater Study
Anacortes, Washington



Figure 7



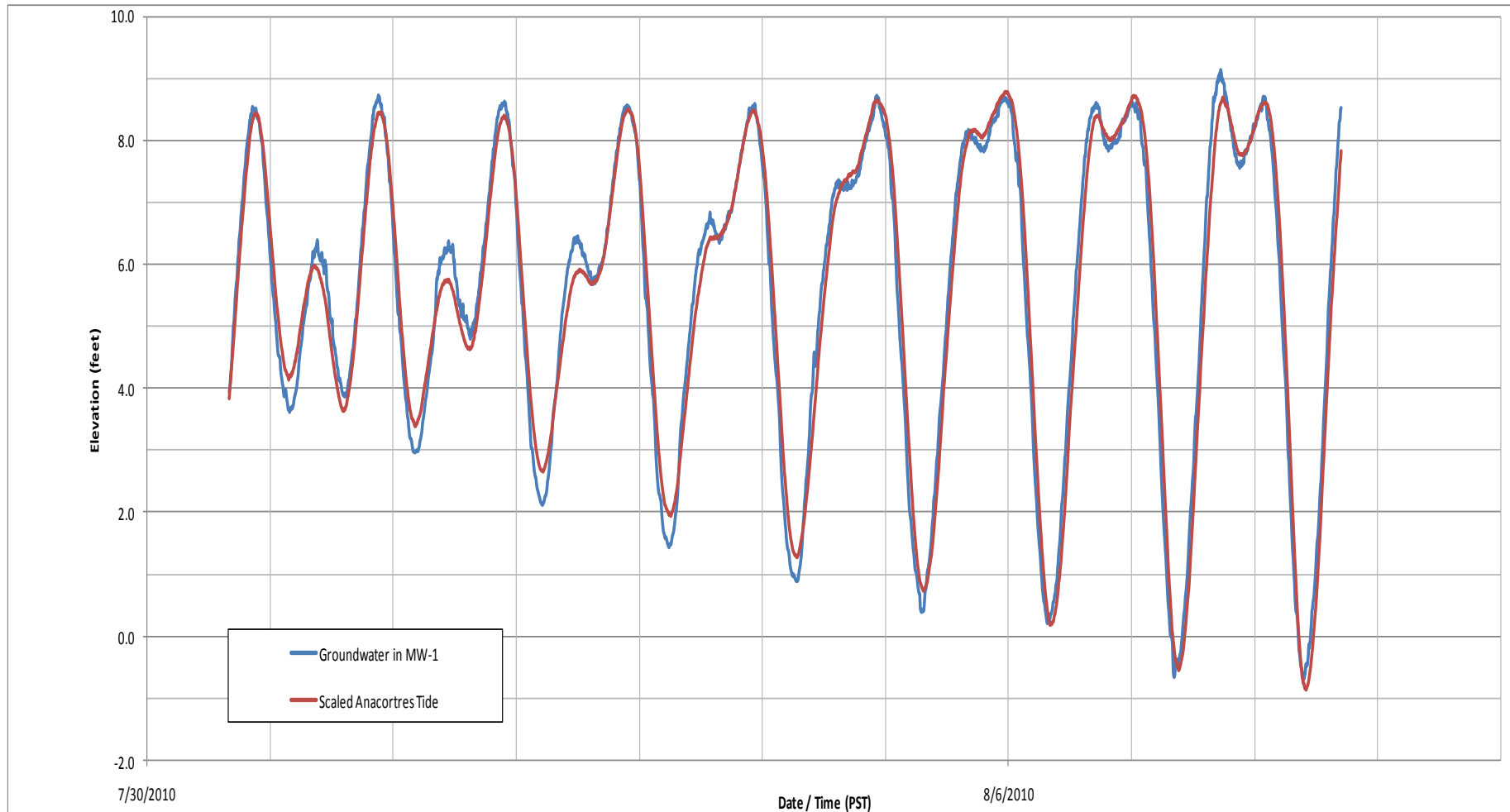


Anacortes Tide Generated From Friday Harbor

Pier 2 Stormwater Groundwater Study
Anacortes, Washington



Figure 9

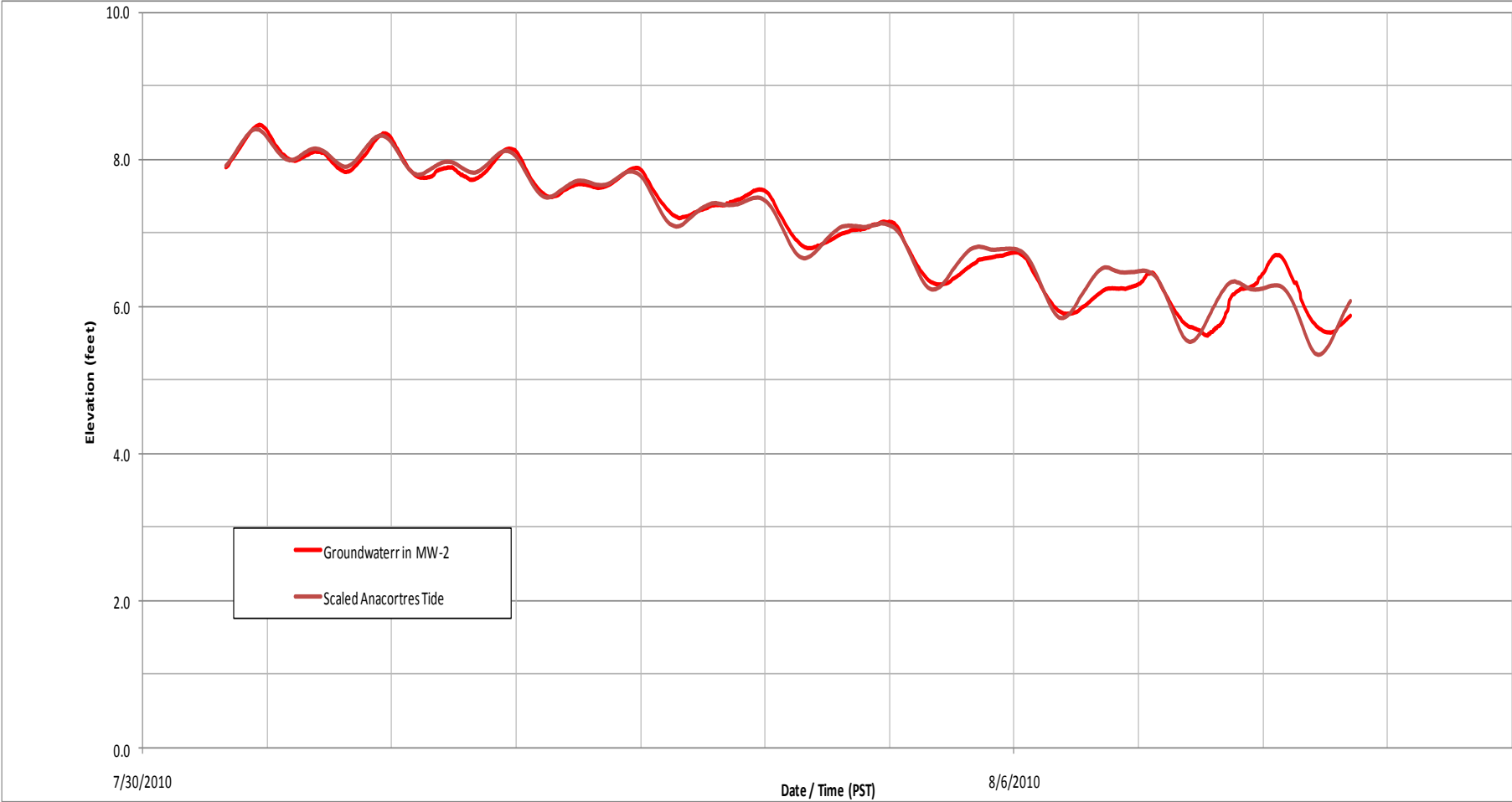


Tidal Evaluation for MW-1

Pier 2 Stormwater Groundwater Study
Anacortes, Washington



Figure 10



Tidal Evaluation for MW-2

Pier 2 Stormwater Groundwater Study
Anacortes, Washington



Figure 11



Planning, Community, & Economic Development Department
904 6th Street - P.O. Box 547 - Anacortes, WA 98221
360-299-1984 - pced@cityofanacortes.org

November 16, 2021

**RE: PRE-2021-0047 - Pre-Application Meeting – November 16th @ 1:30 PM
Pier 2 Stormwater Curb**

The comments below are provided after review by city staff of the materials provided in your submittal. City staff strive to provide a comprehensive review based on the information you provided and the codes and standards in place at the time of the review. Please note that these comments are preliminary in nature and are subject to change based on changed circumstances, changes in the proposal, changes in City policies and development regulations, and/or new information.

Project Description

The Port of Anacortes (Port) proposes construction of a site segregation curb between the Port of Anacortes' Pier 2 and Dakota Creek Industries Shipyard. The curb will segregate the two permitted industrial sites and prevent stormwater run-on and run-off entering and comingling. The curb will be 2-feet tall by 387-feet long, non-structural concrete curb inside of the chain link fence. The curb will be built upon a sub-base of WSDOT Maintenance Rock (WSDOT Spec 9-03.9(4)) and crushed surface base course with a geotextile liner. The curb will be reinforced with rebar and is not designed for structural loads.

Applicant(s)

Kevin Anderson, Port of Anacortes

City Department Comments (received as of November 16, 2021):

Department	Comments
Public Works – Engineering Steve Lange, Senior Engineering Tech stevel@cityofanacortes.org - 360-661-3468	1. The applicant should provide a drainage report for the project that identifies the changes to the drainage flows for Pier 2 and the DCI property and any impacts to the pond. Since the date of pond construction flow from the pond to the water treatment plant has exceeded the agreed upon quantity by 40%. It is Public Works belief that no process water from DCI should be being directed to the wastewater treatment plant via the Pier 2 pond or otherwise. 2. The complete GFCs have not been paid for the Pier 2 Pond. These fees need to be paid in full. 3. The City has an easement for the sewer treatment plant outfall in the vicinity of the project. The City is currently working on a repair project on this pipe line. The Port shall provide a indemnification agreement holding the City harmless for all eventualities relating to the Pier 2 and DCI properties, including but limited to damage to any port facilities, any stormwater permit violations, any interruptions to port operations and/or site contamination
Water Terry Nemeth, Water Supervisor	No water issues at this time

terrryn@cityofanacortes.org – 360-661-3519	
Sanitation Matt Koegel	<i>All good from solid waste</i>
Building Rob Frisinger , Deputy Building Official	<i>Project occurs within the regulatory flood zone. Floodplain Development permit is required. Survey with datum used is required, but project appears to be above the BFE, and likely only in the floodplain due to poor mapping resolution. Building has no other concerns.</i>
Fire Jack Kennedy , Fire Marshall	<i>No Fire issues.</i>

Planning, Community & Economic Development Comments

General:

- It was noted during the preapplication meeting that resolution to items number 2 and 3 in the Public Works – Engineering Department comments (above) are currently being addressed at Port and City leadership levels.

Stormwater:

- According to the materials submitted, the purpose of the curb is to segregate two permitted industrial sites (DCI and Pier 2) and prevent stormwater run-on and run-off entering and comingling. Please address where, after placement of the curb, the water no longer entering the Pond will flow, and how it will be managed to conform to all applicable stormwater and water quality regulations and permit authorizations.

Zoning Requirements:

- The project site is in the Manufacturing & Shipping Zone.

Shoreline Master Program (SMP) Requirements:

- The project site is located within shoreline jurisdiction. The shoreline environment designation is Urban Maritime.
- The proposal must conform to all applicable SMP goals, policies, and regulations. Within the application's project narrative, please provide a written description of project conformance with each of the applicable provisions within the following SMP chapters and sections, including but not limited to:
 - Section 5.11 Urban Maritime
 - DR-5.11.3 – No net loss of shoreline ecological function shall result from new development.
 - DR-6.4.22 – All development activities approved under this Shoreline Master Program shall be designed and maintained consistent with the City's Stormwater Management [Regulations] and Engineering Design Standards.

Critical Areas:

- FEMA Floodplain - Special flood hazard area (Zone AE, EL 9')
- Geologically Hazardous Areas - Tsunami Hazard and Seismic Hazard Area

Permits Needed:

- ***Shoreline Substantial Development Permit (Type 3-PC)***

- [Neighborhood Meeting](#) is required prior to determining any application complete.
- [Master Land Use Application](#)
- [SSDP submittal requirement checklist](#)
 - On the site plan, please include the applicable items listed in [WAC 173-28-180\(9\)](#) and all utilities and easements located within the project vicinity.
- [Floodplain Development Permit](#)

FEES	Estimated Fees. Listed fees are current as of the date of this letter. All fees are subject to change, and it is the applicant's responsibility to obtain the most current fees when budgeting for a project. Land Use Permit Fees
-------------	--

Please contact me at 360-299-1986 or libbyb@cityofanacortes.org if you have any questions.

Sincerely,



Libby Grage
Planning Manager



**Pier 2 Site Segregation Curb
Neighborhood Meeting Notes
12/7/2021
6:00 PM – 7:00 PM**

Convened electronically at:
<https://www.gotomeet.me/POANeighborhoodMeeting>

Meeting transcript and recording: No recording

Agenda:

1. Introductions
2. Site Segregation Curb Outline
3. Comments and Questions
4. Adjournment

Attendees:

Kevin Anderson (facilitator), Environmental Specialist, Port of Anacortes

Brad Tesch, Project Manager II, Port of Anacortes

Libby Grage, Planning Manager, Department of Planning, Economic, and Community Development,
City of Anacortes

Minutes:

Meeting held at 6:00 PM. BT and LG were only attendees. Waited until 6:15 for any attendees. None attended.
No presentation as both BT and LG are familiar with project specifics. Meeting adjourned at 6:15 pm.



NOTICE OF APPLICATION & PUBLIC HEARING

SCAN HERE TO VIEW
Application Materials:



File Number: SDP-2022-0001

Property Owner: Port of Anacortes

Applicant: Kevin Anderson, Port of Anacortes

Date of Application: February 1, 2022

Date of Completeness: February 3, 2022

Project Location: 718 4th Street (P56533)

NOTICE IS HEREBY GIVEN THAT AN APPLICATION WAS MADE FOR THE FOLLOWING PROPOSAL:

The applicant has requested a shoreline substantial development permit for the installation of a segregation curb. The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties. The property located is partially within "Urban Maritime" Shoreline Environment Designation and is zoned Manufacturing & Shipping (MS).

SEPA Review: The Port of Anacortes, as lead agency, determined the scope of the curb installation project would be categorically exempt from SEPA Review per WAC 197-11-800(1)(a) and (23)(b).

Existing Environmental Documents: Geotechnical Report

Public Comment Period: The joint Notice of Application and Public Hearing was published on February 9th, 2022. Written comments must be submitted to the contact person listed below by **5:00 PM on March 11th, 2022**

Open-Record Decision Hearing: A virtual open-record decision hearing to make a decision on the application will be held by the Planning Commission on **March 23rd, 2022 at 6:00 pm** via Zoom video conferencing.

- Virtual meeting participation instructions and connection information can be viewed here: <https://www.anacorteswa.gov/700/Meeting-Documents-and-Video>. Meeting attendance options will be posted on the applicable agenda published the week before the meeting. Hearings will be conducted in accordance with the rules of procedure adopted by the hearing body. Members of the public who require special assistance to participate in or access the public hearing may contact the [City Clerk](#) 24 hours before the meeting to make special arrangements. Dial 360-299-1960.

ANY PERSON HAS THE RIGHT TO RECEIVE NOTICE, PARTICIPATE IN ANY HEARINGS, REQUEST A COPY OF THE FINAL DECISION AND APPEAL THE DECISION AS PROVIDED BY LAW.

Document Availability: Application documents may also be reviewed at <https://www.anacorteswa.gov/161/Planning-Community-Economic-Development> by clicking "**View Current Projects**"

For Project Information: Emily Morgan, Senior Planner; Phone: (360) 298-4350

Email: emilym@cityofanacortes.org; City of Anacortes, P.O. Box 547, Anacortes, WA 98221

ADVERTISING PROOF

1215 Anderson Rd,
Mount Vernon, WA 98274
Ph. Fax: (907) 452-5054



STANWOOD CAMANO NEWS

BILLING DATE:	ACCOUNT NO:
02/04/22	45993



CITY OF ANACORTES
PO BOX 547
ANACORTES, WA 98221

NOTICE OF APPLICATION & PUBLIC HEARING

AD #	DESCRIPTION	START	STOP	TIMES	AMOUNT
200420	NOTICE OF APPLICATION	02/09/22	02/09/22	2	\$142.10

File Number: SDP-2022-0001

Property Owner: Port of Anacortes

Applicant: Kevin Anderson, Port of Anacortes

Date of Application: February 1, 2022

Date of Completeness: February 3, 2022

Project Location: 718 4th Street (P52904)

NOTICE IS HEREBY GIVEN THAT AN APPLICATION WAS MADE FOR THE FOLLOWING PROPOSAL:

The applicant has requested a shoreline substantial development permit for the installation of a segregation curb. The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties. The property located is partially within "Urban Maritime" Shoreline Environment Designation and is zoned Manufacturing & Shipping (MS).

SEPA Review: The Port of Anacortes, as lead agency, determined the scope of the curb installation project would be categorically exempt from SEPA Review per WAC 197-11-800(1)(a) and (23)(b).

Existing Environmental Documents: Geotechnical Report

Public Comment Period: The joint Notice of Application and Public Hearing was published on February 9th, 2022. Written comments must be submitted to the contact person.

Payments:

Date	Method	Card Type	Last 4 Digits	Check	Amount
------	--------	-----------	---------------	-------	--------

Discount: \$0.00
Surcharge: \$0.00
Credits: \$0.00

Gross: \$142.10
Paid Amount: \$0.00

Amount Due: \$142.10

We Appreciate Your Business!

AD# 200420

mitted to the contact person listed below by **5:00 PM on March 11th, 2022**

Open-Record Decision

Hearing: A virtual open-record decision hearing to make a decision on the application will be held by the Planning Commission on **March 23rd, 2022 at 6:00 pm** via Zoom video conferencing.

* Virtual meeting participation instructions and connection information can be viewed here: <https://www.anacorteswa.gov/700/Meeting-Documents-and-Video>. Meeting attendance options will be posted on the applicable agenda published the week before the meeting. Hearings will be conducted in accordance with the rules of procedure adopted by the hearing body. Members of the public who require special assistance to participate in or access the public hearing may contact the City Clerk 24 hours before the meeting to make special arrangements. Dial 360-299-1960.

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Document Availability:

Application documents may also be reviewed at <https://www.anacorteswa.gov/161/Planning-Community-Economic-Development> by clicking “**View Current Projects**”

For Project Information:

Emily Morgan, Senior Planner; Phone: (360) 298-4350

Email: emilym@cityofanacortes.org; City of Anacortes, P.O. Box 547, Anacortes, WA 98221

**Published
February 9, 2022
AA-200420**

AFFIDAVIT OF POSTING

City of Anacortes Planning, Community, & Economic Development

I, **Emily Morgan**, declare under the penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

That on **February 9, 2022**, the general notice of land use action containing the permit #, applicant name and a description of the proposal for a **SDP-2022-0001**, was posted on the subject property.

Emily Morgan

Signature

02.09.2022

Date



Land Use Permit Application - Departmental Review

Designated staff in each identified department review and comment on the permit application. Managing Planner uploads comments received from identified outside agencies and from the public during the comment period.

Application Information

Routing Date *

2/3/2022

Application Date *

2/1/2022

Managing Planner *

Emily Morgan

Planner Phone

360-298-4350

Permit Number *

SDP-2022-0001

Applicant Name *

PORT OF ANACORTES

Applicant Email *KEVIN.ANDERSON@PORTOFANACORTES.ORG**Applicant Phone**

(360) 299-1814

Applicant Address *

100 COMMERCIAL AVE ANACORTES, WA 98221-1560

Parcel(s)

Parcel No.

52904

Project Name *

POA Pier 2 Segregation Curb

Project Contact *

PORT OF ANACORTES

Project Contact Email *KEVIN.ANDERSON@PORTOFANACORTES.ORG**Project Address ***

718 4TH ST ANACORTES, WA 98221

Project Description *

Shoreline Substantial Development Permit for the installation of a segregation curb to prevent stormwater runoff

Review Type *

Type 3 - PC

Review Type Description *

Planning Commission Decisions

SEPA Type *

Exempt

Is this permit related to other current or prior permit applications? *

☒ Yes ☐ No

Child Permits

Subordinate permits submitted for approval in conjunction with this primary permit

Permit	Description
--------	-------------

Related Permits

Previously approved permits related to this primary permit

Permit	Description
--------	-------------

PRE-2021-0047	Construct a site segregation curb between the POA Pier 2 and Dakota Creek Industries Shipyard. The curb will segregate the two permitted industrial sites and prevent stormwater run-on and run-off entering and comingling. The curb will be 2-feet tall by 387-feet long non-structural concrete curb inside of the chain link fence.
---------------	---

Reviewer Selection

Comment Period (CD from NOA) *	Comment Period End Date *	Applicant Comment Response Due
30	3/11/2022	3/18/2022

Departmental Review Required by *

Please check all City departments that must review this application. Other members of the DRG list will be notified of the application and will receive a link to view the application packet but the review process will not wait for their feedback.

- | | | |
|--|---|--|
| ☒ Building | ☒ Engineering | ☐ Fiber |
| ☐ Fire | ☐ Legal | ☐ Museum |
| ☒ Operations | ☐ Parks | ☐ Police |
| ☐ Sanitation | ☐ Streets | ☒ Water Distribution |
| ☒ WWTP | ☐ N/A | |

Outside Review

Select which outside agencies and utilities you would like to invite to comment on the application.

Type *	Agency *	Email *
Federal	US Army Corps of Engineers	Ronald.J.Wilcox@usace.army.mil
State	Department of Archaeology & Historic Preservation (DAHP)	sepa@dahp.wa.gov
State	Department of Ecology (DOE) - Shorelines	mari461@ecy.wa.gov
State	Department of Fish and Wildlife (WDFW) - Area habitat biologist (marine)	Robert.Warinner@dfw.wa.gov
State	Department of Natural Resources (DNR) - Aquatics Land Management	Ross.Zimmerman@dnr.wa.gov
State	Department of Natural Resources (DNR) - SEPA Center	sepacenter@dnr.wa.gov
Tribes	Samish Indian Nation - Planning	twoard@samishtribe.nsn.us
Tribes	Sauk-Suiattle Tribe	thpo@sauk-suiattle.com
Tribes	Skagit System Cooperative	swalsh@skagitcoop.org
Tribes	Skagit System Cooperative - Environmental Protection Ecologist	nkammer@skagitcoop.org
Tribes	Stillaguamish - Historic Preservation	THPO@stillaguamish.com
Tribes	Swinomish Tribe - Planning & Transit	permits@swinomish.nsn.us

Tribes

Upper Skagit Tribe

sschuyler@UPPERSKA
GIT.com

Reviewer Comments

Application is *

☒ Complete ☐ Voided

Comments due by:

3/11/2022

Staff Comments

Enter your comments in the blank row below, or click Next Reviewer to create a new row for your remarks. You may Upload Word or PDF files with your remarks.

Commenter	Dept	Comments	Upload
Lange, Steve	Engineering	The concern is sending additional water to the POA pond that is being processed by the City's WWTP. Based on the meeting conversation with the POA at the DRG meeting, this will help reduce the amount of water going to the POA pond.	
Nemeth, Terry	Water	No water issues at this time	
Frisinger, Rob	Building	Building has no concerns. Port elevation studies show the curb as being above the flood zone. So no flood permit is required.	
Fox, Becky	WWTP	No wastewater issues. POA pond discharge to WWTP controlled during peak WWTP flows, curb will not impact WWTP.	

Agency Comments

Commenters will automatically be emailed notification of the decision.

Commenter	Commenter Email	Comment
		Initial

Public Comments

Commenters will automatically be emailed notification of the decision.

Commenter	Commenter Email	Comment
		I n i t i a l



ANACORTES PLANNING COMMISSION

Findings of Fact, Conclusions of Law and Decision

File Number	SDP-2022-0001
Project Name	Port of Anacortes Pier 2 Segregation Curb
Proposal	The Port of Anacortes has requested a shoreline substantial development permit for the installation of a segregation curb. The proposed curb would be installed between adjoining Port owned properties for the purpose of preventing stormwater runoff and to provide a durable demarcation between the properties.
Public Hearing & Decision Body	Anacortes Planning Commission
Public Hearing Date	March 23, 2022
PC Deliberations	March 23, 2022
Exhibits	A. Staff Report B. SSDP Application Materials C. Noticing Materials D. Comments

Documents are available at City Hall in the Planning, Community, and Economic Development Department or may be accessed on the public portal:

<https://docs.cityofanacortes.org/WebLink/Browse.aspx?dbid=0&startid=434848&row=1>

After considering the written and spoken comments and considering the record before it, the Planning Commission enters the following findings of fact, conclusions of law, and decision:

Findings of Fact & Conclusions of Law

1. The Staff report dated March 17, 2022, accurately describes the project proposal and is hereby incorporated by reference. (Exhibit A)
2. The following members of the public provided testimony during the public hearing: N/A
3. The following additional exhibits were entered into the record at the public hearing: N/A
4. The following additional Findings of Fact and/or Conclusions of Law are entered: N/A

Decision

Based on the foregoing findings and conclusions of law, and review of the City's regulatory authority to implement the policies, standards, and regulations of the Anacortes Municipal Code,

the Planning Commission hereby makes the following decision regarding the subject Shoreline Substantial Development Permit:

- ☒ Approve with Conditions
☐ Approve
☐ Deny

Subject to staff's recommended conditions in the Staff Report dated March 17, 2022.

PLANNING COMMISSION VOTE				
Planning Commissioners	Support	Oppose	Absent	Abstain
Frank Jeretzky				
Jack Curtis				
Sarah Ruether				
Linda Martin				
Gary Molyneaux				
Jeff Graf				
Ward MacKenzie				
TOTAL				

ANACORTES PLANNING COMMISSION
Anacortes, Washington

Ward MacKenzie
Planning Commission Chair

Date

Appeals

Pursuant to AMC 19.20.030, a local appeal of Type 3-PC Planning Commission Decisions is available to the City Council. Appeals of this decision must be filed in accordance with AMC 19.20.180 by 5:00 PM, 21 days from the date the WA Dept. of Ecology receives the decision.



Planning Commission Agenda Bill

Meeting Date: March 23, 2022 **Agenda Item:** D.3.

Subject: 2021 Docket of Comprehensive Plan and Development Regulation Amendment Work Session

Staff Contact: LIBBY GRAGE

Approved for Submittal to Commission by

LIBBY GRAGE
DON MEASAMER

Action Type

Discussion

Summary Statement: Staff will provide a review of the petitions that were docketed for consideration as part of the 2021 Comprehensive Plan and Development Regulations Amendment Docket. The Planning Commission will have the opportunity to ask staff questions about the proposal prior to a public hearing. No public testimony will be taken as part of this agenda item. More information is available at <https://www.anacorteswa.gov/1321/Comprehensive-Plan-Amendments>.

Background: Citizen initiated petition application materials can be found here: <https://www.anacorteswa.gov/1321/Comprehensive-Plan-Amendments>

Previous Action: On July 12, 2021, the City Council adopted [Resolution 3042](#) establishing the 2021 Docket of Comprehensive Plan and Development Regulation Amendments.

Competing Viewpoints Considered: A written public comment period and public hearing will be advertised and held in the upcoming weeks.

Recommended Motion: N/A - No action is requested.

Alternative Actions: N/A

Attachments (listed in order presented):

1. Memo to PC, 3/10/21
2. Resolution 3042



Planning, Community, & Economic Development Department
Don Measamer, Director

Memorandum

To: Anacortes Planning Commission
Date: March 10, 2022
From: Libby Grage, Planning Manager
Don Measamer, Director, Community & Economic Development
Subject: 2021 Docket of Comprehensive Plan and Development Regulation Amendments
Planning Commission Work Session – March 16, 2022

Contents

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Next Steps	8

SUMMARY

This memo provides information for the upcoming Planning Commission work session to review the 2021 Docket of Comprehensive Plan and Development Regulation Amendment Proposals.

BACKGROUND

The City of Anacortes is conducting its annual process to accept and consider suggested amendments to the Anacortes Comprehensive Plan and Development Regulations. The Growth Management Act requires that “each comprehensive land use plan and development regulations shall be subject to continuing review and evaluation”.

[Anacortes Municipal Code \(AMC\) Chapter 19.16](#) provides the procedures for review of Legislative Actions, including comprehensive plan and development regulation amendments. Below is a summarized overview of the process.

Figure 1. City of Anacortes Annual Comprehensive Plan and Development Regulation amendment process



During the years 2020 and 2021, the city received 3 citizen-initiated petitions for amendments to the Comprehensive Plan. In addition, City staff have proposed 1 Comprehensive Plan amendment and multiple amendments to the development regulations within the Anacortes Municipal Code (AMC) Title 19, Unified Development Code. In July 2021, following a public comment period, petitioner presentations, a public hearing, and consideration of comments received, the City Council established the 2021 docket (Resolution 3042).

2021 DOCKET - AMENDMENTS OVERVIEW

Citizen Petitions

The City received the following timely petitions and suggestions to amend the Comprehensive Plan policies, map, or development regulations. For each proposal, the Department has provided a summary of the proposal and analysis. Petition titles contain a hyper link to the petitioner's application. The full text of each petition is available on the [Comprehensive Plan Amendment webpage](#).

P1. “Promoting Neighborhoods & Affordable Housing” – Evergreen Islands

Summary

The proposal seeks to add the following policies to Goal H-1 of the Housing Element of the Comprehensive Plan:

(New) Policy H-1.x. Regulate Short Term Vacation Rentals (STVRs) to mitigate their adverse impacts on the availability of Affordable Housing.

(New) Policy H-1.x. Regulate Short Term Vacation Rentals (STVRs) to mitigate their adverse impacts to Residential Neighborhoods such as additional traffic, noise, and their quality of life.

Analysis

The Anacortes Comprehensive Plan is currently silent on the topic of short-term vacation rentals. The Comprehensive Plan does contain general goals and policies supporting provision of a sufficient quantity and variety of housing to meet the community’s needs, and preservation of the character of residential neighborhoods.

The addition of specific policies for short-term vacation rentals would be useful in clarifying and memorializing Council’s intent and would help provide direction for the upcoming review and potential amendment to the City’s short-term rental regulations, which is currently on PCED’s work plan to complete in 2021/2022.

More information about current regulations governing short-term rentals is available in this [informational handout](#).

Public Comments

Seven written comments were received in support of docketing this proposal.

P2. “Skillings Future Land Use Map Amendment” – Thomas Skillings

Summary

The proposal seeks to change the [Comprehensive Plan Future Land Use Map](#) designation for portions of parcels P33059 and P33058 from Industrial to Residential Medium Density.



Analysis

The applicants would like to adjust the boundary line between 3 properties under their ownership. The purpose of the BLA would be to create a more generous setback between the existing home on P33062 (designated Residential Medium Density) and the adjacent properties to the west (designated Industrial and Residential Medium Density). The City's code prohibits approval of a BLA when it would result in a lot having more than one zoning or land use designation. Therefore, the owner is requesting a change to the land use designation for portions of P33059 and P33058 so that they are consistent with the designation of the residentially developed parcel to the east, and that, ultimately, the BLA can be accomplished.

If the FLUM amendment were approved, a subsequent rezone of the property from Industrial to R3 would be required to achieve consistency between the FLUM and zoning map. This would create additional land that could be developed with residential uses.

The applicant proposes leaving the remaining 31,486 sq. ft. portion of the property designated as Industrial.

P3. “Towards Zero Waste Policy” – Ryan Walters

Summary

The proposal seeks to add a new goal and policies to the Utilities Element of the Comprehensive Plan:

- New Goal U-9. Toward Zero Waste. Increase recycling and composting to 65% of the municipal solid waste stream.
 - New Policy U-9.1. Provide weekly curbside food waste collection including small containers for residents that do not require yard waste bins.
 - New Policy U-9.2. Facilitate or require multi-family dwellings to offer food waste collection.
 - New Policy U-9.3. Perform a waste characterization study and analyze results to identify waste stream components that can be targeted for reduction through producer responsibility or consumer education.
 - New Policy U-9.4. Construct solid waste rate schedules to incentivize increased diversion or reduced frequency of pickup.
 - New Policy U-9.5. When it becomes feasible, reduce garbage collection frequency to reduce trips, personnel costs, and greenhouse gas emissions.

Analysis

The City of Anacortes is included under Skagit County's Solid Waste Management Plan, which sets a goal for recycling and composting of 65%. The petition states that the new goal and policies would help the City move toward that goal.

City Initiated Amendments

The following amendments recommended by the PCED Department are included in this year's docket.

C1. Comprehensive Plan Technical Updates

Summary

The proposal is to amend the "Other Plans" paragraph on Page I-12 of the Comprehensive Plan as follows:

Other Plans

Each of the following plans is incorporated by reference into the Comprehensive Plan:

- [6-Year Capital Facilities Financing Plan 2015-2020](#)
- Wastewater Comprehensive Plan ~~2015~~
- ~~2011~~ Water System Plan
- ~~2007~~ Stormwater ~~Management~~ [Comprehensive Plan](#)
- Anacortes Parks & Recreation ~~Comprehensive Plan 2009~~
- ~~Anacortes Community Forest Lands Comprehensive Plan 2009~~
- Shoreline Master Program ~~2010~~
- ~~Fidalgo Bay-Wide Plan (2000)~~
- ~~Anacortes Airport Subarea Plan (2005)~~

Other plans may be incorporated into the Comprehensive Plan after its adoption by the adopting document for the individual plan.

Analysis

The purpose of the proposed amendment is to improve clarity by removing the names of city plans that are not necessary to be a part of the Comprehensive Plan, correcting and updating remaining plan titles, and removing specific dates so that updates to this section are not needed every time a referenced plan is updated in the future.

Title 19 Unified Development Code Clean-Up

Summary

Over the past 5 years, the City's land use procedures and development regulations have undergone significant reorganization and updates. In use of the code over time, City staff, members of the public, and applicants have identified areas that would benefit from revision to improve consistency in application, enhance clarity, and better implement the Comprehensive Plan's goals and policies. They are as follows:

C2. AMC Ch. 19.20 Application Procedures

- **AMC 19.20.070 - Vesting** – Revise vesting language to clarify that approval of certain application types (that are not building permits or land divisions) does not provide vested rights for subsequent building permit applications.

C3. AMC Ch. 19.22 Concurrency

- **New section** - Re-insert language (omitted in 2019 update) regarding Director establishment of a concurrency facilities review program to monitor capacity on concurrency facilities and assess the cumulative impact of forecasts of approved development upon capacity and anticipated levels of service.
- **AMC 19.22.050 - Concurrency Test** – Add application requirements and review fee language.

C4. AMC 19.43.020.B -Adult Family Home Definition

- Update to reflect recent changes to [RCW 70.128.010](#), which allows provision of services to up to 8 adults upon approval by DSHS.

C5. AMC Ch. 19.52 – Public Street Design

- Generally – consider changing terminology for ‘parking lane’ to ‘parking pocket’, where appropriate, to better convey comprehensive plan policies for new street design that minimizes impervious surfaces. The new street parking philosophy is less linear (lane) and more sectional (pockets).

C6. AMC 19.52.040.A.2 – Modified and Special Standards.

- There are several areas in the city for which the Public Works Department has developed special design standards for a street or neighborhood; however, some of these have not been formally adopted by Council. These standards should be adopted formally by council and added to the Public Works Engineering Design Standards.

C7. AMC Table 19.52.040.E – Lane Design Standards.

- Add note about integration of guest parking to the “Lane” street standard, similar to the note in the Local Access standard (Table 19.52.040.A).

C8. AMC Ch. 19.52.080 – Street Names and Signage.

- Add provision allowing the Fire Marshal or PW Director to require installation of No-Parking signage or other curb/pavement markings when a development contains a street with insufficient pavement width to allow for simultaneous on-street parking and emergency vehicle access.

C9. AMC 19.53.030.B Driveway location.

- Subsection B.2. “Lowest volume street” needs to be defined or consider changing to “Lowest order functional classification” or similar.
- Subsection B.3. The conditions identified in (a) and (b) need further clarification to assist in application, including defining the ‘functional capacity’ for an alley.
- In this section or elsewhere, provide better guidance for determining when development /redevelopment will require relocation to the alley of an existing driveway/access onto a city street.

C10. AMC Ch. 19.66 Fences

- Clarify when a fence permit is required.
- Identify parameters for what constitutes repair and maintenance of existing nonconforming fences.

C11. AMC Ch. 19.67 Signs

- Table 19.67.060, Projecting Sign maximum sign area - Update incorrect cross reference - The reference to 19.67.080(B)(1) should be 19.67.**090**(B)(1).
- Fix potentially conflicting provisions for commercial and noncommercial temporary signs located in the public right-of-way (AMC 19.67.110.C.2 and Table 19.67.110.F) and clarify placement standards.

NEXT STEPS

An additional Planning Commission work session to consider the docketed petitions will be held on March 23, 2022, if needed. Subsequently, staff will provide a staff report with PCED Department recommendations on specific amendment requests.

The proposal will be reviewed under the State Environmental Policy Act (SEPA) and State review through the WA State Department of Commerce.

Public Comment opportunity on the proposed amendments and a SEPA determination of environmental impacts are expected in April/May of 2022.

Resolution No. 3042

A Resolution establishing the 2021 Docket of Comprehensive Plan and Development Regulation Amendments

Whereas under RCW 36.70A.130(2)(a), updates, proposed amendments, or revisions to the Comprehensive Plan are considered by the City no more frequently than once every year;

Whereas, under AMC 19.16.030(B), the City of Anacortes may accept petitions for development regulation amendments as part of the annual docketing process, or may itself initiate the process of adopting or amending development regulations at any time;

Whereas under AMC 19.16.040(B), the City of Anacortes accepted proposals for amendments to the Comprehensive Plan and/or development regulations through the last business day in March;

Whereas petitions received for the 2020 Docket that were not previously considered for docketing are included for consideration in the 2021 Docket;

Whereas the Planning, Community & Economic Development Department published notice of the public hearing on June 9, 2021 and accepted written comment through June 30, 2021;

Whereas the City Council held a public hearing on the proposals on June 28, 2021;

Whereas amendment proposals placed on the docket will undergo further public, agency, and environmental review, consideration by the Planning Commission, and final consideration by the City Council; however, placing a proposal on the docket does not imply its ultimate approval;

Whereas on July 12, 2021, the City Council deliberated on the proposals, including public comments received, and made a motion to include all the proposals for amendments to the Comprehensive Plan and Development Regulations.

Now, therefore it is hereby resolved by the Anacortes City Council that the 2021 Docket of Comprehensive Plan and Development Regulation Amendments is hereby adopted and attached as Exhibit A.

PASSED and APPROVED on this 12th day of July 2021.

CITY OF ANACORTES

By Laurie Gere

Laurie Gere, Mayor

ATTEST:

Ste D H L O

Steven D. Hoglund, City Clerk

APPROVED AS TO FORM:

Darcy Swetnam

Darcy Swetnam, WSBA #40530
City Attorney

Resolution No. 3042
July 12, 2021

Exhibit A

2021 Docket of Proposed Comprehensive Plan and Development Regulation Amendments

Public Proposals			
Number	Title/Applicant	Summary	Action Taken
Comprehensive Plan			
P1	Promoting Neighborhoods & Affordable Housing, Evergreen Islands	Add 2 new policies to the Goal H-1 of the Housing Element relating to regulation of short-term rentals.	Include
P2	Skillings Future Land Use Map Amendment, Thomas Skillings	Change the future land use map designation of a portion of P33058 & P33059 (southeast corner of 35 th & V intersection) from Industrial to Residential Medium Density	Include
P3	Toward Zero Waste Policy, Ryan Walters	Adds a new goal and related policies to increase recycling and composting to 65% of the municipal solid waste stream	Include
City Initiated Proposals			
Number	Section	Summary	Action Taken
Comprehensive Plan			
C1	Introduction Section; Page I-12, "Other Plans"	Remove plan titles that are not required to be incorporated by reference, update remaining plan titles and dates	Include
Development Regulations			
C2	AMC 19.20.070 - Vesting	Revise vesting language to clarify that approval of certain application types (that are not building permits or land divisions) does not provide vested rights for subsequent building permit applications.	Include
C3	AMC Ch. 19.22 Concurrency	New section - Re-insert language (omitted in 2019 update) regarding Director establishment of a concurrency facilities review program to monitor capacity on concurrency facilities and assess the cumulative impact of forecasts of approved development upon capacity and anticipated levels of service. AMC 19.22.050 - Concurrency Test – Add application requirements and review fee language.	Include
C4	AMC 19.43.020.B -Adult Family Home Definition	Update to reflect recent changes to <u>RCW 70.128.010</u> , which allows provision of services to up to 8 adults upon approval by DSHS	Include

C5	AMC Ch. 19.52 – Public Street Design	Generally – consider changing terminology for ‘parking lane’ to ‘parking pocket’, where appropriate, to better convey comprehensive plan policies for new street design that minimizes impervious surfaces. The new street parking philosophy is less linear (lane) and more sectional (pockets).	Include
C6	AMC 19.52.040.A.2 – Modified and Special Standards	There are several areas in the city for which the Public Works Department has developed special design standards for a street or neighborhood; however, some of these have not been formally adopted by Council. These standards should be adopted formally by council and added to the Public Works Engineering Design Standards	Include
C7	AMC Table 19.52.040.E – Lane Design Standards	Add note about integration of guest parking to the Lane street standard, similar to the note in the Local Access standard (Table 19.52.040.A).	Include
C8	AMC Ch. 19.52.080 – Street Names and Signage	Add provision allowing the Fire Marshal or PW Director to require installation of No-Parking signage or other curb/pavement markings when a development contains a street with insufficient pavement width to allow for simultaneous on-street parking and emergency vehicle access.	Include
C9	AMC 19.53.030.B Driveway location	Subsection B.2. “Lowest volume street” needs to be defined or consider changing to “Lowest order functional classification” or similar. Subsection B.3. The conditions identified in (a) and (b) need further clarification to assist in application, including defining the ‘functional capacity’ for an alley. In this section or elsewhere, provide better guidance for determining when development /redevelopment will require relocation to the alley of an existing driveway/access onto a city street.	Include
C10	AMC 19.66 Fences	Clarify when a fence permit is required Identify parameters for what constitutes repair and maintenance of existing nonconforming fences.	Include
C11	AMC Ch. 19.67 Signs	Table 19.67.060, Projecting Sign maximum sign area - Update incorrect cross reference - The reference to 19.67.080(B)(1) should be 19.67.090(B)(1). Fix potentially conflicting provisions for commercial and noncommercial temporary signs located in the public right-of-way (AMC 19.67.110.C.2 and Table 19.67.110.F) and clarify placement standards.	Include

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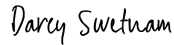
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Required hardware and software

Operating Systems:	Windows® 2000, Windows® XP, Windows Vista®; Mac OS® X
Browsers:	Final release versions of Internet Explorer® 6.0 or above (Windows only); Mozilla Firefox 2.0 or above (Windows and Mac); Safari™ 3.0 or above (Mac only)

PDF Reader:	Acrobat® or similar software may be required to view and print PDF files
Screen Resolution:	800 x 600 minimum
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